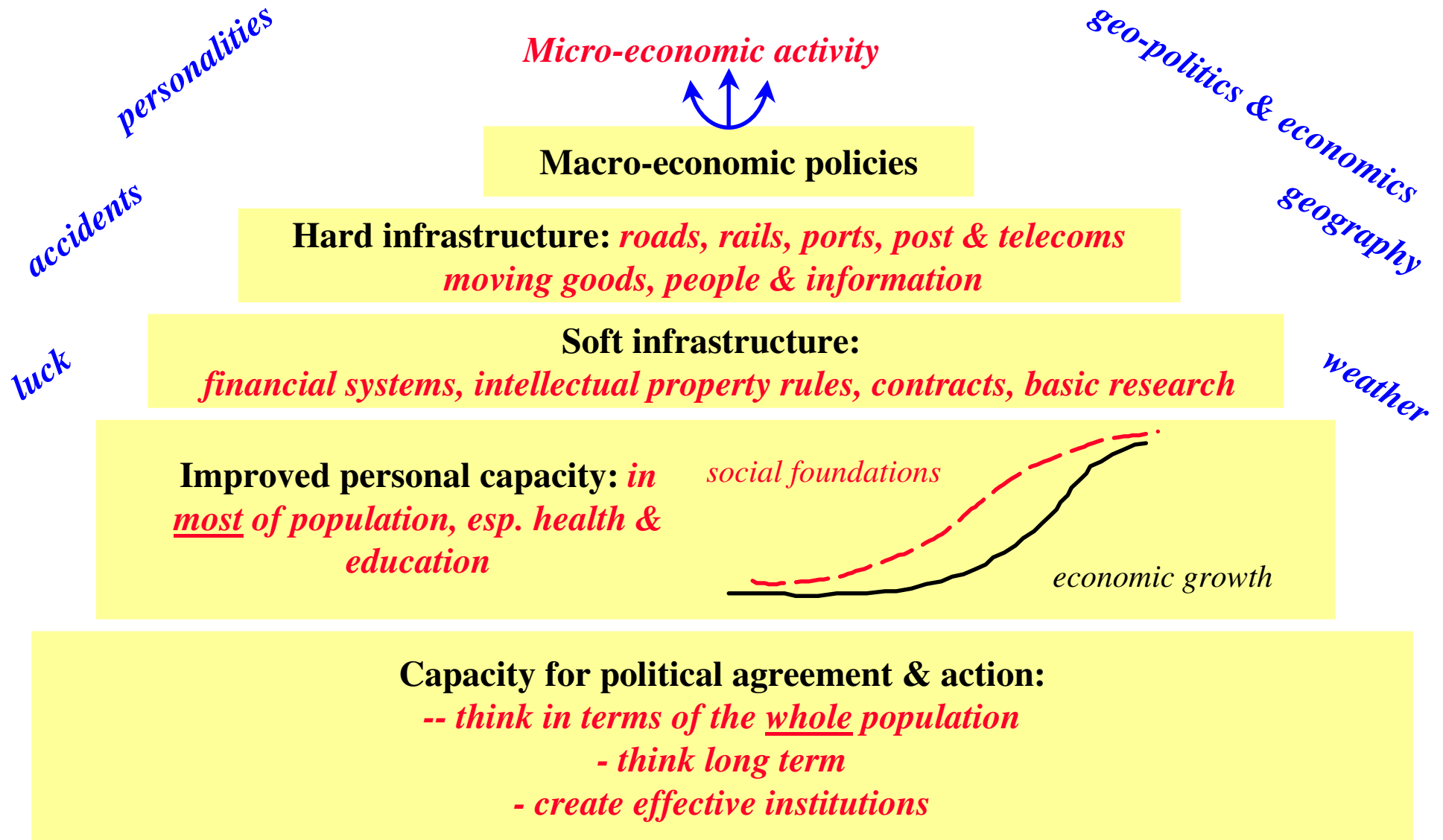


Losing Control

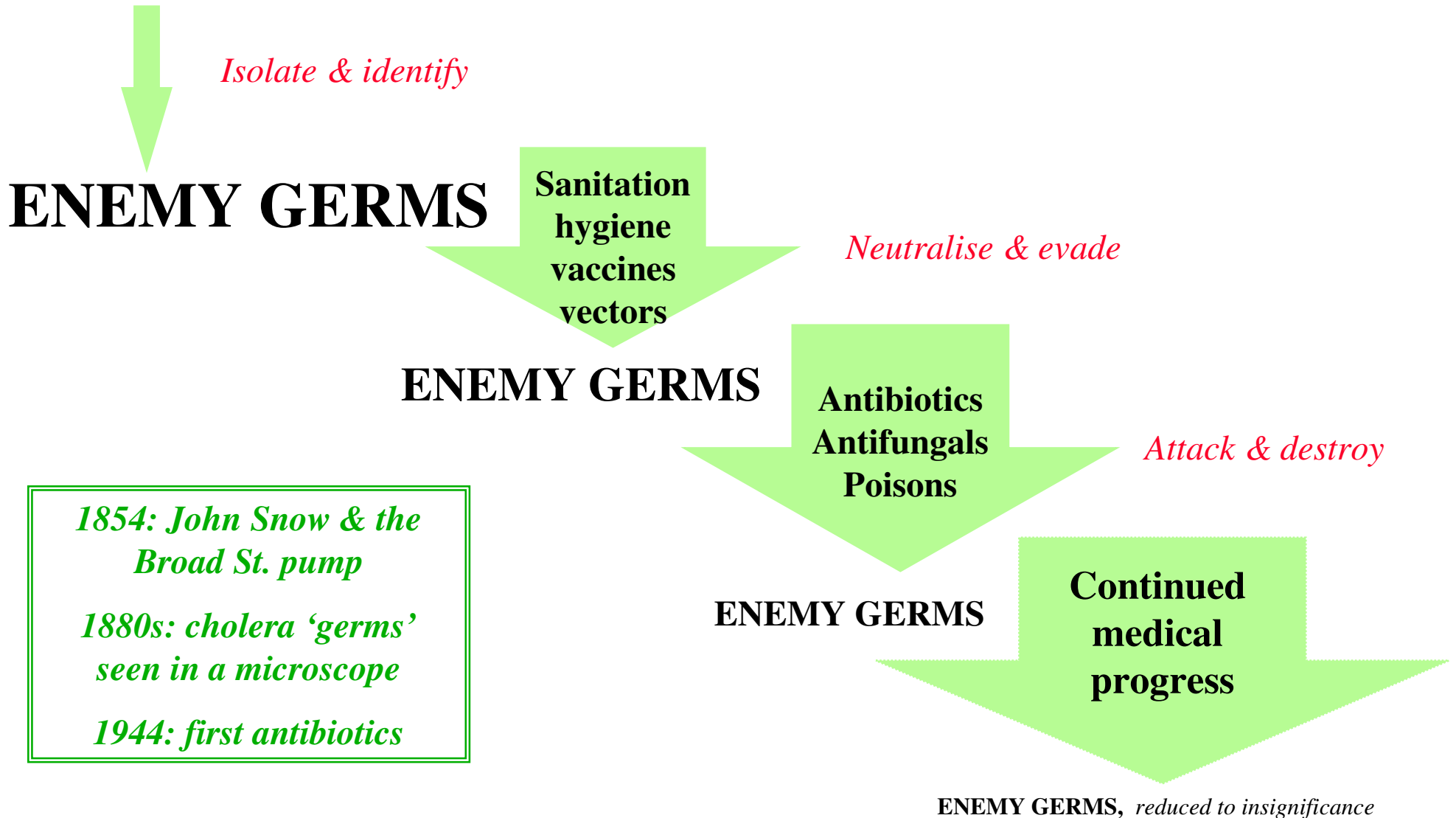
Viruses, bacteria & human reactions

*a short presentation to the
Anglo American Midhurst gathering
from B.J. Heinzen, September 1995*

How Countries Grow



The Age of Reason & Antibiotics

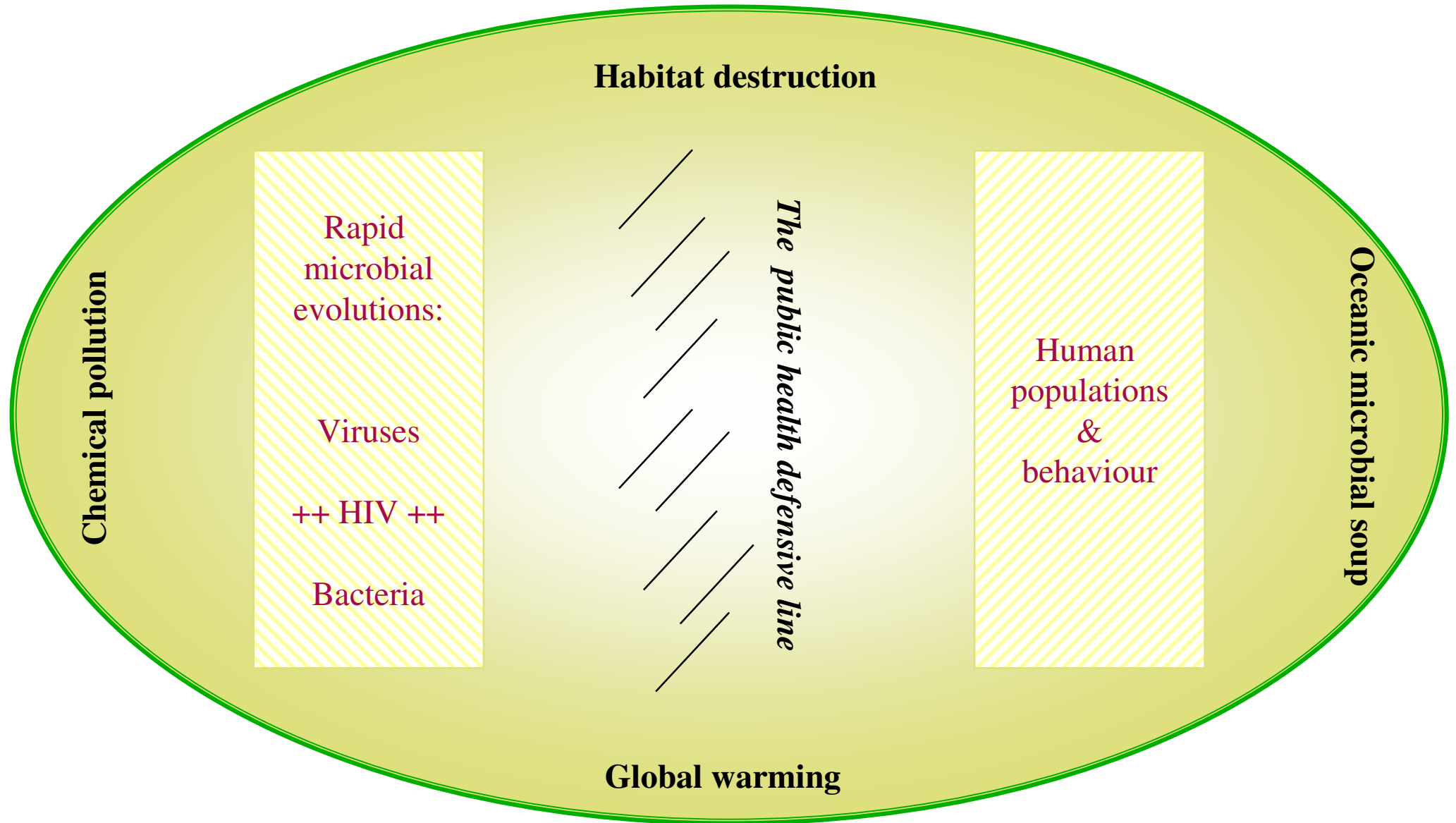


“We’ll never escape the limits of the ecosystem. We are caught in the food chain, whether we like it or not ...”

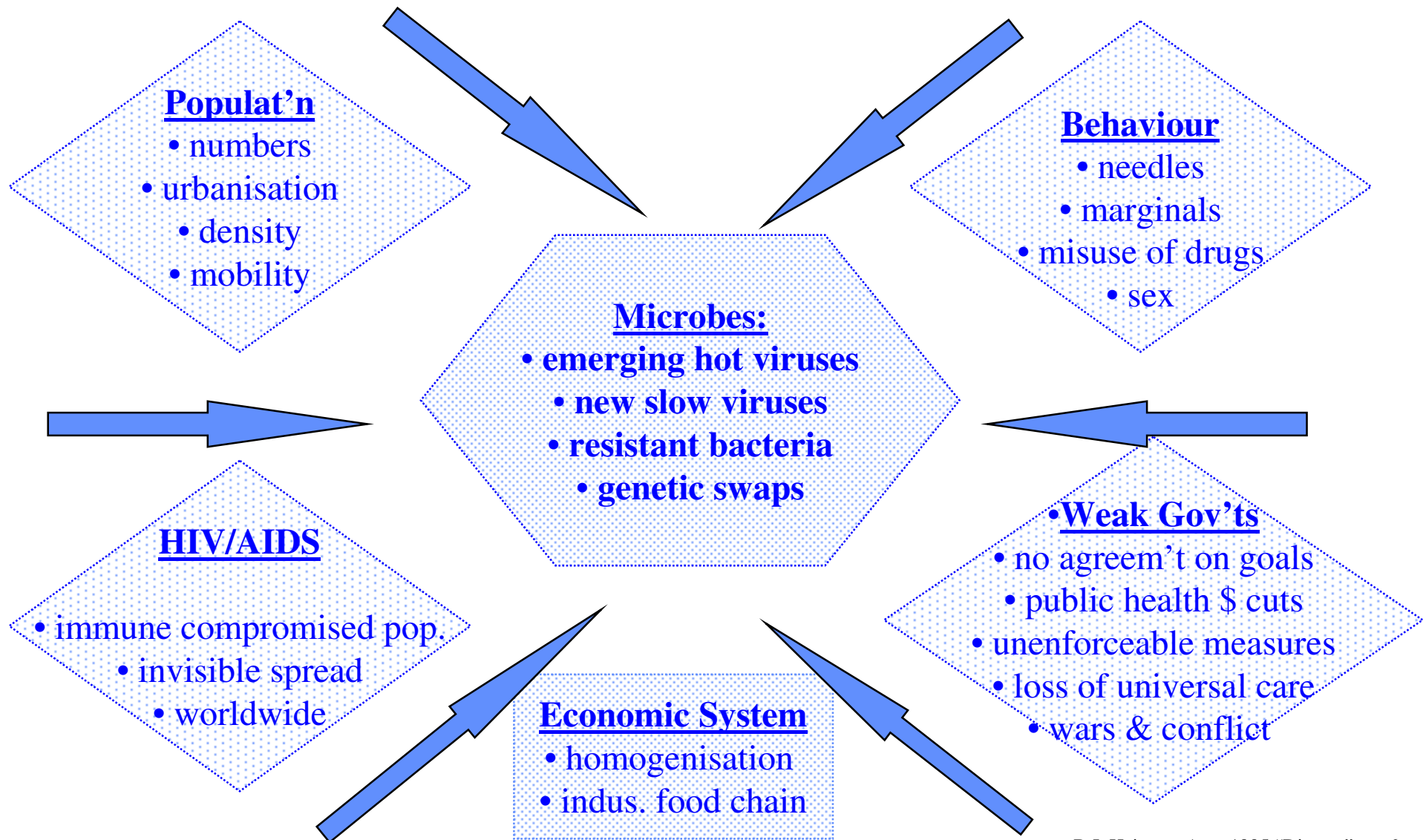
William McNeill, author of
Plagues and Peoples

(quoted in The Coming Plague by Laurie Garrett, 1995)

The Age of Complexity Begins



A Rising Potential for Plagues



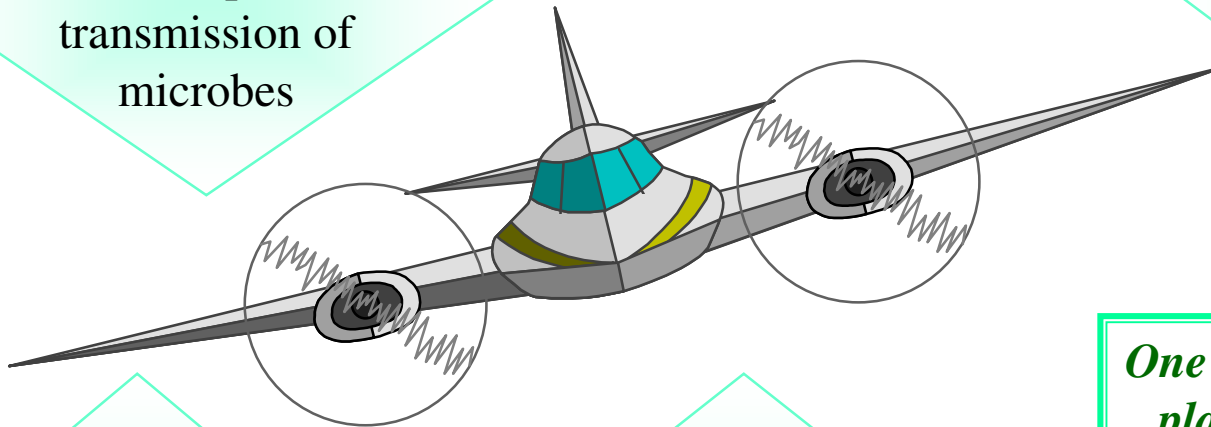
In an Unbalanced Environment

Habitat destruction

- loss of biodiversity
- cross species transmission of microbes

Global warming

- more microbes
- more vectors
- greater range of both



Oceanic pollution

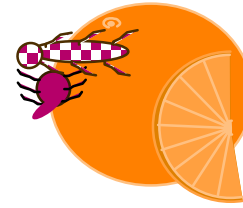
human & chemical wastes create a mobile, microbial soup

Chemical pollution

reduced resistance to disease among all species

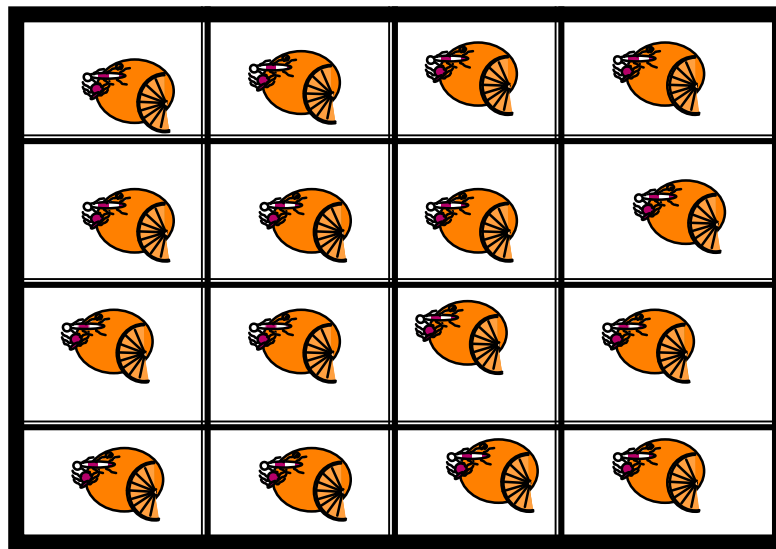
One rivet may be lost, and the plane won't crash. When many rivets fail, the plane goes down.

Malthus Revisited

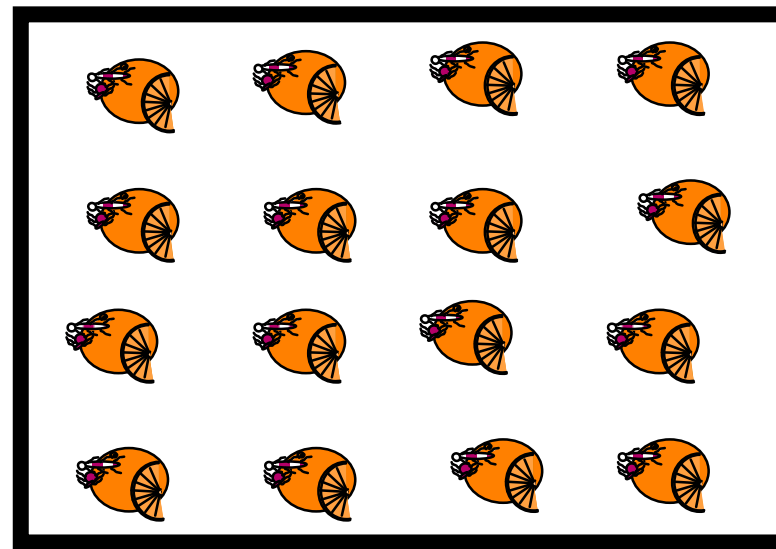


1958 Carl Huffaker,
UC Berkeley

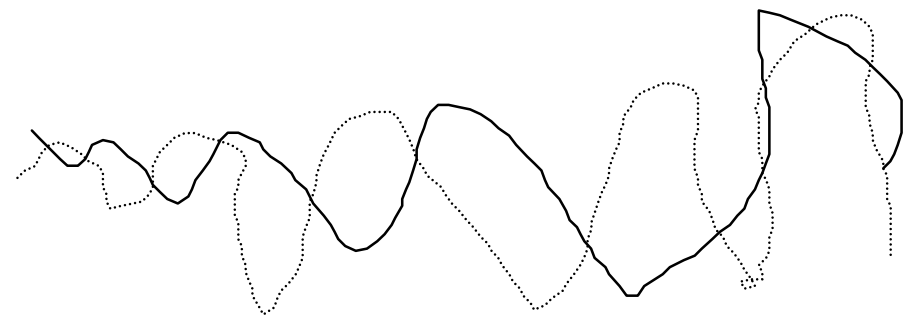
Spatial Variability



Spatial Homogeneity



*local extinctions, but systemic
resilience*



*boom-bust of both populations to mutual
extinction of all*

Pathology of Control



Variability

mg't more efficient
=> mg't more rigid
=>
eco-system less resilient
+
society more dependent
=>
more efficiency
+ more rigidity
+ less resilience
=>
!!FLOOD!!



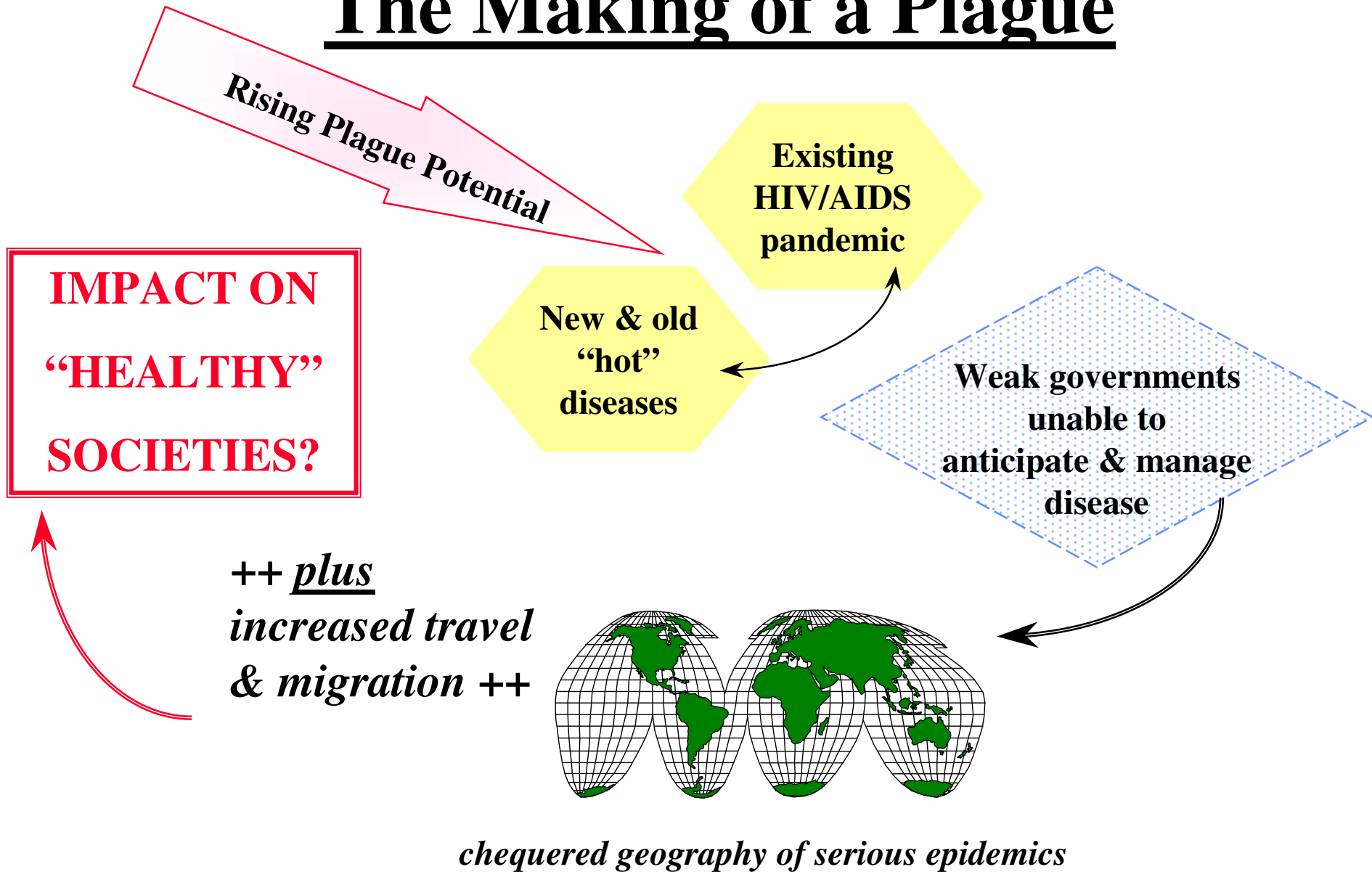
Homogeneity

***“Plagues are as certain as death
and taxes.”***

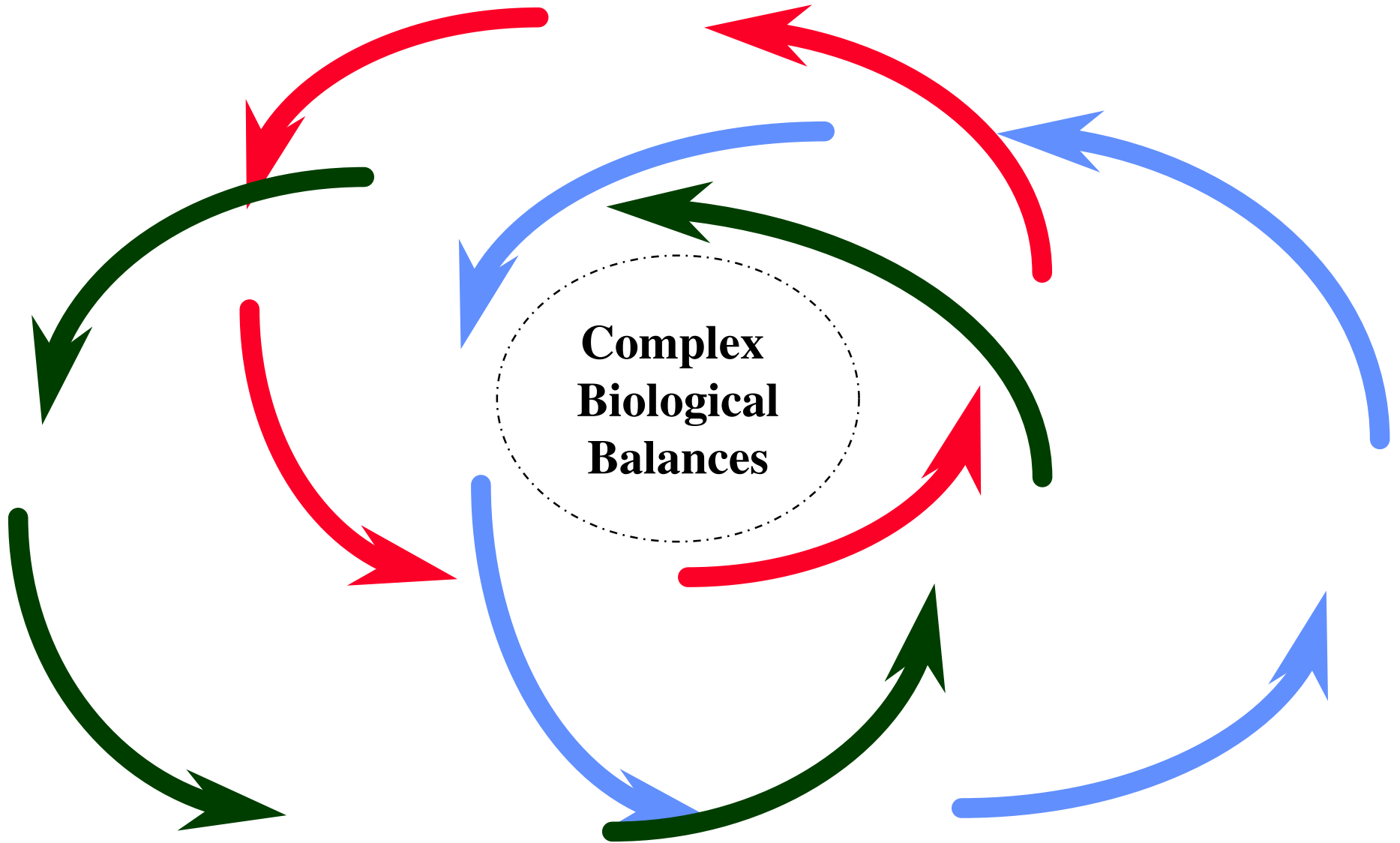
Dr Richard Krause, testifying before the US
Congress, 1982

(quoted in The Coming Plague by Laurie Garrett, 1995)

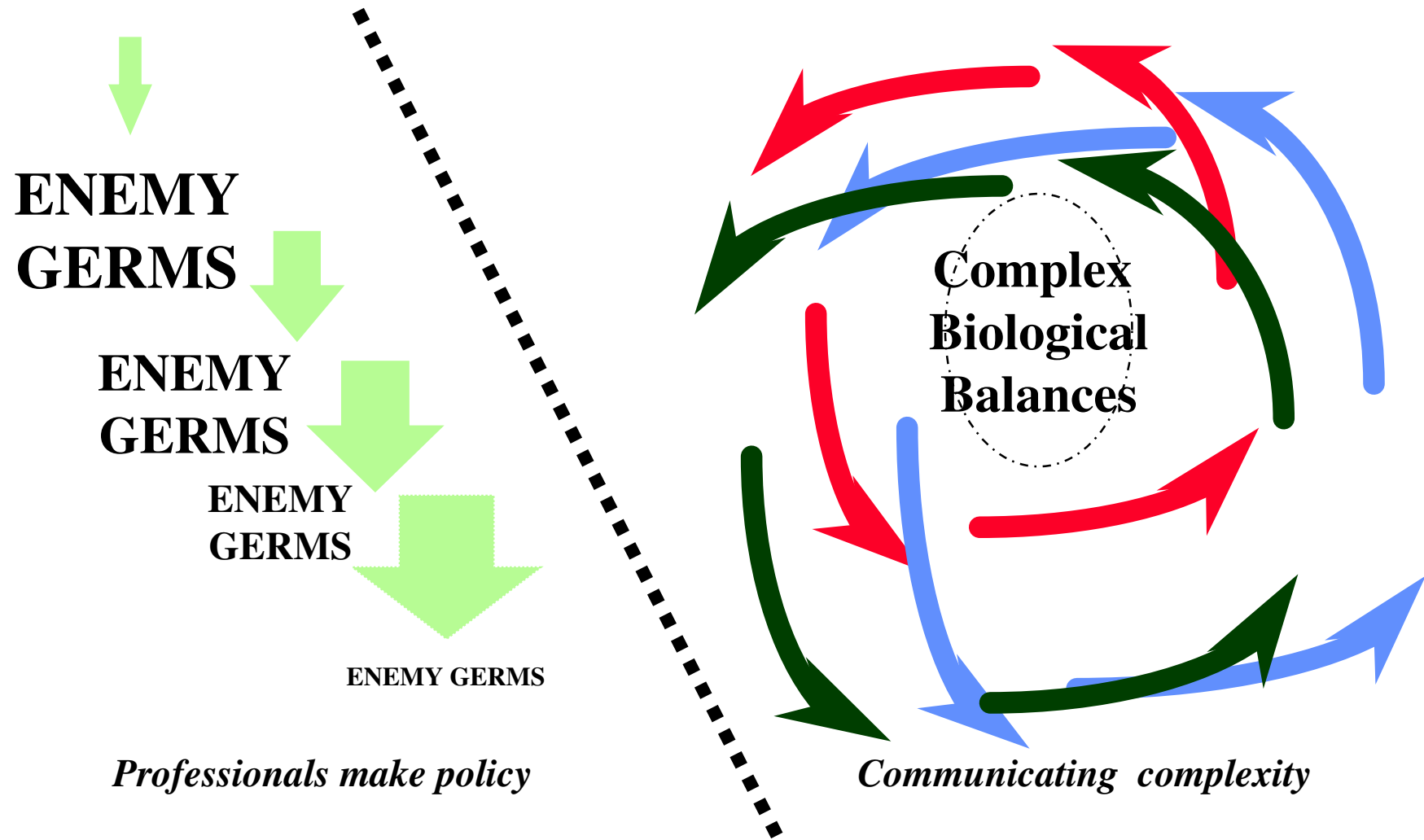
The Making of a Plague



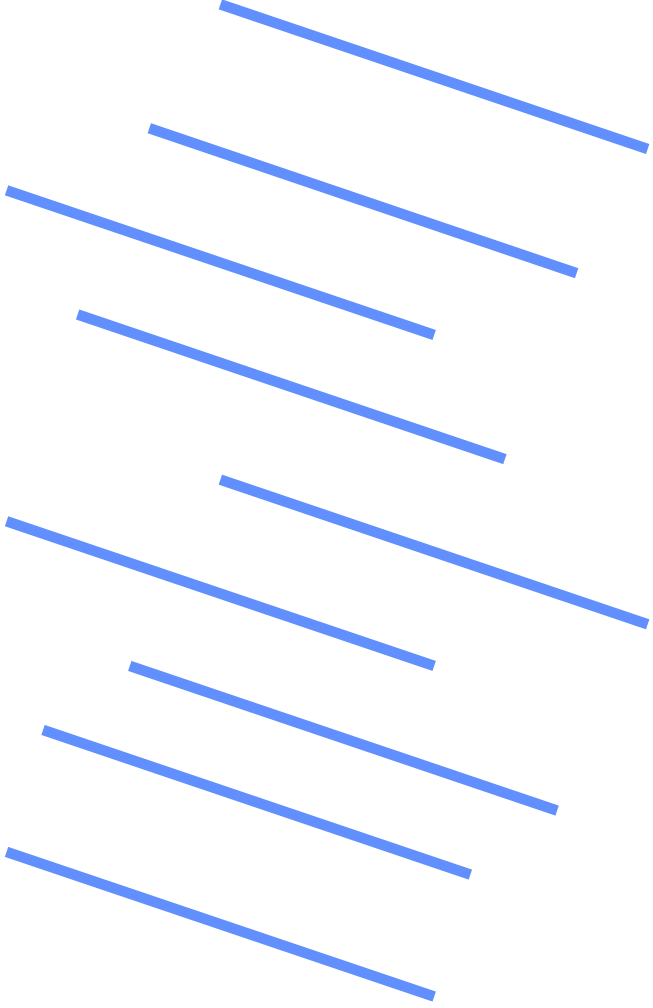
A New Paradigm for Managing Disease



The Need for New Tools



The Defensive Line



Public Health

- **Basic & applied research**
- **Surveillance & epidemiology**
- **Disease “cowboys”**
- **Good nutrition**
- **Clean water & air & soil**
- **Clean, uncrowded housing**
- **Good clinics & hospitals**
- **Effective drugs**
- **Effective compliance**

Will it hold?

The Lesson of AIDS - Changing Behaviour

Stage 1
Invisible
epidemic

Stage 2
Awareness
*Friends
sicken and die*

Stage 3
Acceptance
*Acceptance &
care in the
community*

Stage 4
Behaviour
change
*Individual
behaviour
starts to
change*

