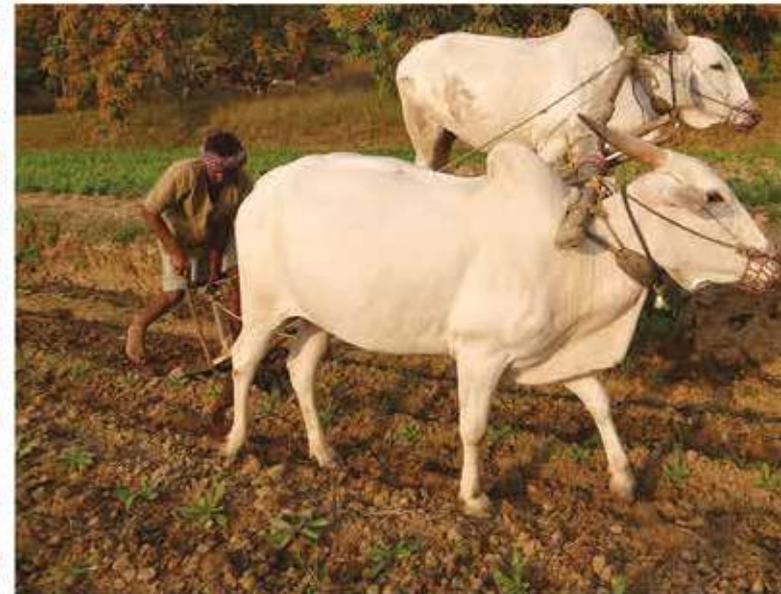




# IFSTAL

Innovative Food Systems Teaching And Learning

HEFCE  
HIGHER EDUCATION  
FUNDING COUNCIL  
FOR ENGLAND



## IFSTAL Accra 2018

Monday 23rd July - Lecture 2

Introduction to Food Systems Thinking





# Systems and Systems Thinking

- Problems and how to solve them
- What are systems?
- Why is it useful to think about food systems?

# Tame Problems

## Tame Problems

- Well-defined and stable problem statement
- Definite stopping point
- Solution can be objectively evaluated
- Solution can be generalised to similar problems
- Solutions can be tried and abandoned



**They may be complicated,  
but ultimately solvable**

Rittel, H. & Webber, M., 1973. Dilemmas in a general theory of planning. *Policy sciences*, 4(December 1969), pp.155–169.

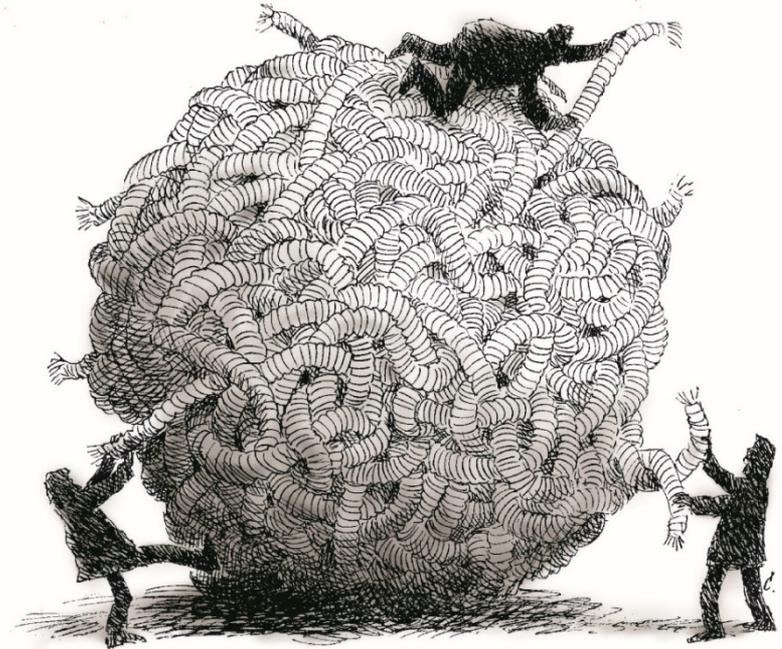
# Complex Problems

- **Wicked Problems**

- Share none of the characteristics of tame problems
- Transcend disciplinary, organisational, institutional, and geo-political boundaries

- **Super Wicked Problems**

- Time is running out
- No central authority
- Those seeking to solve the problem are also causing it
- Policies discount the future irrationally



**Looking for *improvement*,  
not solvable.**

**Many food related issues are  
complex and 'wicked'**

Levin, K. et al., 2012. Overcoming the tragedy of super wicked problems: constraining our future selves to ameliorate global climate change. *Policy Sciences*, 45(2), pp.123–152.



# Systems thinking is an approach to addressing complex problems

But what is a system?

# What is a system?

parts + relationships + function(s) = system

*"The whole is greater than the sum of its parts."*

Aristotle

## What's *not* a system?

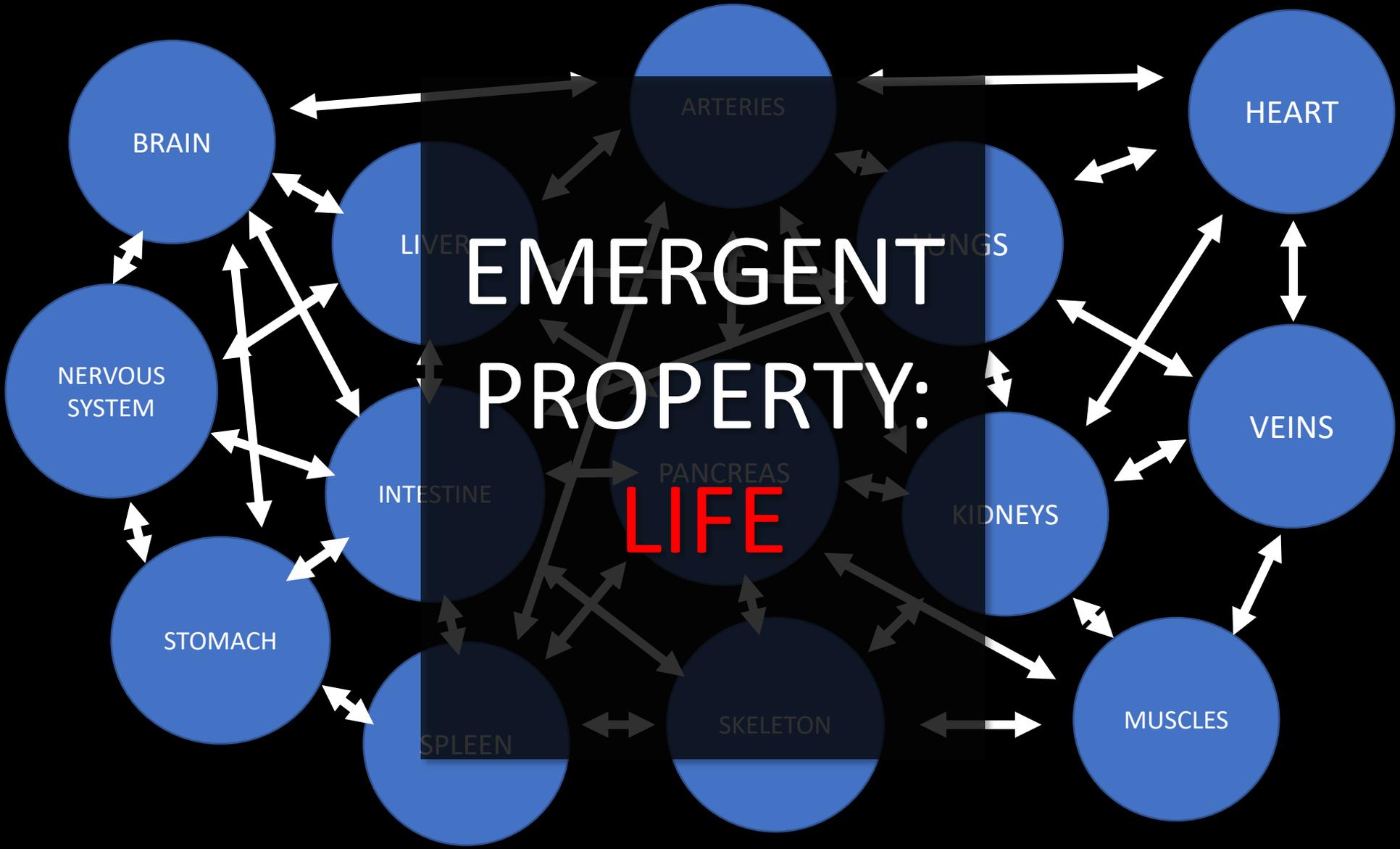
*"A conglomeration without any particular interconnections or functions."*

Donella Meadows



For Example...grain alone is not a system- but is part of other systems and a wider food system that consists of parts, relationships and functions.







# EXERCISE: 10 mins

In your groups, choose a food issue and discuss where and how it 'emerges' within the food system.

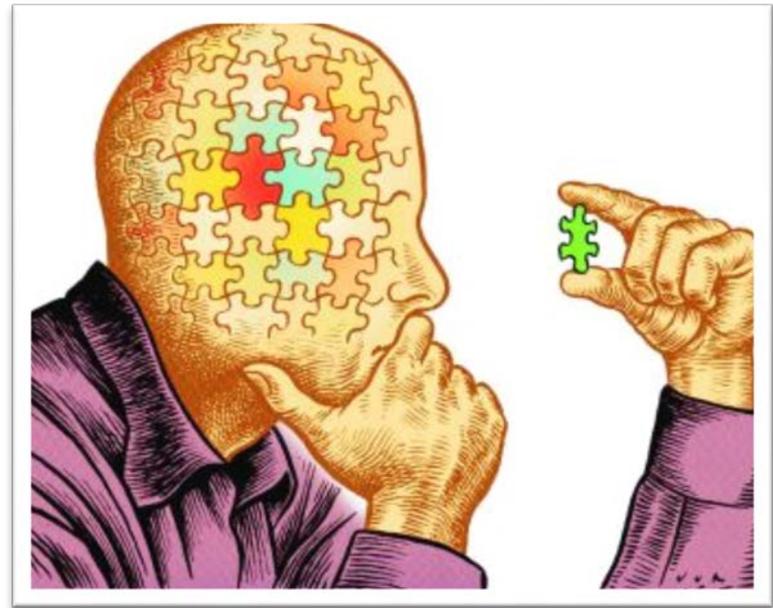
[Hint: Recall your 2-3 word 'interests' from last night]

**All problems in the food system are located in the patterns of relationships between the different parts of the system, not in the parts themselves.**

# Systems Thinking: a critical thinking skill

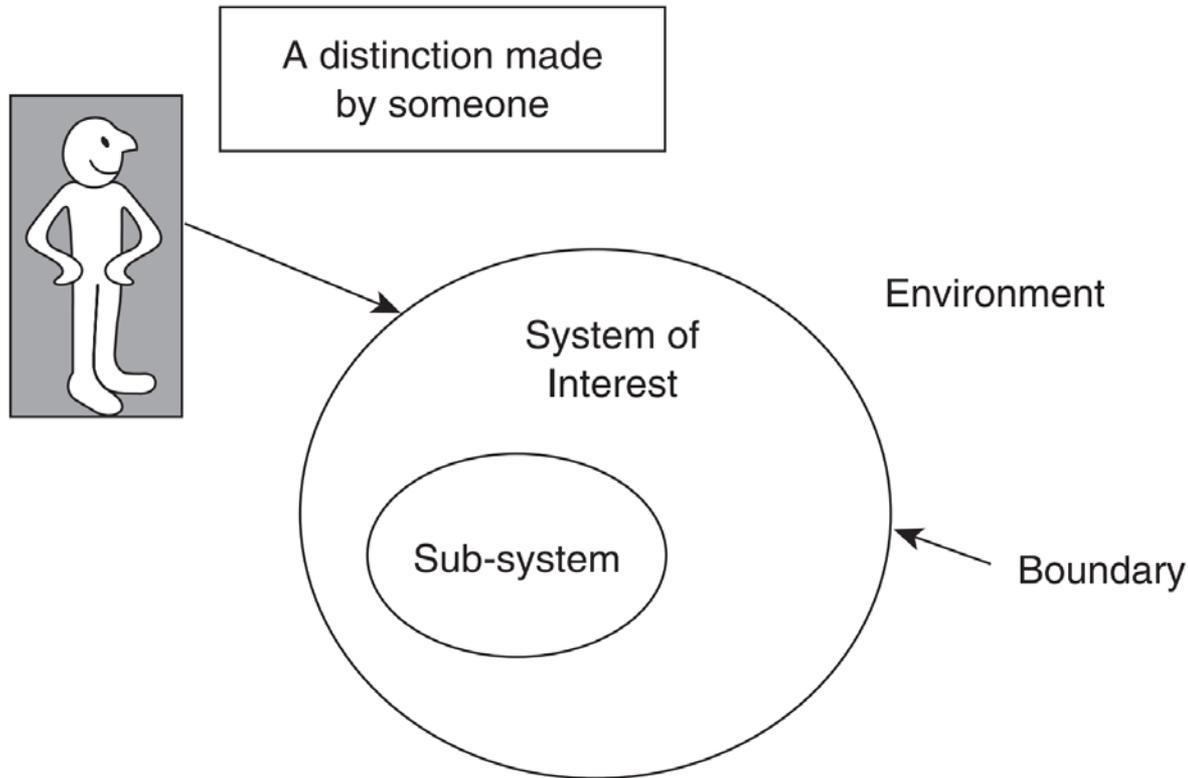
## Systems Thinking

- The consideration of something in its totality, its interaction with the wider environment, while also considering its constituent parts and their interactions
- Incorporating diverse perspectives
- Thinking about thinking (metacognitive skill)



awareness and understanding of one's own thought processes.

# What happens when we think about a system?



Key elements that result from systems thinking.

Ison (2008)

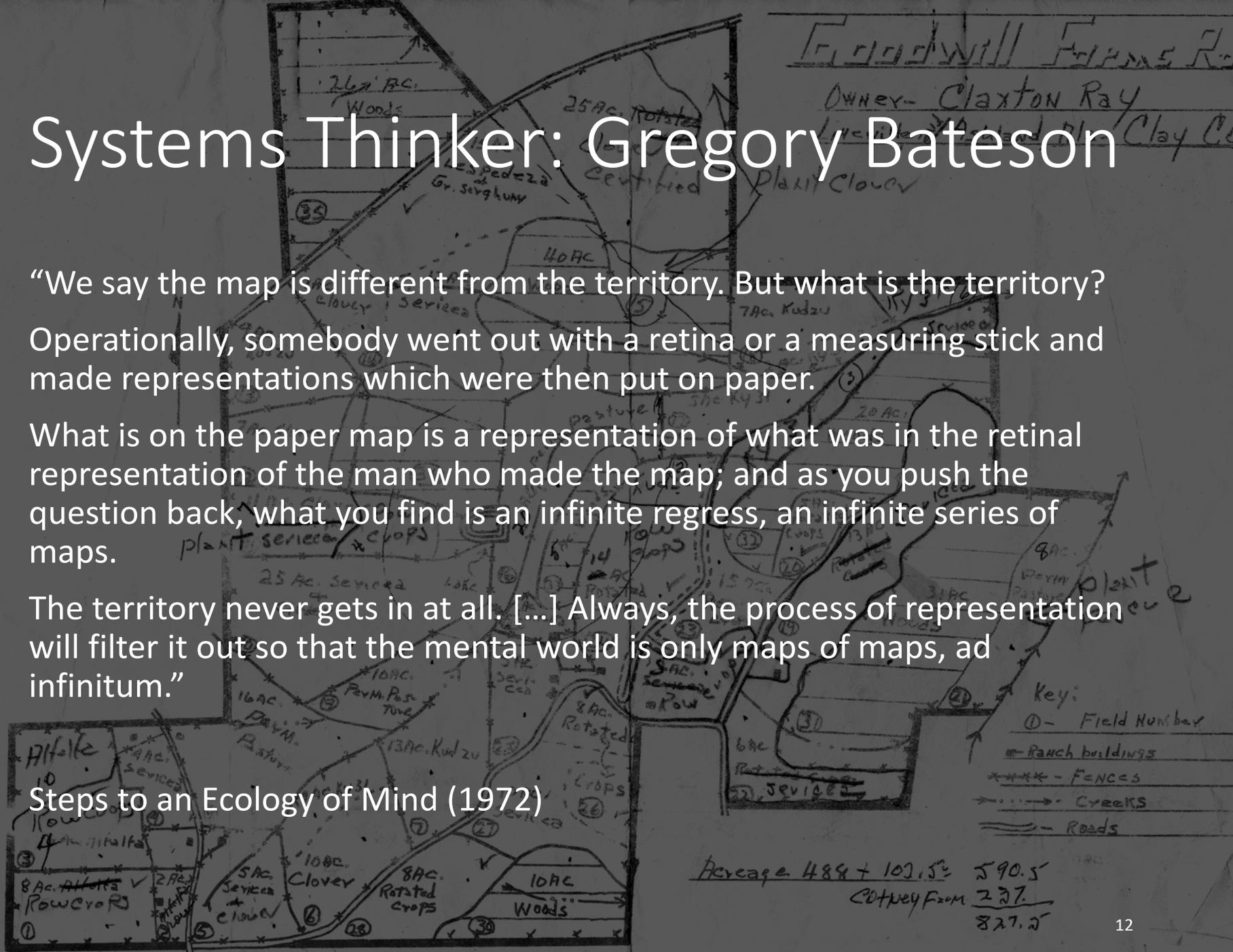
# Systems Thinker: Gregory Bateson

“We say the map is different from the territory. But what is the territory? Operationally, somebody went out with a retina or a measuring stick and made representations which were then put on paper.

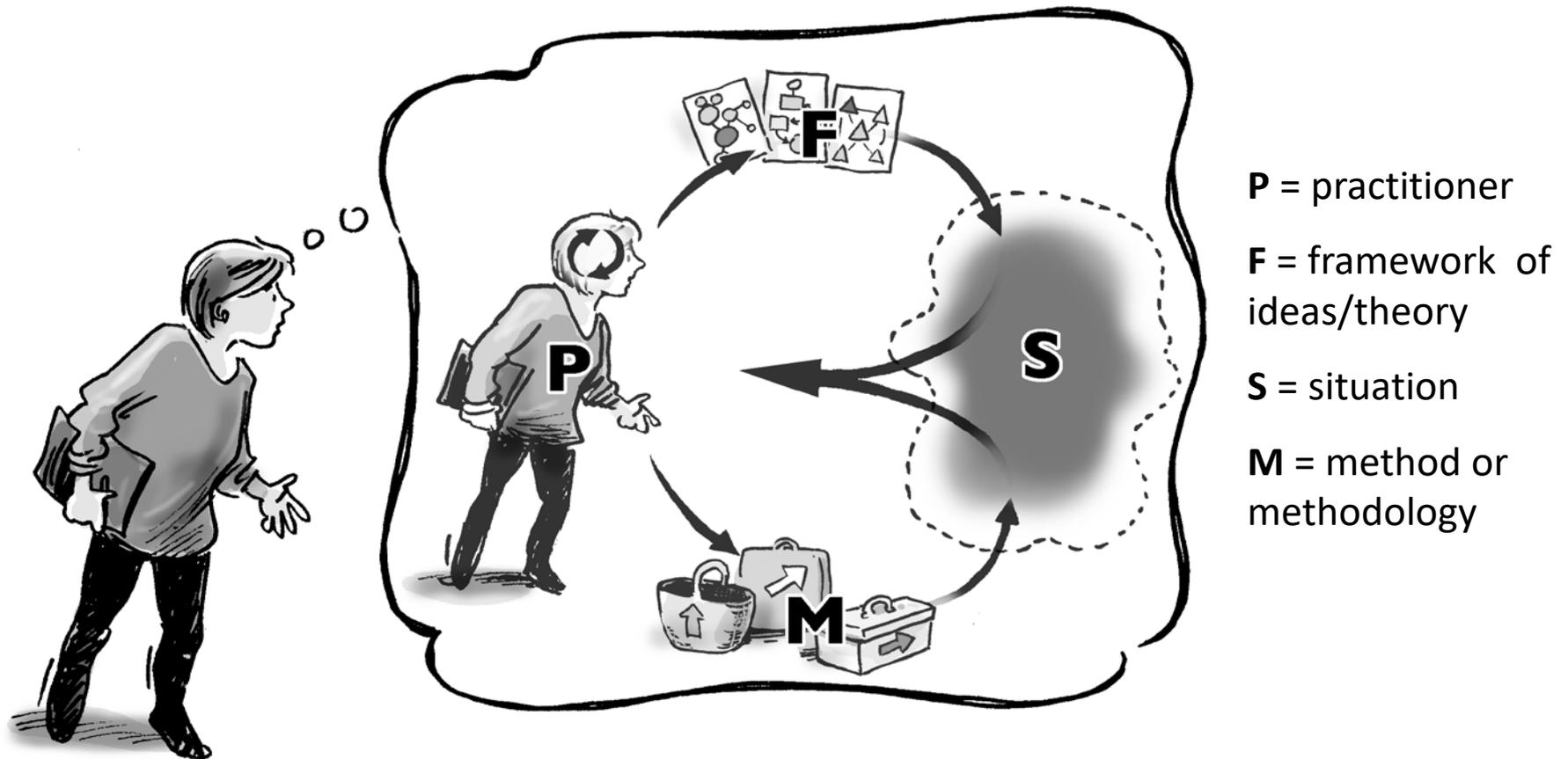
What is on the paper map is a representation of what was in the retinal representation of the man who made the map; and as you push the question back, what you find is an infinite regress, an infinite series of maps.

The territory never gets in at all. [...] Always, the process of representation will filter it out so that the mental world is only maps of maps, ad infinitum.”

Steps to an Ecology of Mind (1972)

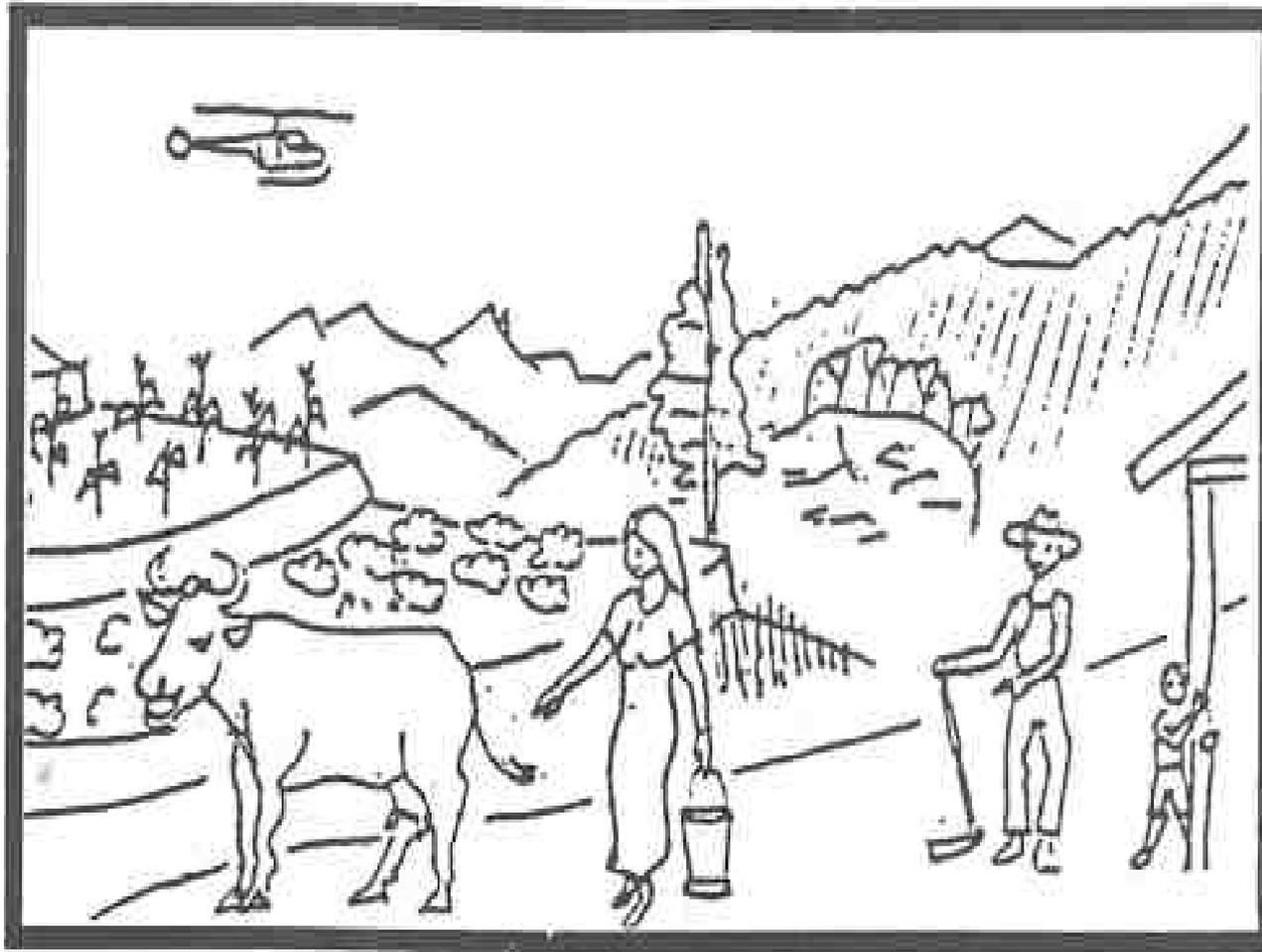


# A representation of what is *actually* happening when we think about systems



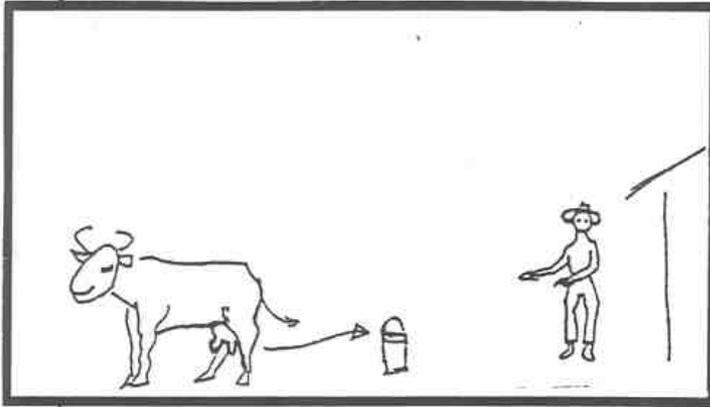
Ison, R. L. (2010). *Systems Practice: How to Act in a Climate-Change World*. Springer London.

# Boundaries in action

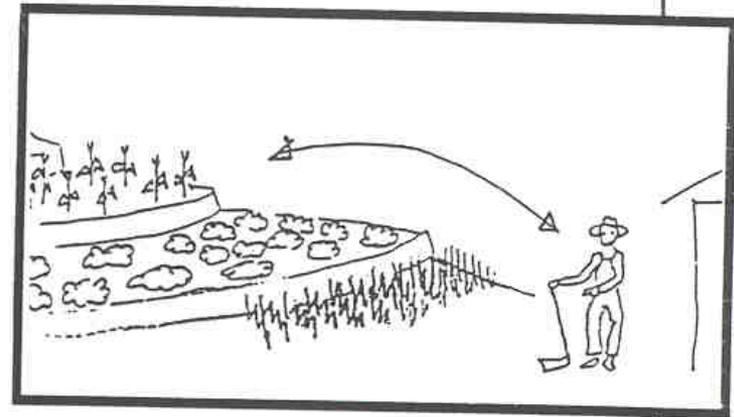


“Current Reality”

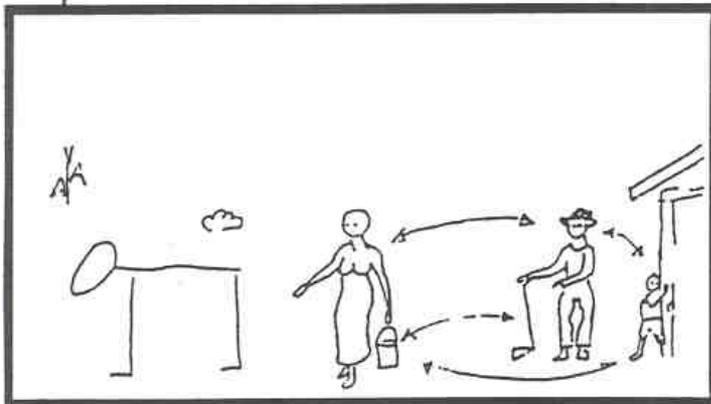
What the multidisciplinary Expert-mission sees



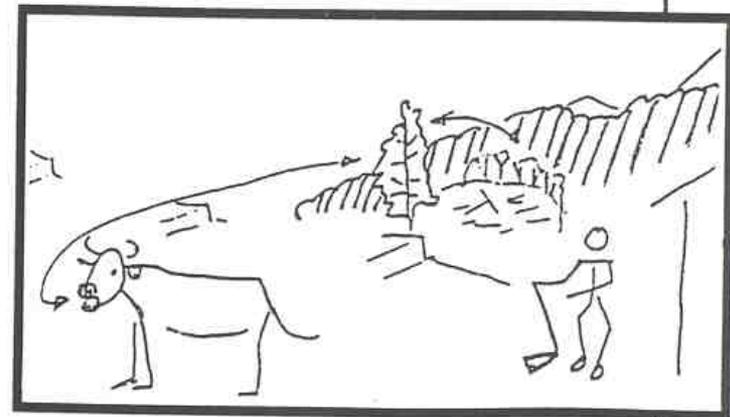
The view of the dairy-specialist



The view of the agronomist



The view of the sociologist



The view of the ecologist



# DSRP

A framework to help us think about food systems

# Distinctions, Systems, Relationships & Perspectives (DSRP)

- We can consider systems through *four interrelated patterns of thinking*
- DSRP stands for:
  - Distinctions
  - Systems
  - Relationships
  - Perspectives

*Source:* Cabrera, D. & Colosi, L. (2008). Distinctions, systems, relationships, and perspectives (DSRP): A theory of thinking and of things *Evaluation and Program Planning*, Volume 31, Issue 3, August 2008, Pages 311-317

# DSRP

---

## 4 Interrelated Patterns of Thinking...

## Framing Questions

### **Making *Distinctions***

- What is \_\_\_ ?
- What is not \_\_\_?

### **Organising *Systems***

- Does \_\_\_ have parts?
- Can you think of \_\_\_ as a part?

### **Recognising *Relationships***

- Is \_\_\_ related to \_\_\_?
- Can you think of \_\_\_ as a relationship?

### **Taking *Perspectives***

- From the perspective of \_\_\_\_\_, [insert question]?
- Can you think about \_\_\_\_\_ from a different perspective?

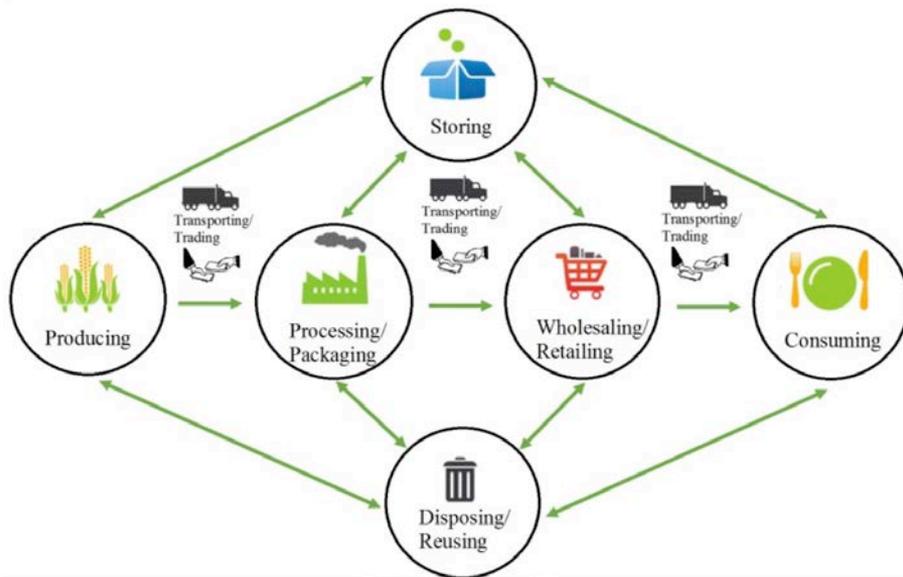
# Distinctions (Food Waste)

- Definitions
  - What it is and what it isn't (boundaries)



# Systems (Food Waste)

- Who is creating it? Where is it created? Where does it end up?



Actors (+organisations)  
Activities



Demographics  
Behaviour

Systems can also be 'nested' within each other

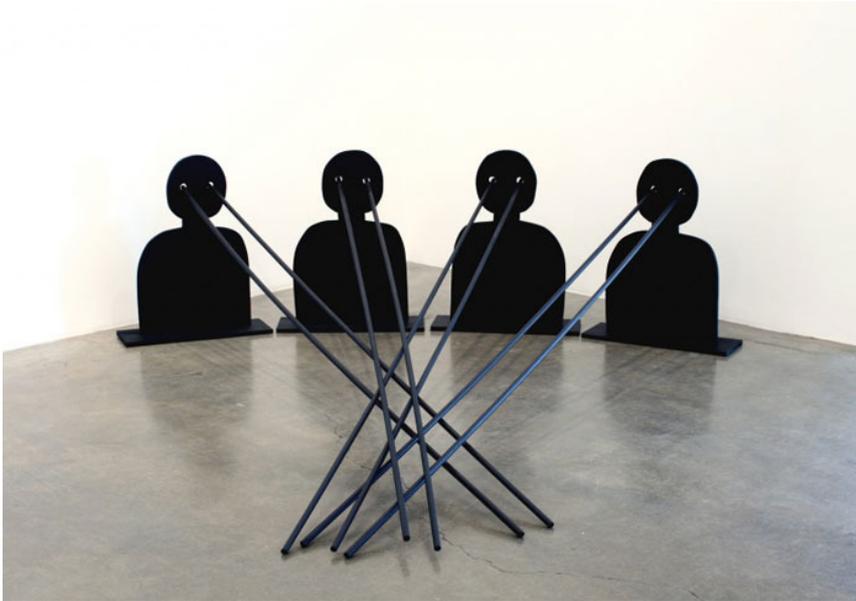
# Relationships (Food Waste)

- How, why and when is waste being generated?
- Consider the different flows of waste.
- Who bears the cost? Can it be distributed?



# Perspectives (Food Waste)

- To what extent is waste a problem?
- How do individuals, groups and organisations see it?
- Is food waste linked to other problems?



# Food System Frameworks

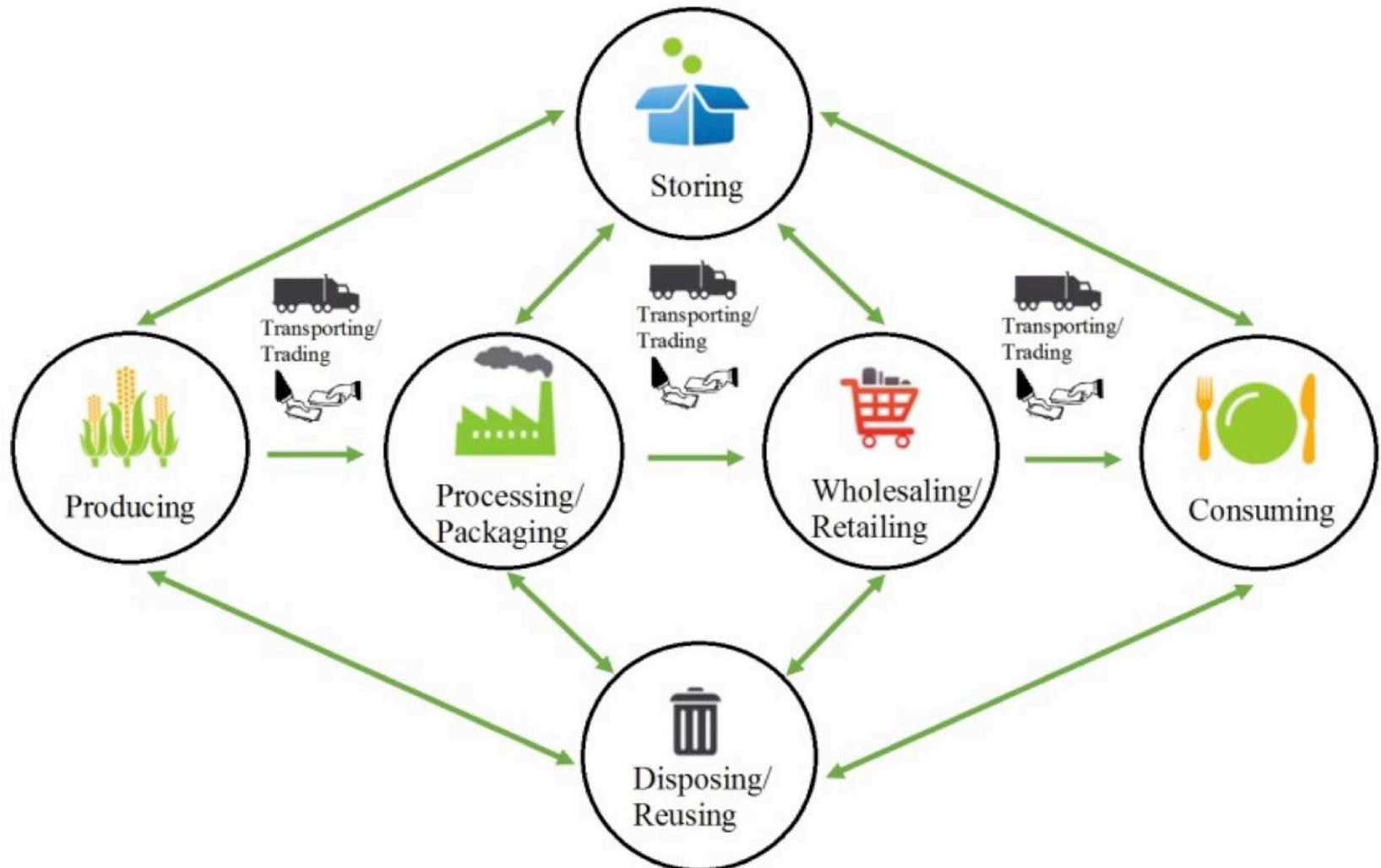


# Food System – a definition

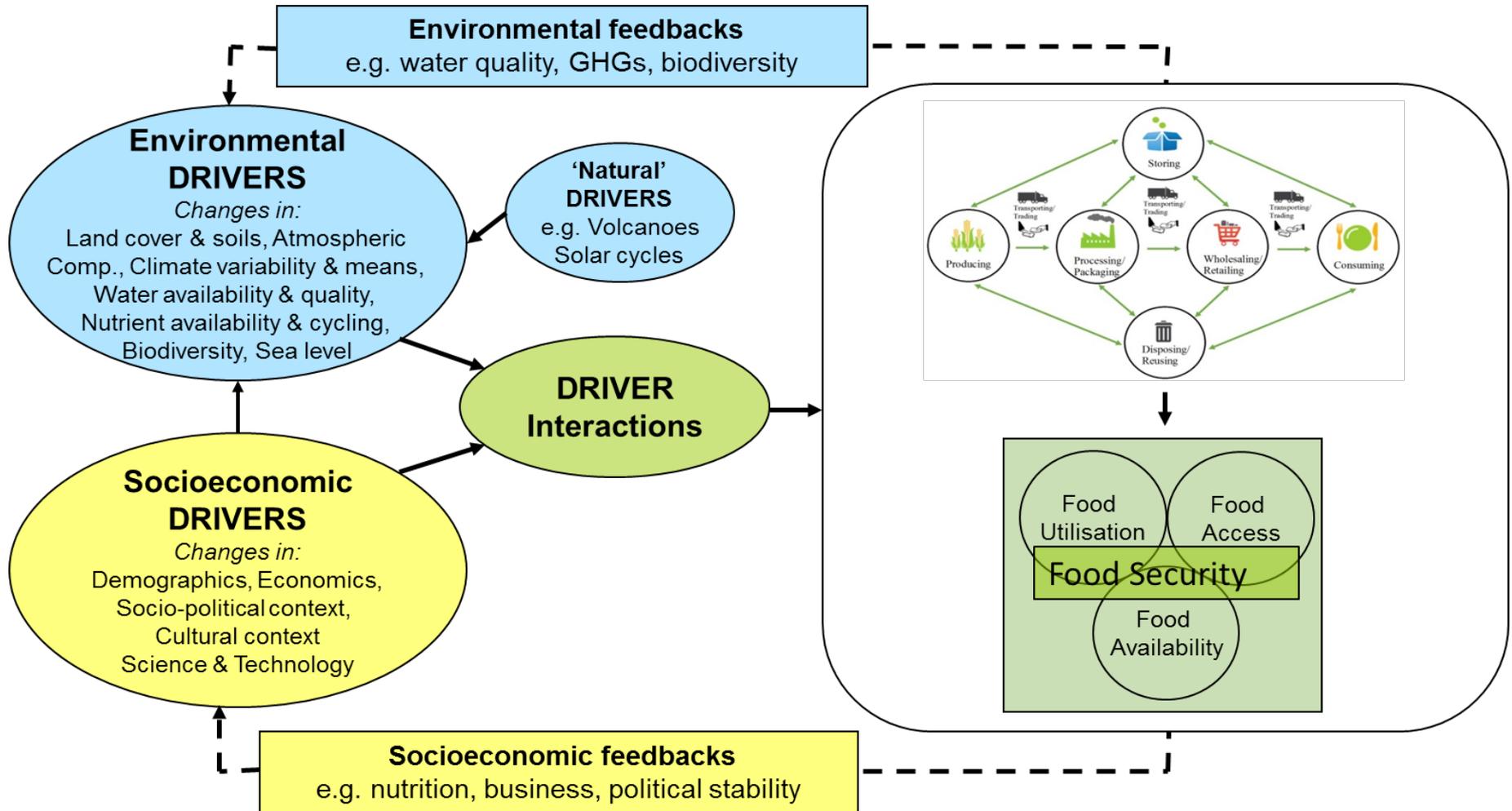
- The food system, in the sense we use it here, includes all those activities involving the production, processing, transport and consumption of food.
- The food system includes the *governance* and economics of food production, its *sustainability*, the degree to which we waste food, and how food production affects the *natural environment*.
- This include issues of how food affects health and well-being, including nutrition, obesity, food security and food safety. As well as our food cultures.

**Oxford Martin School, University of Oxford**

# A Food System > Value/Supply Chains



# GECAFS Framework



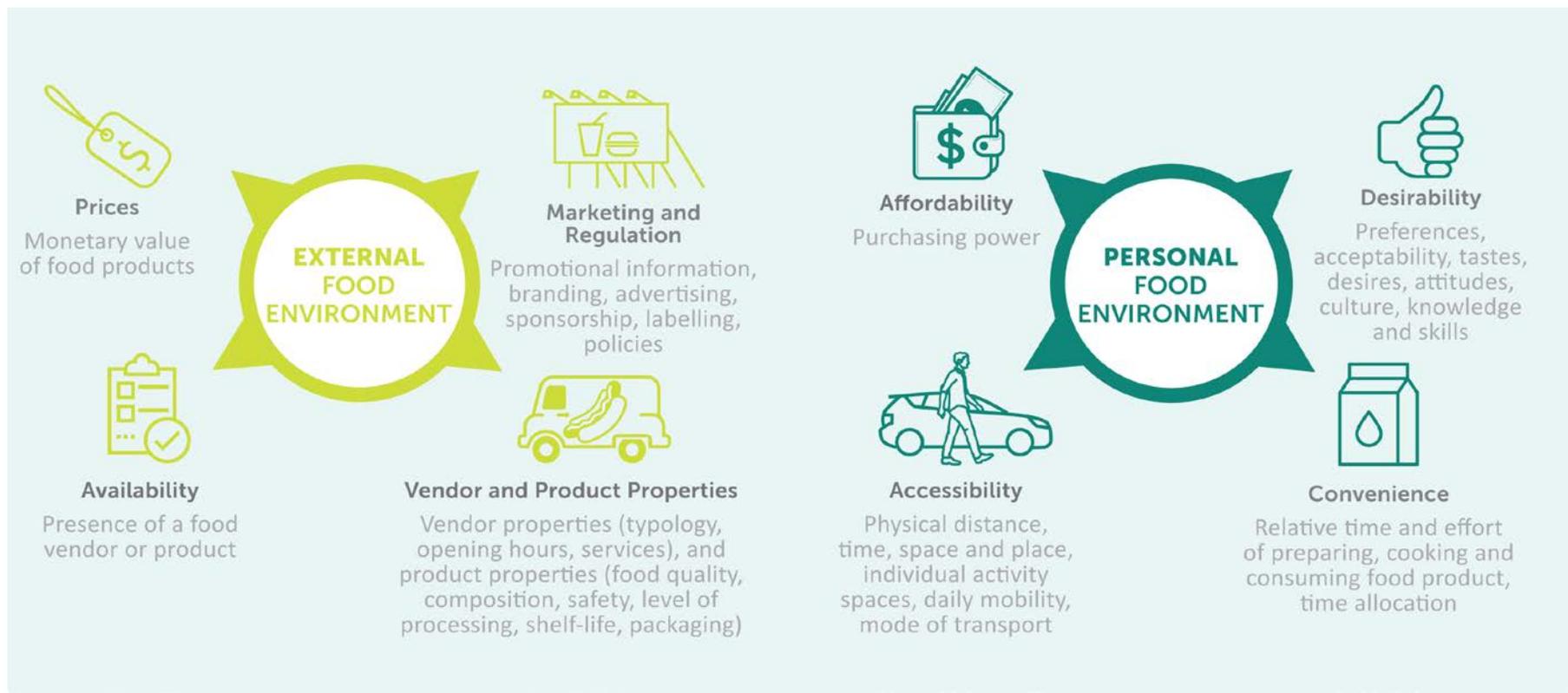
Global Environmental Change and Food Systems (GECAFS) Framework

Ericksen, P.J., 2008. Conceptualizing food systems for global environmental change research.

*Global Environmental Change*, (18), pp.234–245.



# Food Environments



Turner, C., et al. (2017). *Concepts and methods for food environment research in low and middle income countries* (Food Environment Working Group: Technical Brief). *Food Environment WORKING GROUP: TECHNICAL BRIEF*. London, UK.



# DSRP (*reminder*)

---

## 4 Interrelated Patterns of Thinking...

## Framing Questions

### **Making *Distinctions***

- What is \_\_\_ ?
- What is not \_\_\_?

### **Organising *Systems***

- Does \_\_\_ have parts?
- Can you think of \_\_\_ as a part?

### **Recognising *Relationships***

- Is \_\_\_ related to \_\_\_?
- Can you think of \_\_\_ as a relationship?

### **Taking *Perspectives***

- From the perspective of \_\_\_\_\_, [insert question]?
- Can you think about \_\_\_\_\_ from a different perspective?

# Food for thought...

“How is it that one way of seeing the world becomes so widely shared that institutions, technologies, production systems, buildings, cities become shaped around that way of seeing? How do systems create cultures? How do cultures create systems?”

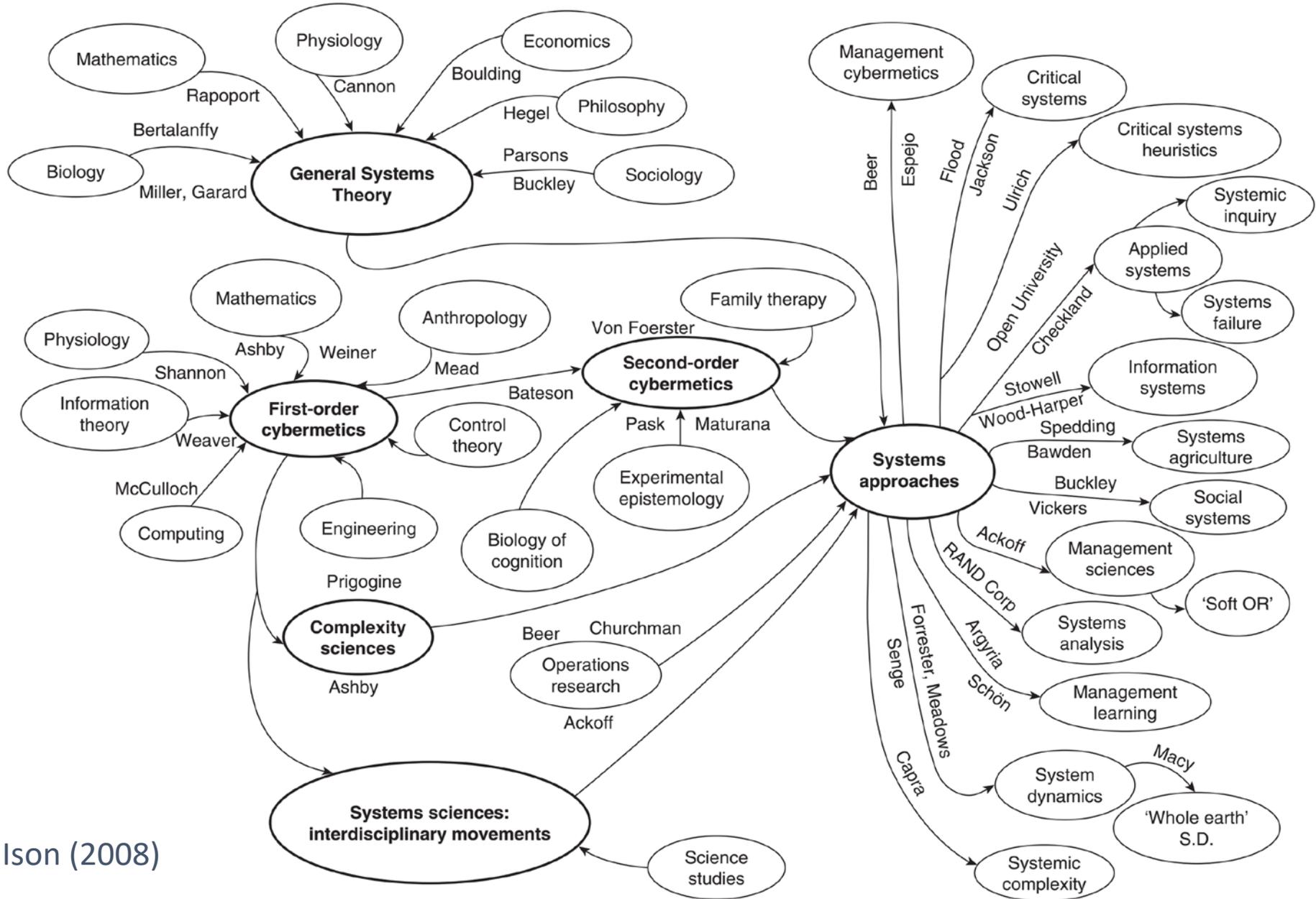
Donella Meadows – *Thinking in Systems* (2008)



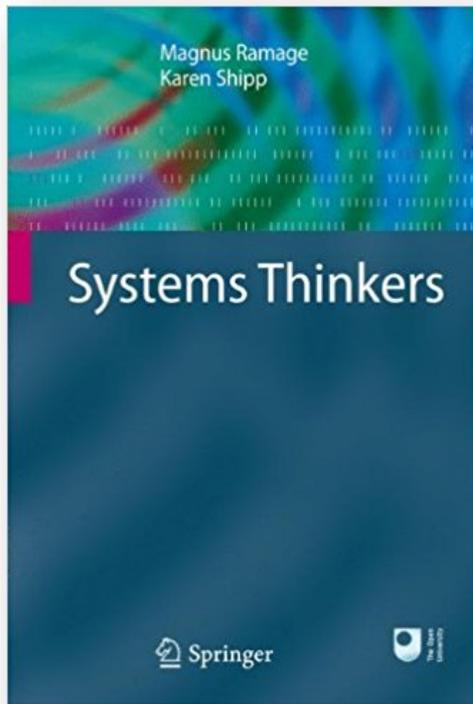
# Further Resources

Continuing your systems thinking journey

# Traditions of Systems thinking



# Historical Development



## Early cybernetics

Gregory Bateson (1904-1980)  
Norbert Wiener (1894-1964)  
Warren McCulloch (1898-1969)  
Margaret Mead (1901-1978)  
W. Ross Ashby (1903-1972)

## General systems theory

Ludwig von Bertalanffy (1901-72)  
Kenneth Boulding (1910-1993)  
Geoffrey Vickers (1894-1983)  
Howard Odum (1924-2002)

## System dynamics

Jay Forrester (1918-)  
Donella Meadows (1941-2001)  
Peter Senge (1947-)

## Soft & critical systems

C. West Churchman (1913-2004)  
Russell Ackoff (1919-)  
Peter Checkland (1930-)  
Werner Ulrich (1948-)  
Michael C. Jackson (1951-)

## Later cybernetics

Heinz von Foerster (1911-2002)  
Stafford Beer (1926-2002)  
Humberto Maturana (1928-)  
Niklas Luhmann (1927-1998)  
Paul Watzlawick (1921-2007)

## Complexity theory

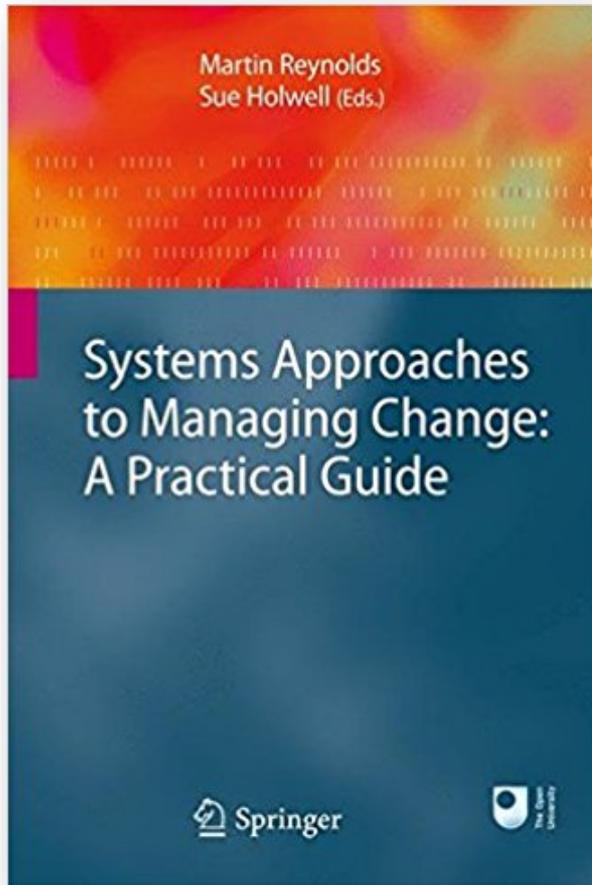
Ilya Prigogine (1917-2003)  
Stuart Kauffman (1939-)  
James Lovelock (1919-)

## Learning systems

Kurt Lewin (1890-1947)  
Eric Trist (1911-1993)  
Chris Argyris (1923-)  
Donald Schön (1930-1997)  
Mary Catherine Bateson (1939-)

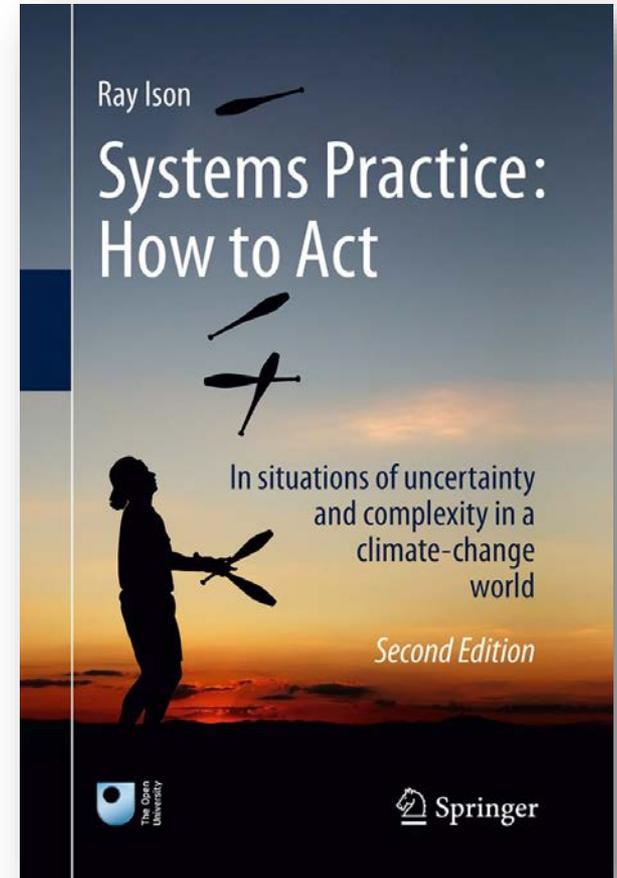
Ramage, M., & Shipp, K. (2009). *Systems thinkers*. London: Springer.

# A Primer in Methods...



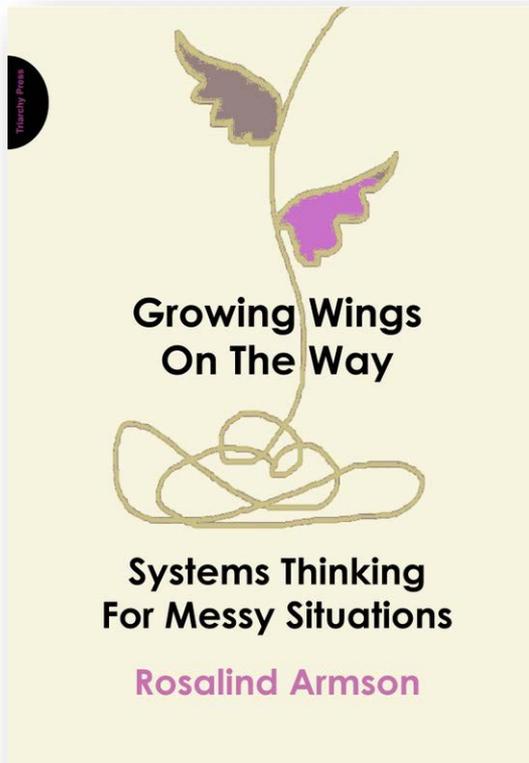
**LEFT:** Reynolds and Holwell (2010). *Systems Approaches to Managing Change: A Practical Guide* Springer London.

**RIGHT:** Ison, R. L. (2010). *Systems Practice: How to Act in a Climate-Change World*. Springer London.



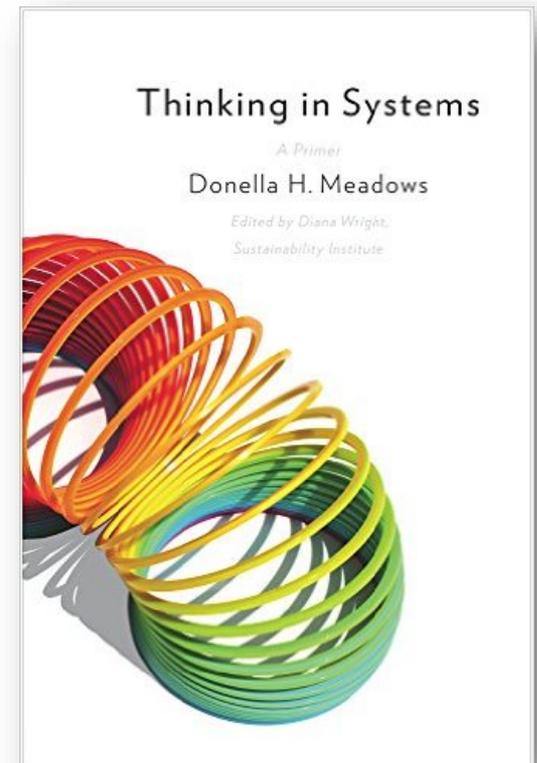
# Further Resources: Systems Thinking

**DSRP Video:** <https://www.youtube.com/watch?v=-sfiReUu3o0>



**LEFT:** Armson, R., 2011. *Growing Wings on the Way: Systems Thinking for Messy Situations*, Triarchy Press

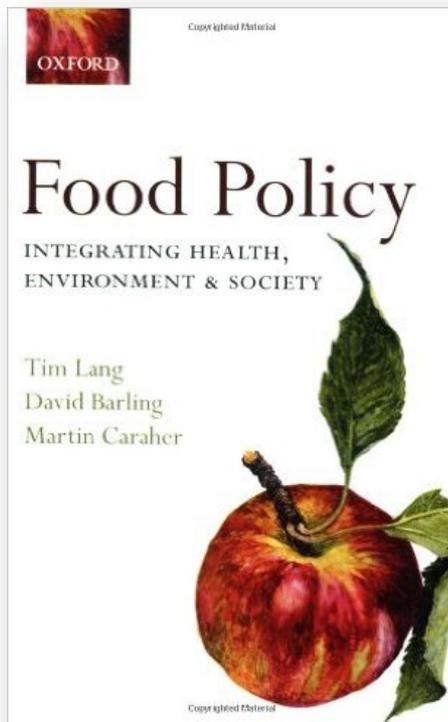
**RIGHT:** Meadows, D.H. & Wright, D., 2009. *Thinking in Systems: A Primer*, Earthscan.



# Further Resources: Food Systems

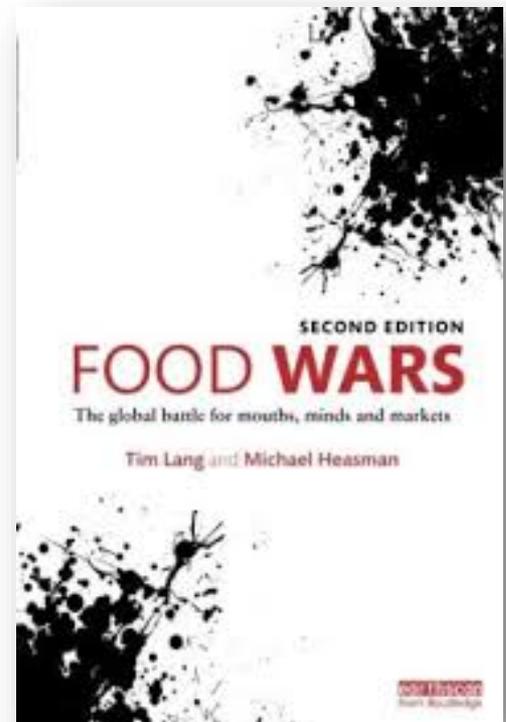
Geoff Tansey's Food Systems Academy:

<http://www.foodsystemsacademy.org.uk/>



**LEFT:** Lang, T., Barling, D. & Caraher, M., 2009. *Food Policy: Integrating health, environment and society*, Oxford University Press.

**RIGHT:** Lang, T. & Heasman, M., 2015. *Food Wars: The global battle for mouths, minds and markets, second edition*, Earthscan





# IFSTAL

Innovative Food Systems Teaching And Learning

