



# The Psychology of Complexity

and Its Role in Global Civil Society



# Presentation Overview

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- Psychology and complexity – a brief history.
- Provide two examples
  - Human cognition and consciousness – a systems view.
  - Collective psychology and global civil society.

A complex network graph with a globe in the center. The globe is a light gray silhouette of the world, centered on the Atlantic Ocean. It is surrounded by a dense web of black nodes (circles of varying sizes) connected by thin black lines. The nodes are distributed across the entire frame, with a higher concentration around the globe. The overall image has a white background.

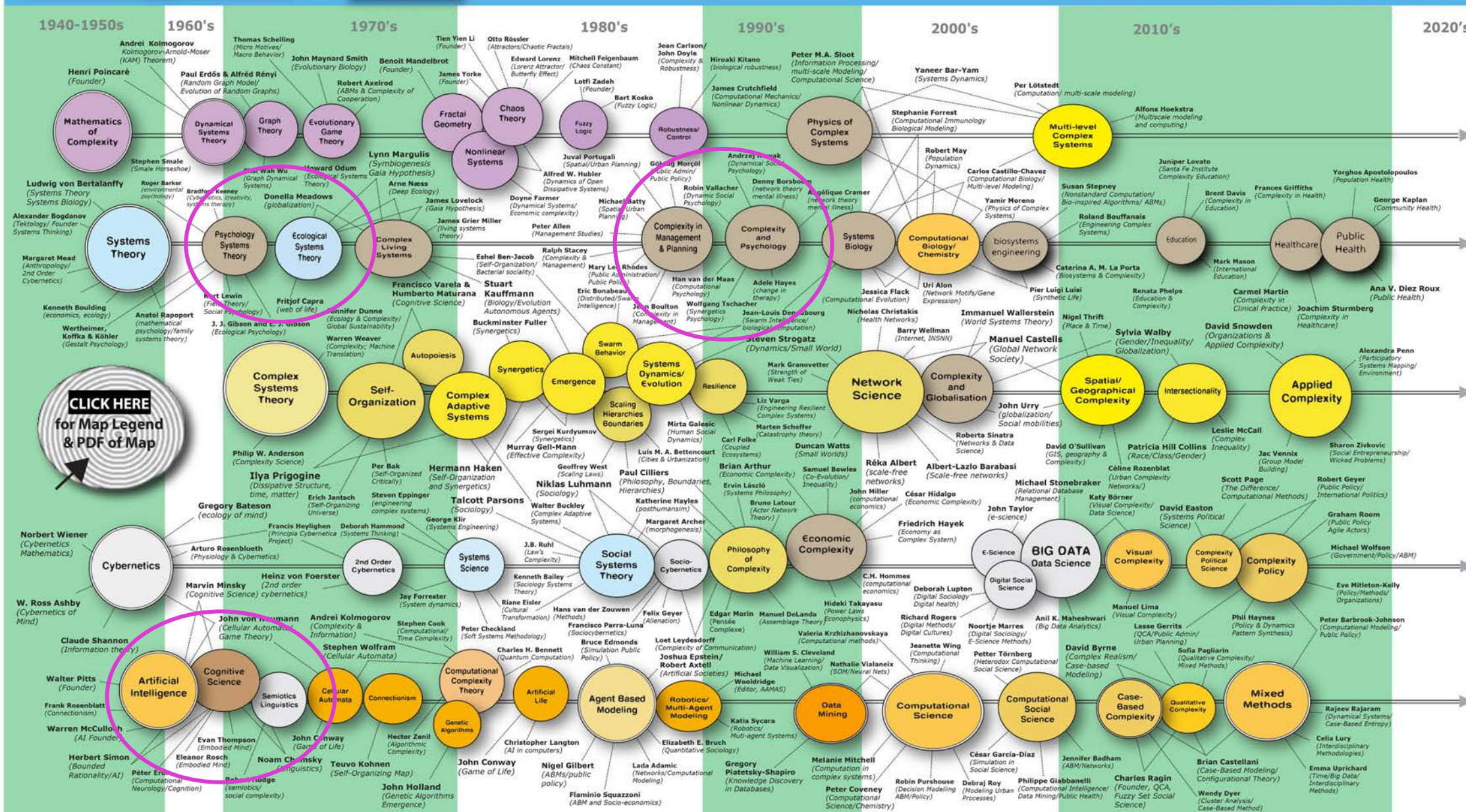
# Psychology and Complexity – A Brief History



# Historical Outline

## Psychology of complexity

- a. Gestalt psychology
  - i. Max Wertheimer (1880–1943), Kurt Koffka (1886–1941), and Wolfgang Köhler (1887–1967)
- b. Family systems theory
  - i. Anatol Rapaport
  - ii. Bradford Keeney
- c. Field Theory
  - i. Kurt Lewin
- d. Ecology of mind
  - i. Gregory Bateson
- e. Cybernetics of mind and artificial intelligence
  - i. Ross Ashby
  - ii. Warren McCulloch and the rest of the AI and cybernetics crowd
- f. Cognitive Science
  - i. Intersects with psychology in developing a theory of mind
- g. Self-organisation, synergetics and clinical psychology (1992)
  - i. Wolfgang Tschacher
  - ii. Günter Schiepek
- h. Complex systems and change in psychotherapy (1998)
  - i. Adele Hayes (Univ Delaware) and Leigh Andrews
  - ii. James Paul Gustafson – brief psychotherapy
- i. Network theories of personality and mental health (2013)
  - i. Angélique O.J. Cramer
  - ii. Han van der Maas
  - iii. Claudia van Borkulo
  - iv. D. (Denny) Borsboom (psychosystems project – Lead)
- j. Computational social psychology
  - i. Robin R. Vallacher – one of the first to do this work in psychology.
  - ii. Andrzej Nowak
- k. Dynamics systems in social psychology
  - i. Andrzej Nowak
  - ii. Robin R. Vallacher
- l. Chaos and complexity in psychology
  - i. Stephen Guastello
  - ii. David Pincus
  - iii. Matthijs Koopmans





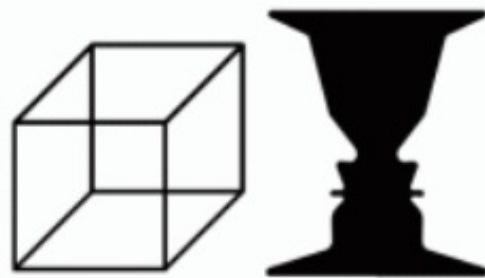
# Gestalt Psychology

- EARLY YEARS – EARLY 1900S
- Max Wertheimer (1880–1943)
- Kurt Koffka (1886–1941)
- Wolfgang Köhler (1887-1967 )
- *The focus is on the psychology of complexity*

# Gestalt Psychology



**Emergence**



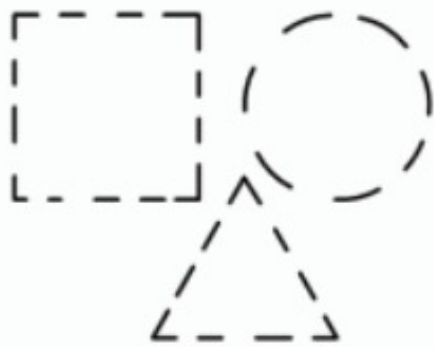
**Multistability**  
*Figure/Background selection*



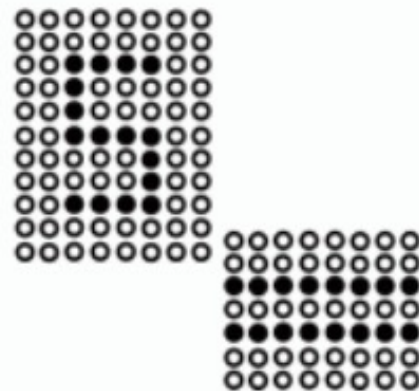
**Reification**  
*Illusory contours*



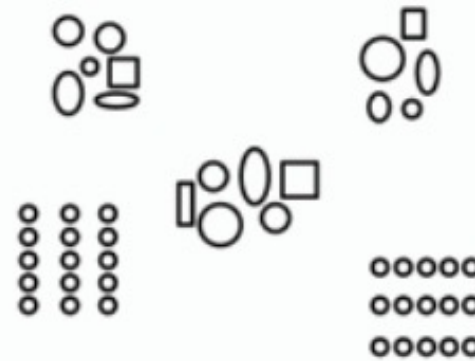
**Invariance**



**Closure**



**Similarity**



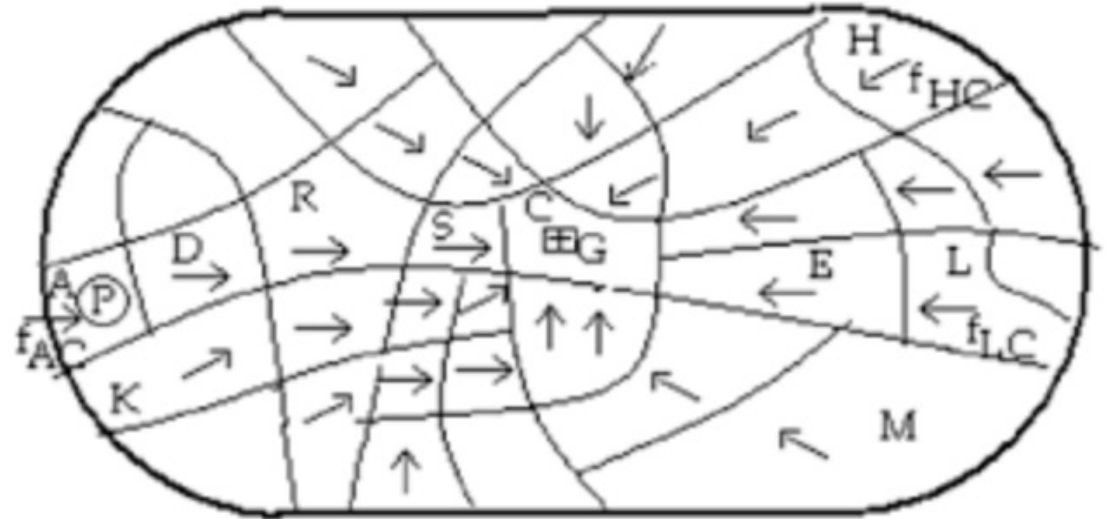
**Proximity**



We see this...but not this  
**Continuity**

# Field Theory

- EARLY YEARS – EARLY 1900S
- Kurt Lewin – deeply original scholar.
- Field Theory – Alternatively, topological and vector psychology
- Pioneered a variety of ideas still widely used today.
  - Social psychology
  - Group dynamics
  - Action research
  - Organisational development





# Macy Conference – Cybernetics

- The Real Start of Systems Thinking (1946-1953)

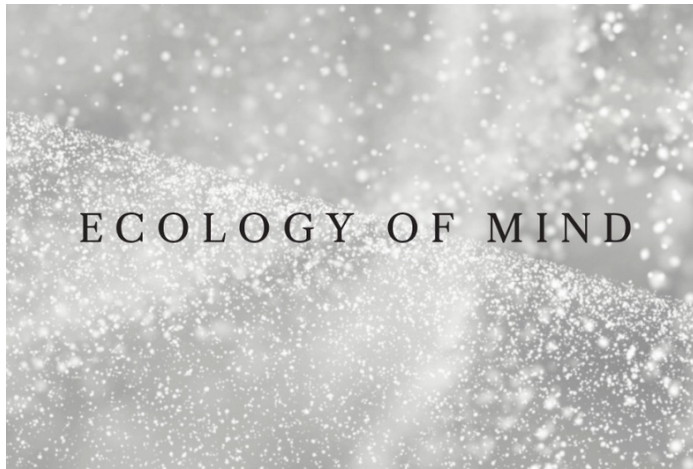
**Participants: (as members or guests) in at least one of the Cybernetics conferences:**

William Ross Ashby, Gregory Bateson, Lawrence K. Frank, Ralph Waldo Gerard,  
Paul Lazarsfeld, Kurt Lewin, J. C. R. Licklider, Howard S. Liddell, Donald B. Lindsley,  
Donald M. MacKay, Warren S. McCulloch, Margaret Mead, Walter Pitts, Arturo Rosenblueth,  
Claude Shannon, Heinz von Foerster, John von Neumann, Norbert Wiener,.

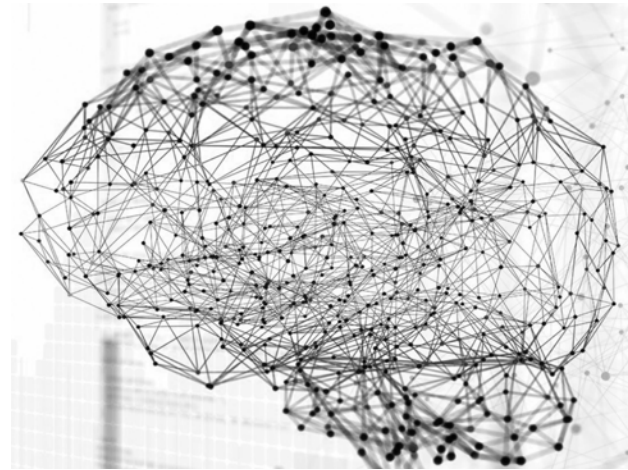
# Macy Conference – Cybernetics

- The Real Start of Systems Thinking (1946-1953)

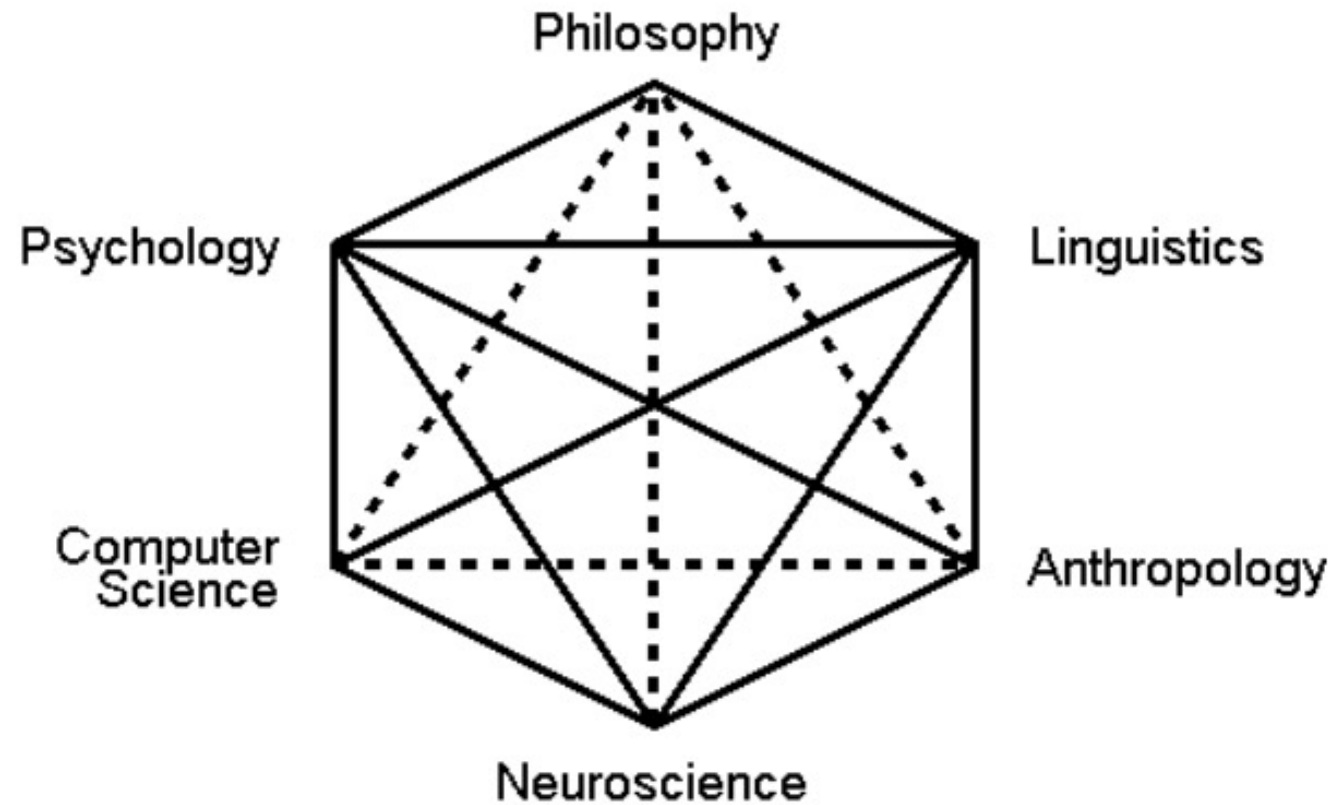
Ecology of mind  
Gregory Bateson



Cybernetics of mind and AI  
Ross Ashby, Warren McCulloch



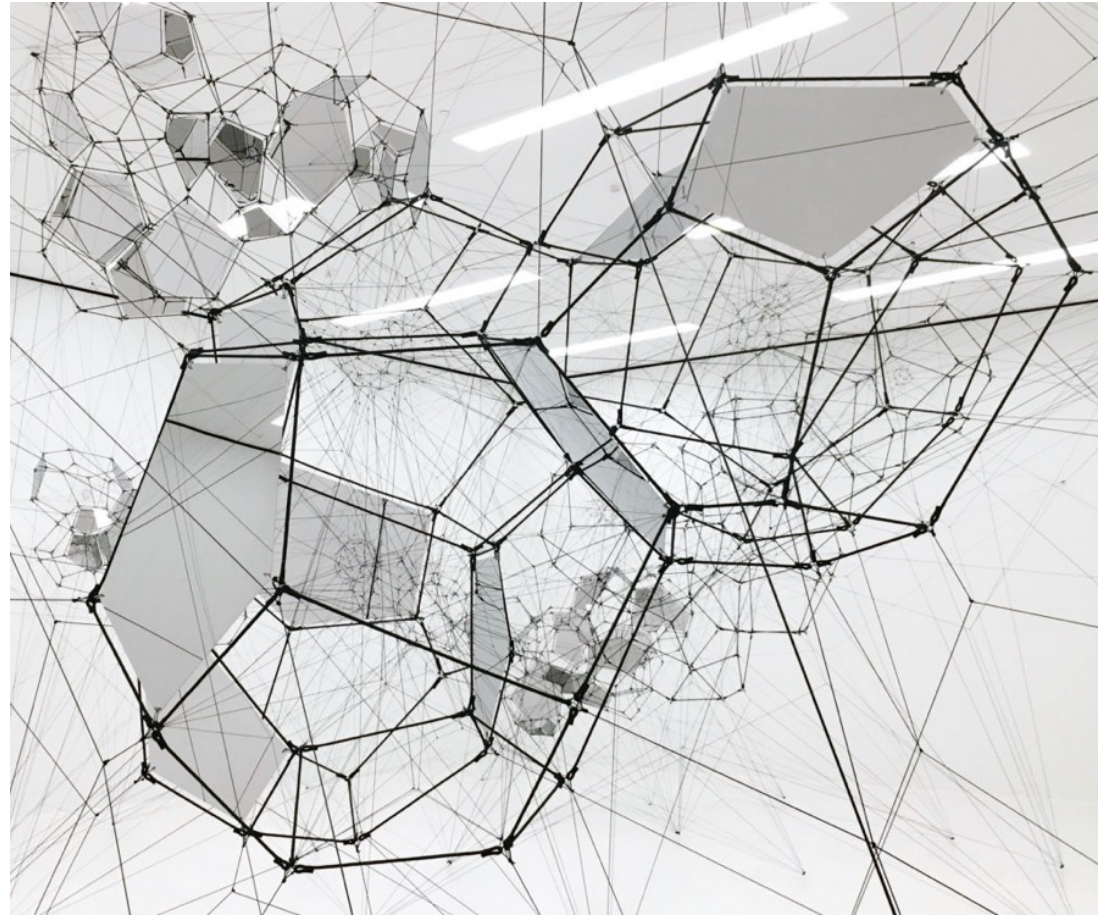
# Cognitive science





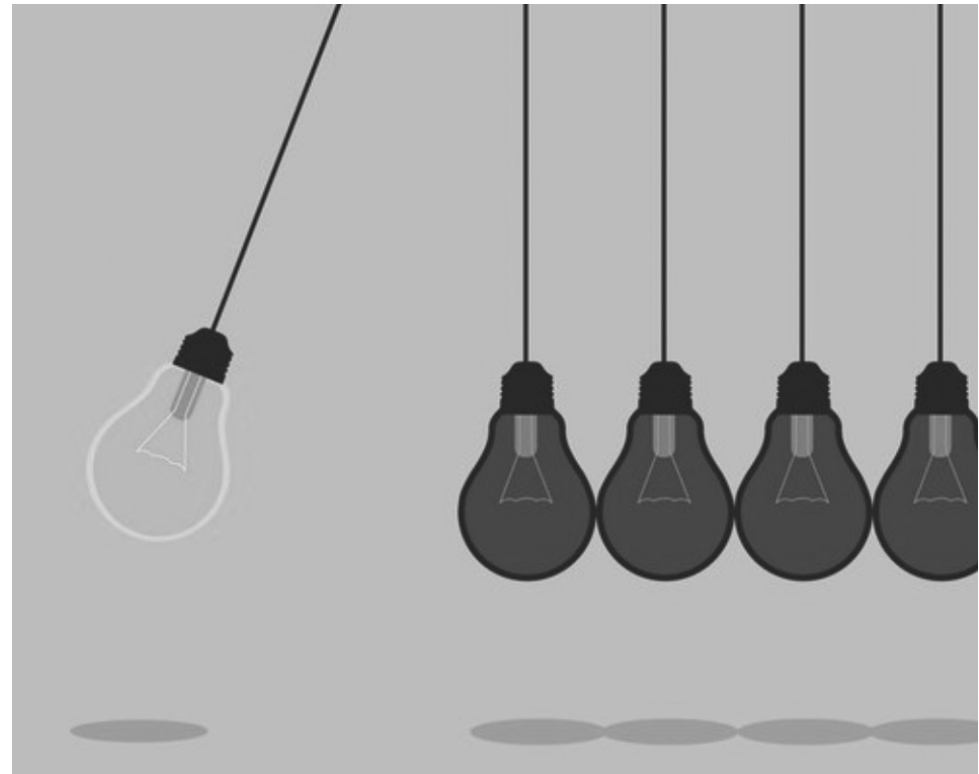
# Self-organisation, synergetics and clinical psychology

- Wolfgang Tschacher
- Günter Schiepek
- *Here we see a switch to the complexity of psychology*



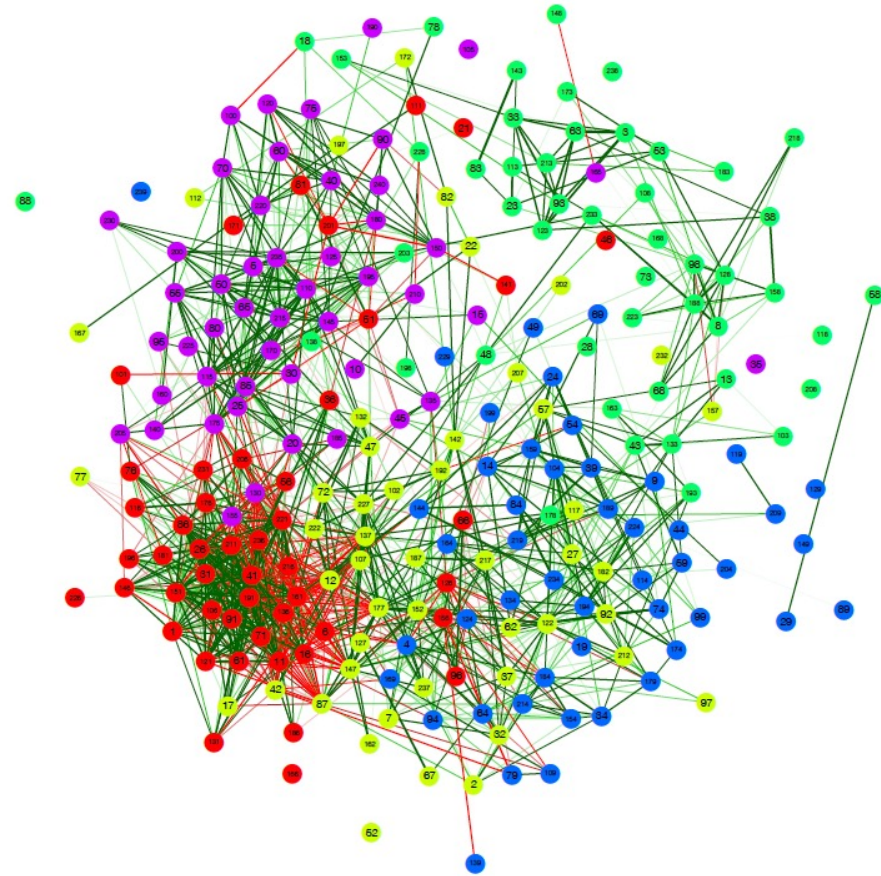
# Complex systems and change in psychotherapy

- Adele Hayes and Leigh Andrews
- James Paul Gustafson – brief psychotherapy



# Network theories of personality and mental health

- Angélique O.J. Cramer
- Han van der Maas
- Claudia van Borkulo
- D. (Denny) Borsboom





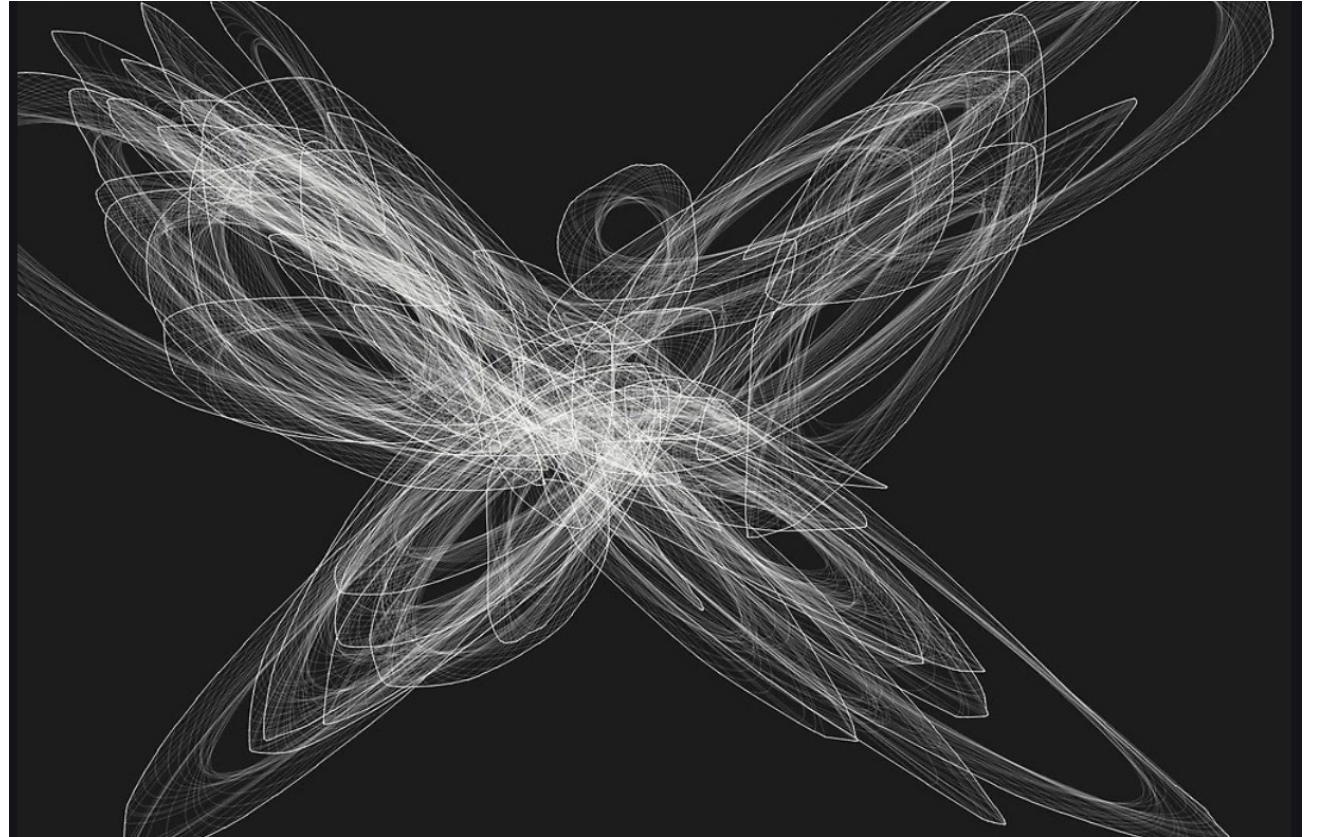
# Computational social psychology

- Robin R. Vallacher
- Andrzej Nowak



# Chaos and complexity in psychology

- Stephen Guastello
- David Pincus
- Matthijs Koopmans



The background of the slide features a grayscale world map. Overlaid on this map is a dense, intricate network graph. The graph consists of numerous nodes, represented by circles of varying sizes, and a complex web of thin, light-gray lines connecting them. The nodes are distributed across the map, with higher concentrations in certain regions, particularly in North America and Europe. The overall effect is one of global interconnectedness and complexity. The text 'Human cognition – a complexity perspective' is centered over the map in a bold, red, sans-serif font.

# Human cognition – a complexity perspective

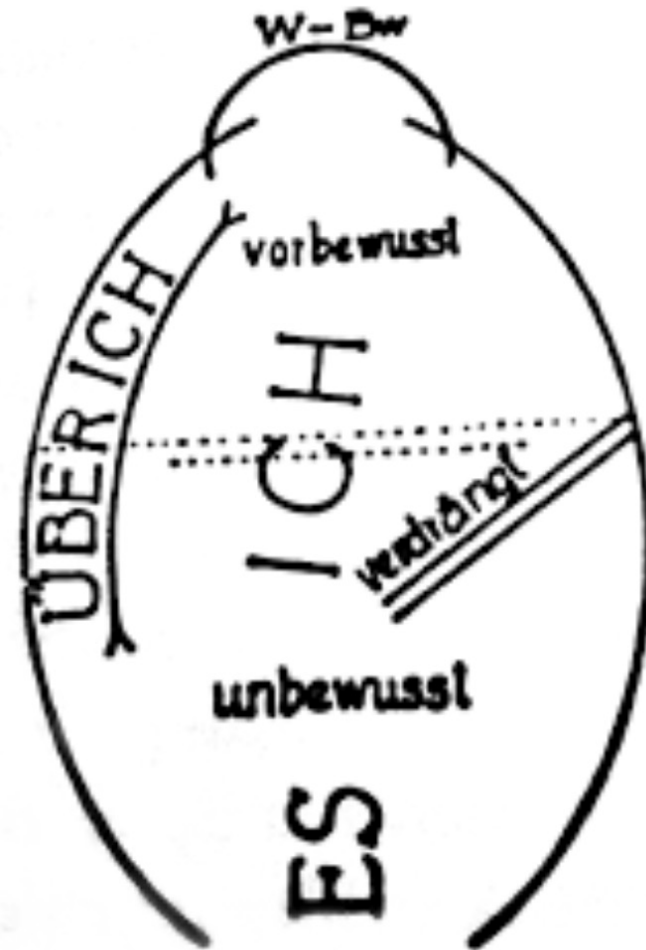


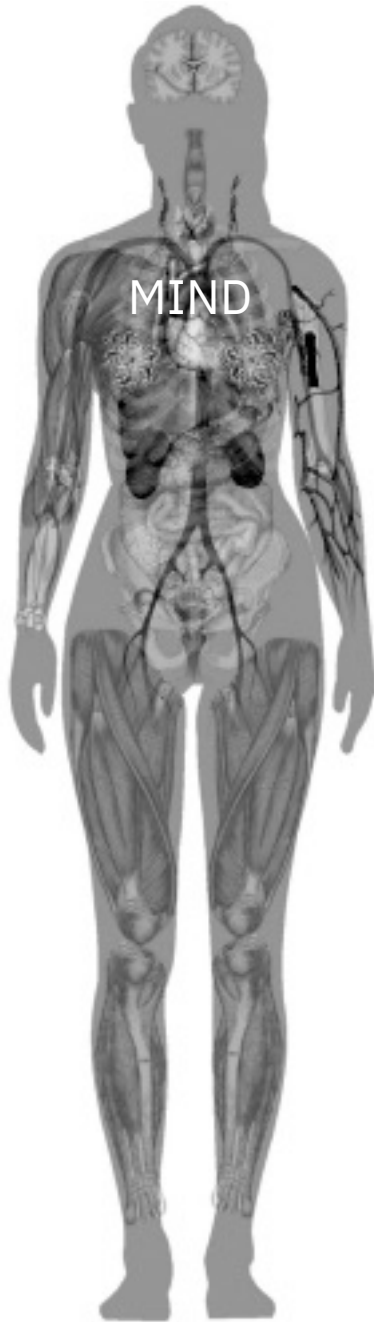
# The Atlas of Social Complexity

Brian Castellani  
Lasse Gerrits



# Freud, Jung and the unconscious





Ecosystems Cognition

Machine Intelligence/Cognition

Non-Conscious Cyberinfrastructure Cognition

Smart Machines, Internet

Collective Intelligence/Swarm Intelligence

Societal Cognition – information systems, governance

Social Group/Network Cognition

Brain-Based Embodied Cognition

Reflexive Self – I and Me, Identity, etc

Consciousness

Pre-Conscious

Un-conscious

Personal Unconscious/Collective Unconscious

Emotions and Affective Consciousness (multiple levels) –

Paleomammalian Emotions, Drives, etc

Non-Conscious Brain Systems

Attention, Memory, Hearing, Vision, etc

Immune System Cognition

Brain–Gut–Microbe Communication

Social behaviours of bacteria

Autopoiesis and Cellular Cognition



## Bacterial linguistic communication and social intelligence

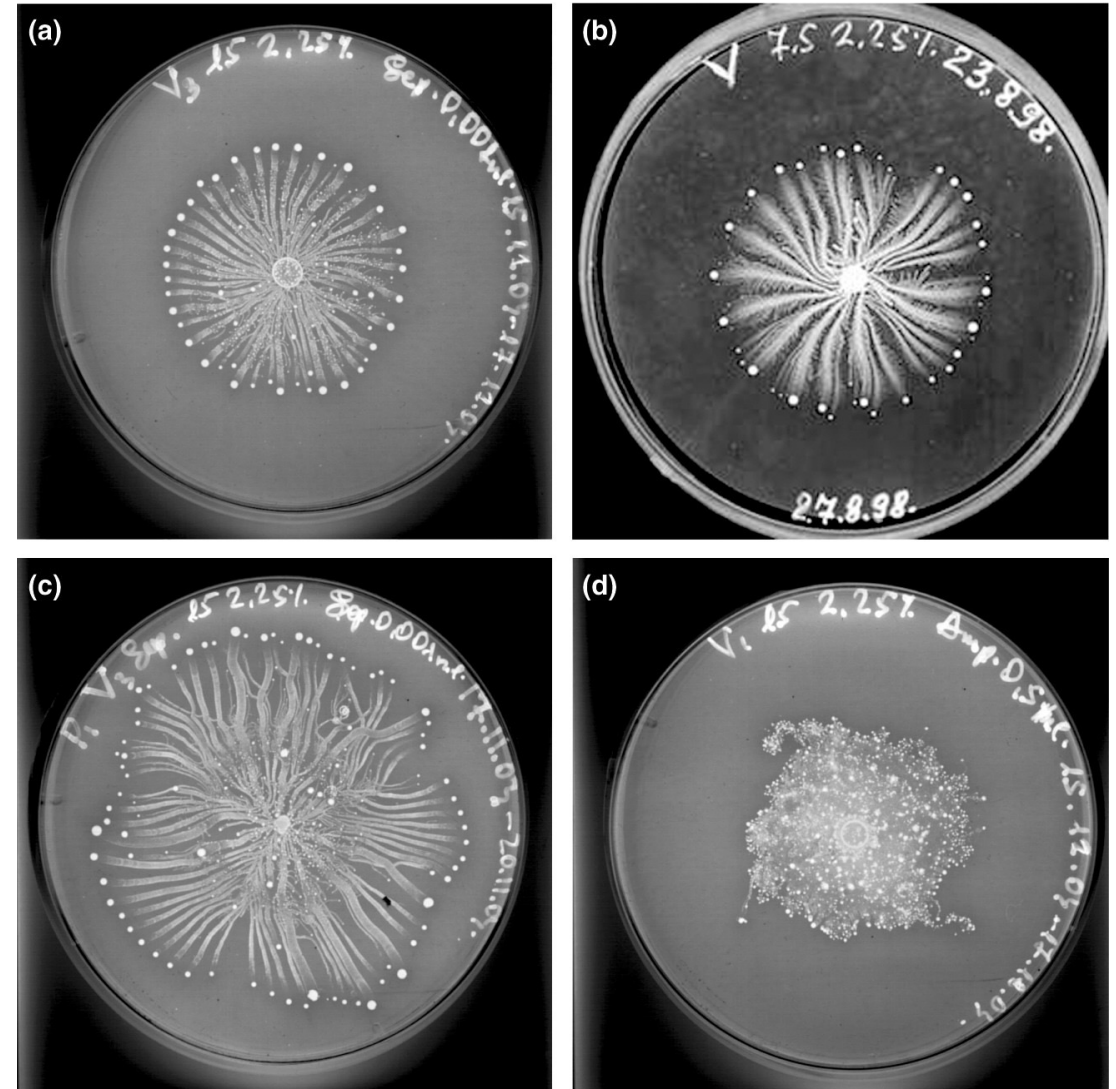
Eshel Ben Jacob<sup>1</sup>✉, Israella Becker<sup>1,2</sup>, Yoash Shapira<sup>1</sup>, Herbert Levine<sup>3</sup>

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<https://doi.org/10.1016/j.tim.2004.06.006>

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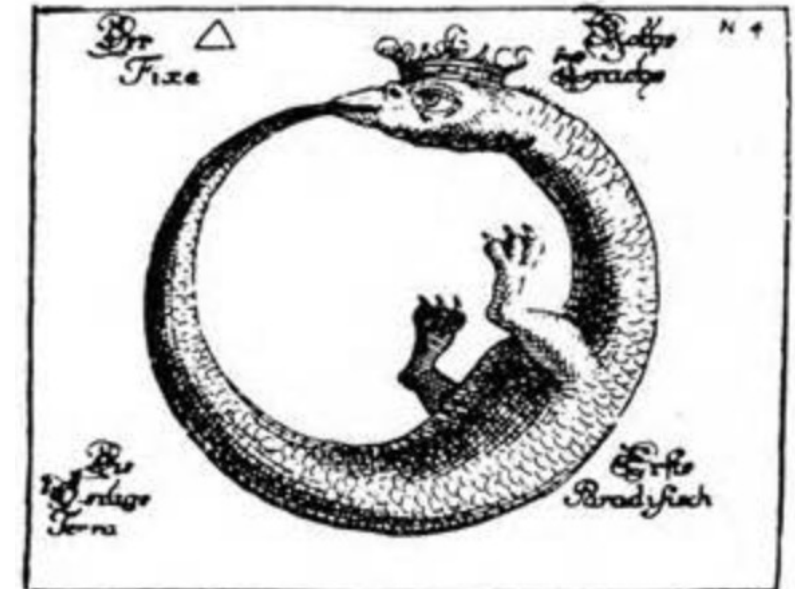
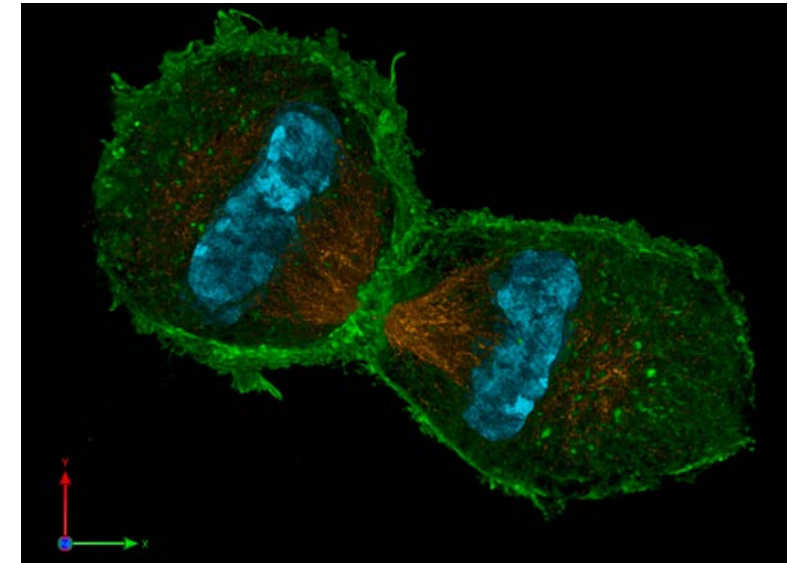


# Autopoiesis: The organization of living systems, its characterization and a model

F.G. Varela, H.R. Maturana, R. Uribe

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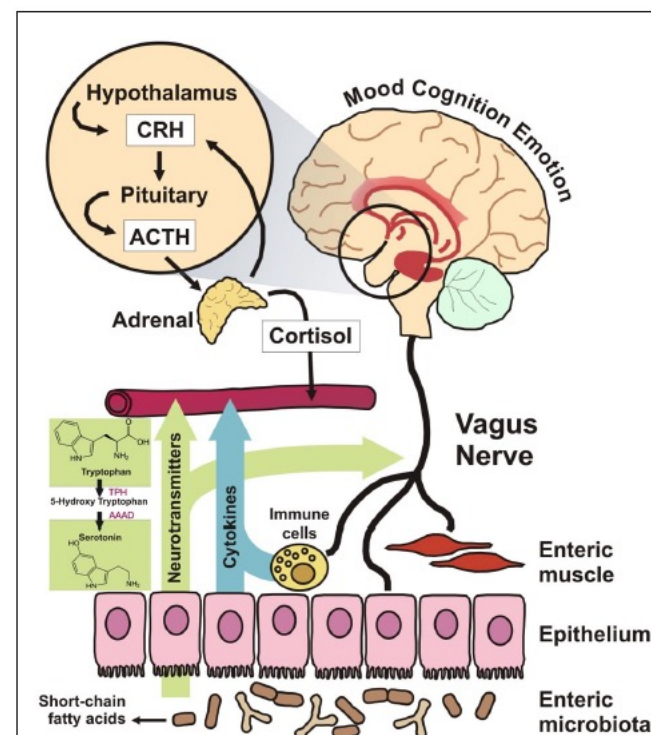
# Brain–gut–microbe communication in health and disease

Sue Grenham<sup>1</sup>, Gerard Clarke<sup>1,2</sup>, John F. Cryan<sup>1,3</sup> and Timothy G. Dinan<sup>1,2\*</sup>

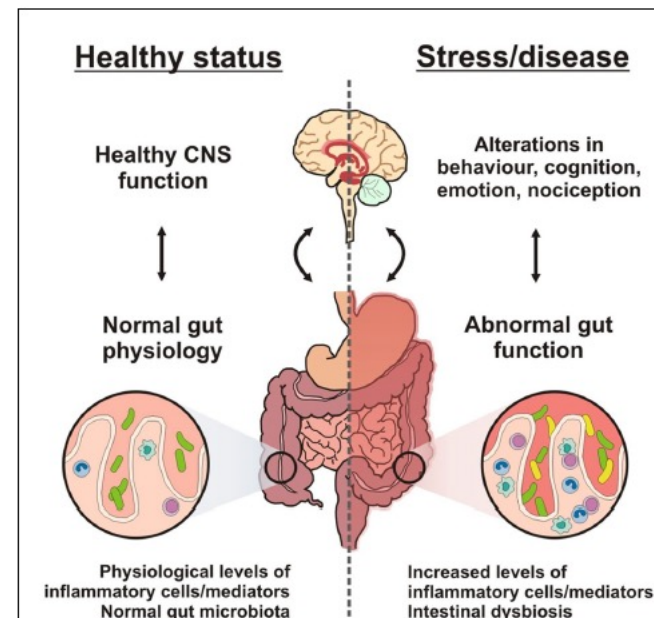
<sup>1</sup> Laboratory of NeuroGastroenterology, Alimentary Pharmabiotic Centre, University College Cork, Cork, Ireland

<sup>2</sup> Department of Psychiatry, University College Cork, Cork, Ireland

<sup>3</sup> Department of Anatomy, University College Cork, Cork, Ireland



**FIGURE 3 | Proposed mechanisms of action.** There are a variety of proposed mechanisms, including both humoral and neural routes, through which the microbiota can modulate signaling along the brain–gut axis. For example, recent studies suggest a role for both the vagus nerve and modulation of systemic tryptophan levels in relaying the influence of both resident and exogenous microflora along this bidirectional communication axis.



**FIGURE 4 | Brain–gut–microbe communication in health and disease.** A stable gut microbiota is essential for normal gut physiology and contributes to appropriate signaling along the brain–gut axis and to the healthy status of the individual as shown on the left hand side of the diagram. Conversely, as shown on the right hand side of the diagram, intestinal dysbiosis can adversely influence gut physiology leading to inappropriate brain–gut axis signaling and associated consequences for CNS functions and disease states. Stress at the level of the CNS can also impact on gut function and lead to perturbations of the microbiota.



# From inflammation to sickness and depression: when the immune system subjugates the brain

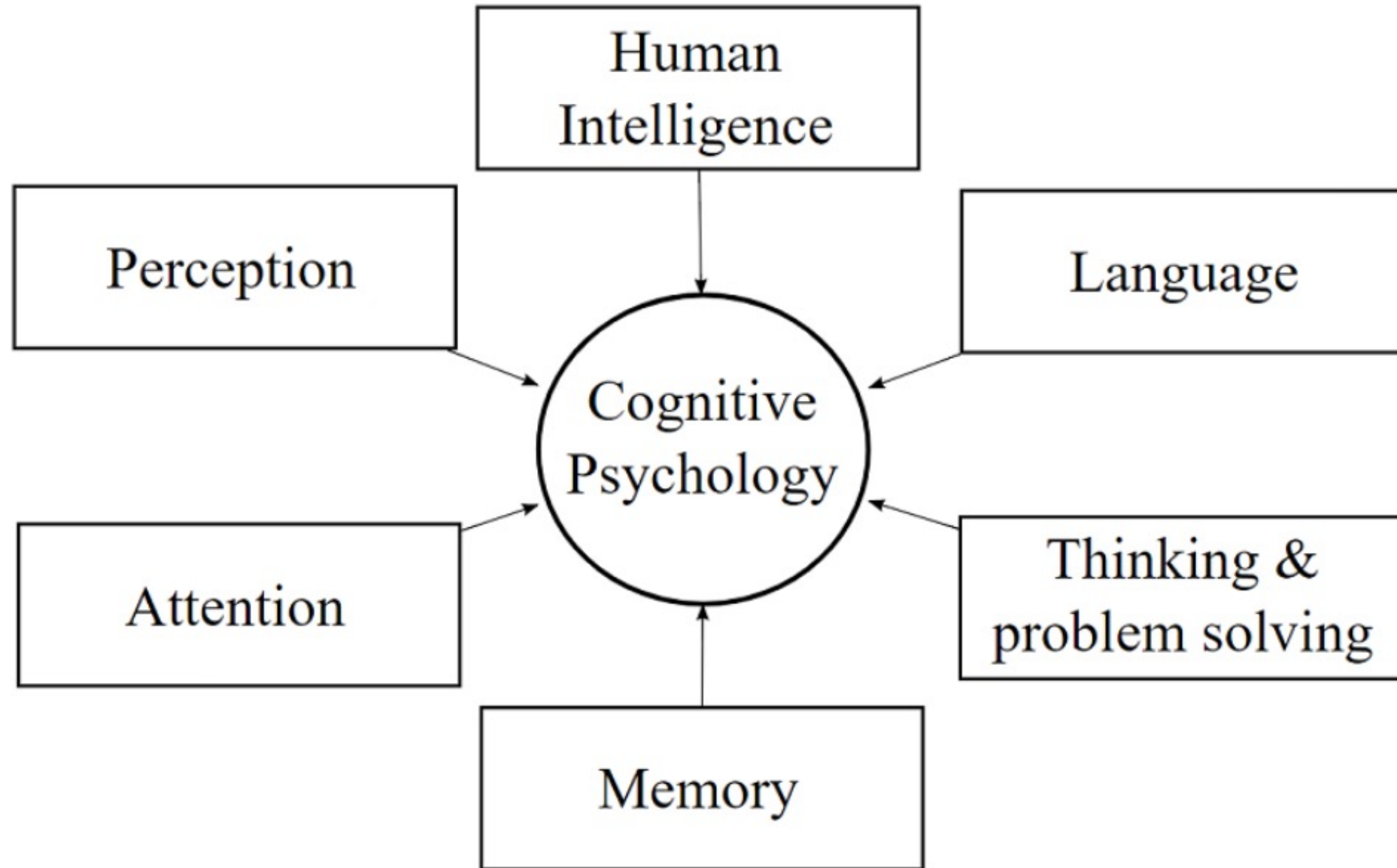
Robert Dantzer , Jason C. O'Connor, Gregory G. Freund, Rodney W. Johnson & Keith W. Kelley

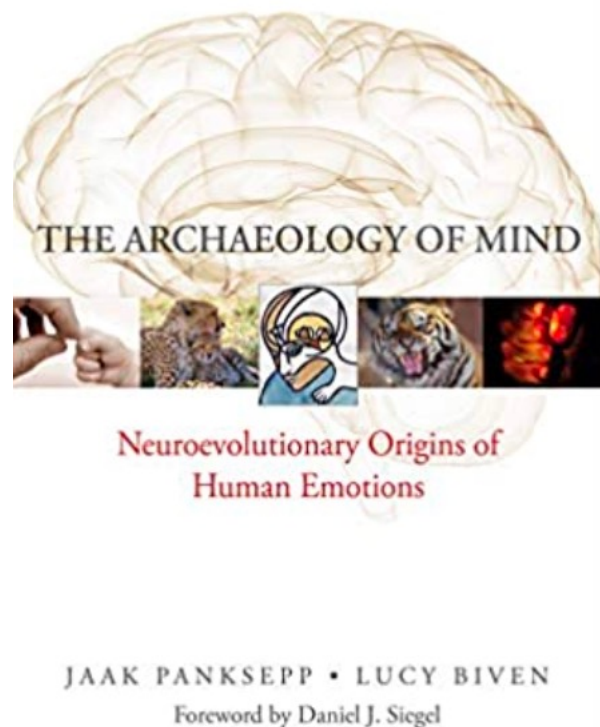
*Nature Reviews Neuroscience* **9**, 46–56 (2008) | [Cite this article](#)

**8285** Accesses | **3729** Citations | **216** Altmetric | [Metrics](#)

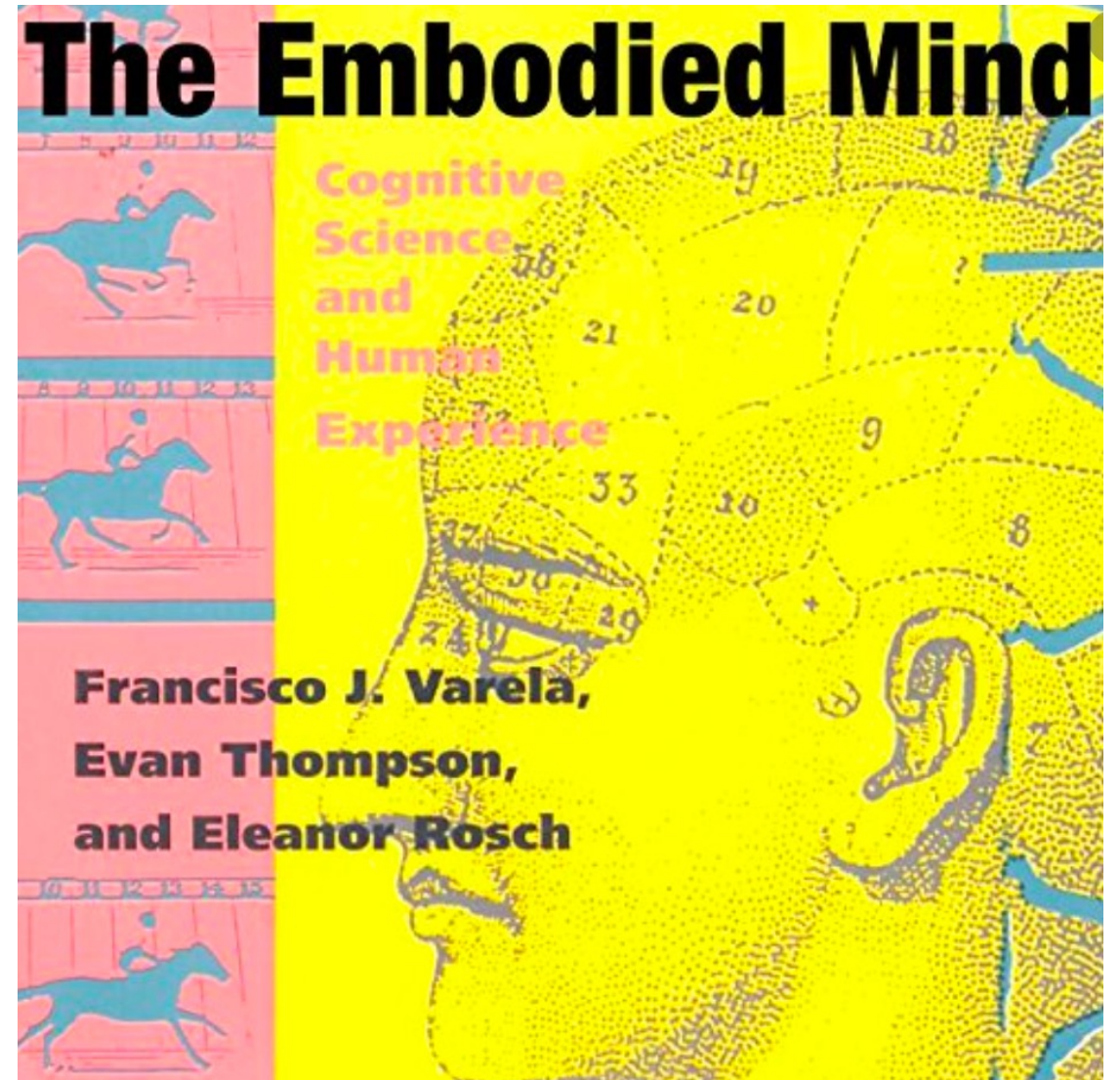
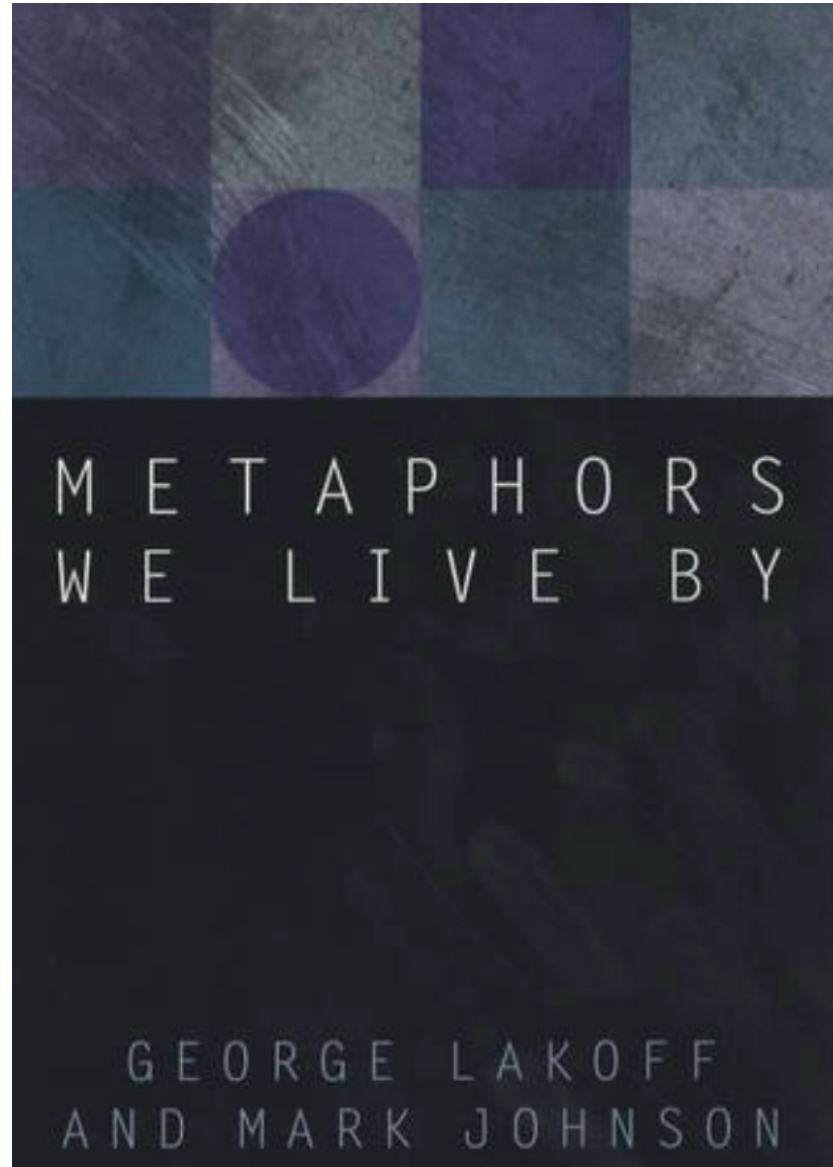
## Key Points

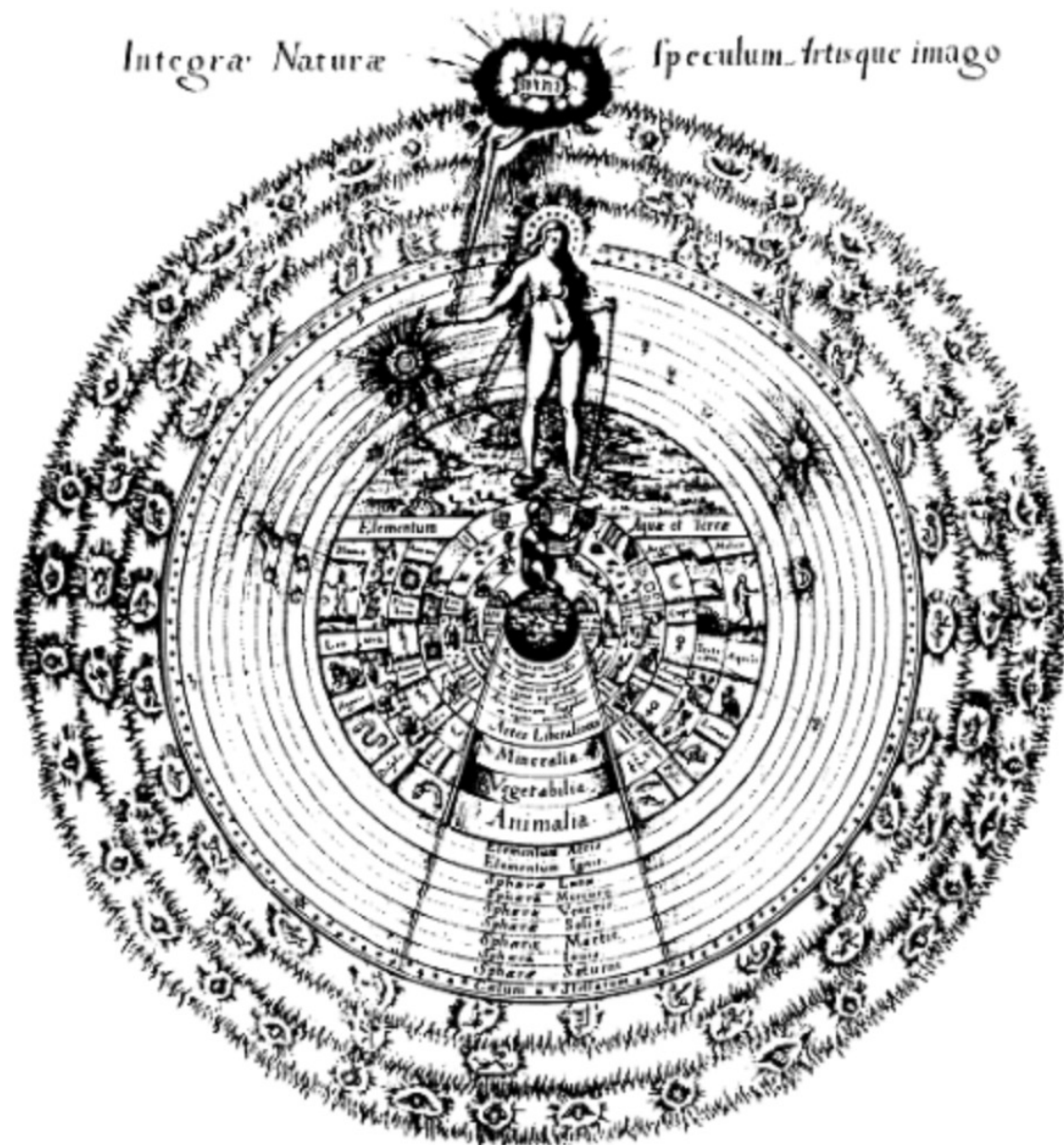
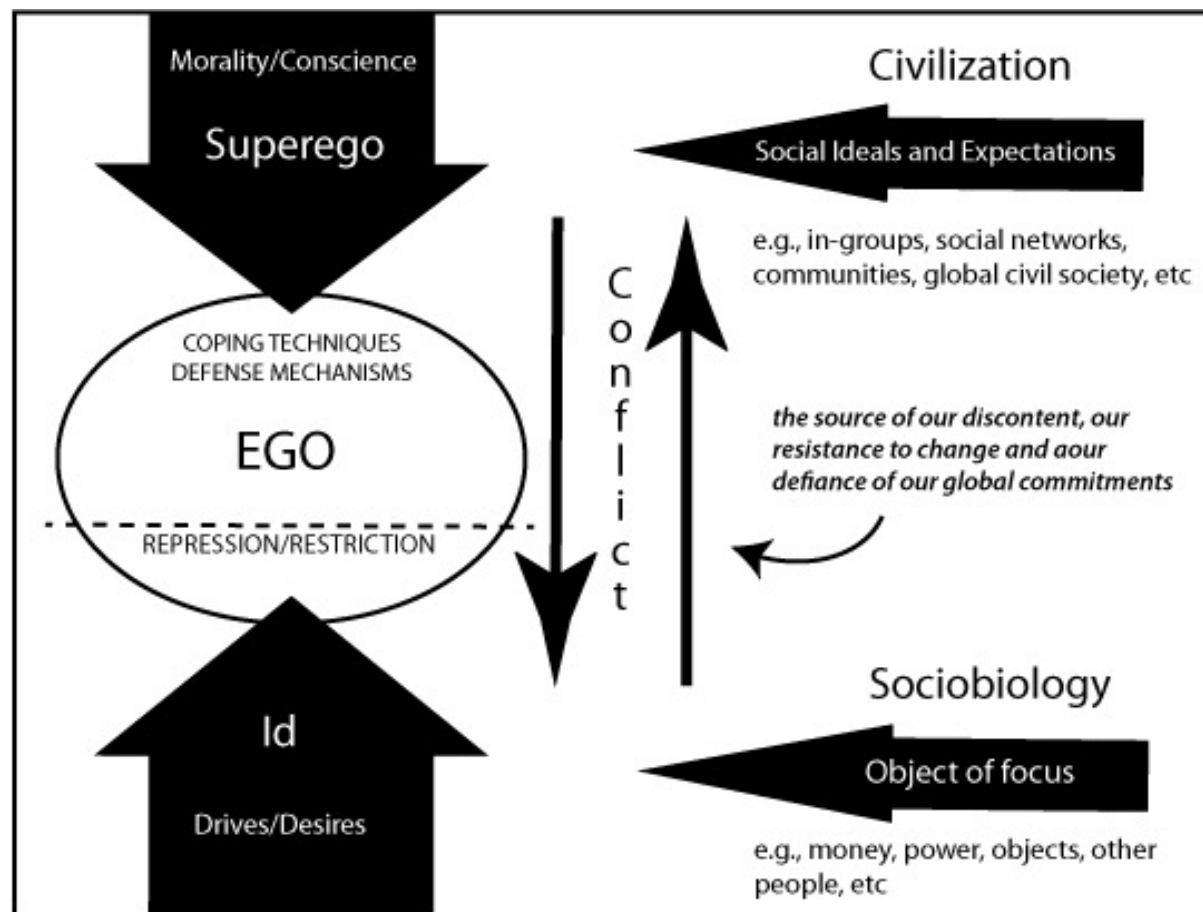
- Infections cause people to become sick and change their behaviour. They develop fever, sleep poorly, eat less, experience difficulty with memory and learning, withdraw socially and complain of pain and fatigue.
- Glial and macrophage-like cells in the brain respond to peripheral infection by synthesizing the same pro-inflammatory and anti-inflammatory cytokines as those produced by leukocytes. Several immune-to-brain communication pathways act in parallel; these include a fast neural afferent pathway and a slower humoral pathway that requires a relay in circumventricular organs and the brain vasculature.
- The predominant pro-inflammatory cytokines that cause behavioural signs of sickness are interleukin-1 $\beta$  and tumour necrosis factor- $\alpha$  (TNF- $\alpha$ ).
- Inflammation and sickness place a burden on working memory by reducing the ability of the short-term memory register to process environmental stimuli. This effect is likely to be responsible for the alterations in cognition that are caused by inflammation.
- Sickness is as normal to infection as the fear response is to a threatening predator. Its purpose is to promote survival of the organism.
- If infections do not resolve and peripheral inflammation continues unabated, clinical depression can develop over a background of sickness behaviour.
- A mechanism for inflammation-associated depression is shunting of tryptophan away from serotonin synthesis, by activation of indoleamine 2,3 dioxygenase (IDO), an enzyme that is predominantly synthesized by myeloid cells, such as macrophages and microglia.
- IDO activity is stimulated mainly by TNF- $\alpha$  and interferon- $\gamma$ . This leads to the production of neuroactive tryptophan metabolites that can induce depression-like behaviour by altering glutamatergic neurotransmission.
- Ageing, obesity and other conditions associated with chronic inflammation increase the risk of development and persistence of inflammation-associated sickness and depression.











# Technologies OF THE Self



A SEMINAR WITH MICHEL FOUCAULT

*Edited by*

LUTHER H. MARTIN

HUCK GUTMAN

PATRICK H. HUTTON

## MIND, SELF & SOCIETY

FROM THE STANDPOINT OF  
A SOCIAL BEHAVIORIST

GEORGE H. MEAD

*Late Professor of Philosophy, University of Chicago*

EDITED, WITH INTRODUCTION, BY

CHARLES W. MORRIS

*Associate Professor of Philosophy, University of Chicago*



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## Modernity and Self-Identity



*Self and Society in  
the Late Modern Age*

ANTHONY  
GIDDENS



# Collective Intelligence/Cognition



# Collective Intelligence/ Cognition



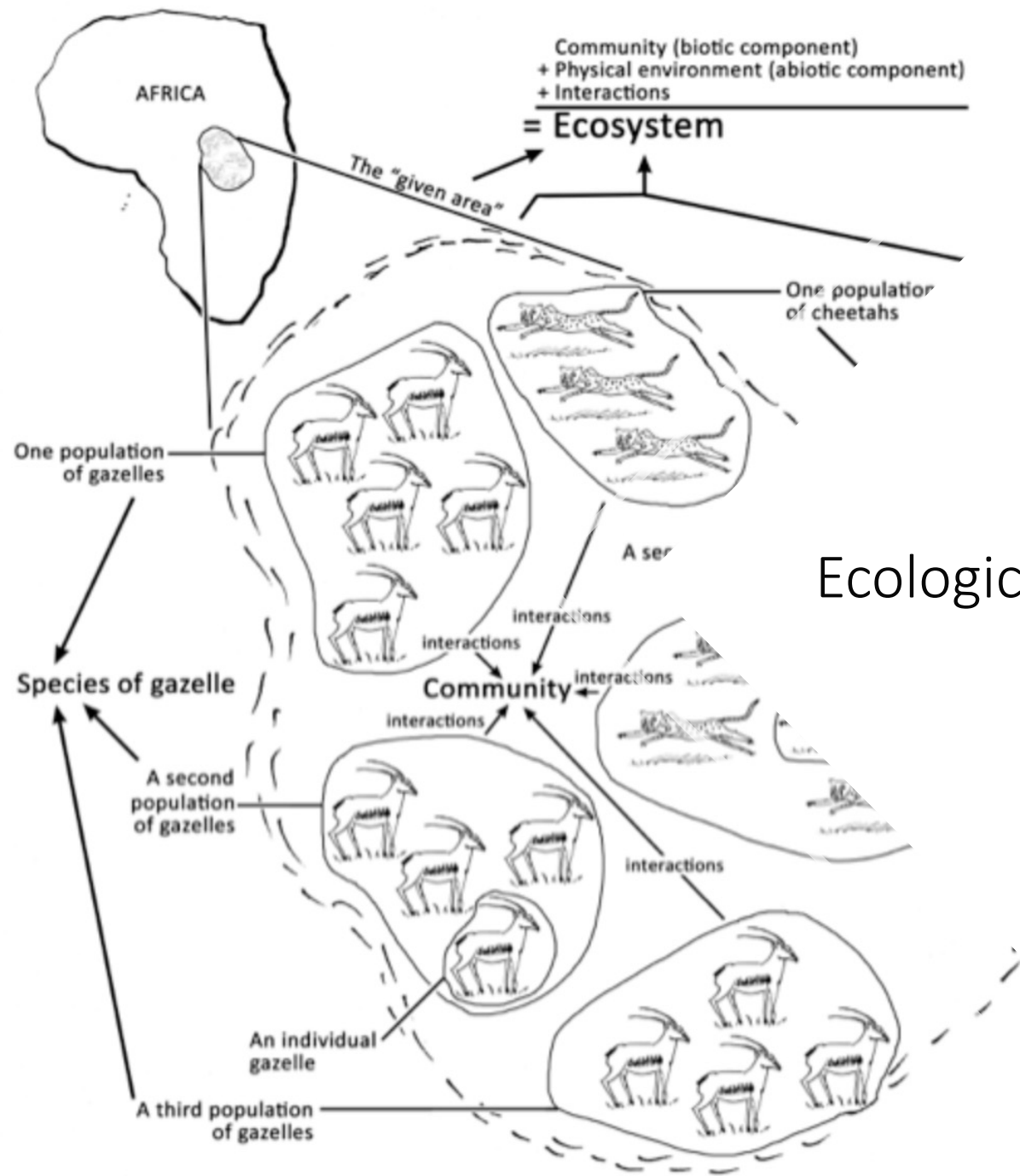
# Machine Cognition

The image features a complex network diagram. At the center is a globe showing the continents of Africa, Europe, and Asia. The globe is surrounded by a dense web of nodes (represented by circles of varying sizes) and connecting lines (edges). The network extends outwards from the globe, with many nodes and lines visible. A large, faint, stylized letter 'S' is overlaid on the right side of the image, spanning across the globe and the network. The background is white on the left and black on the right, separated by a diagonal line.

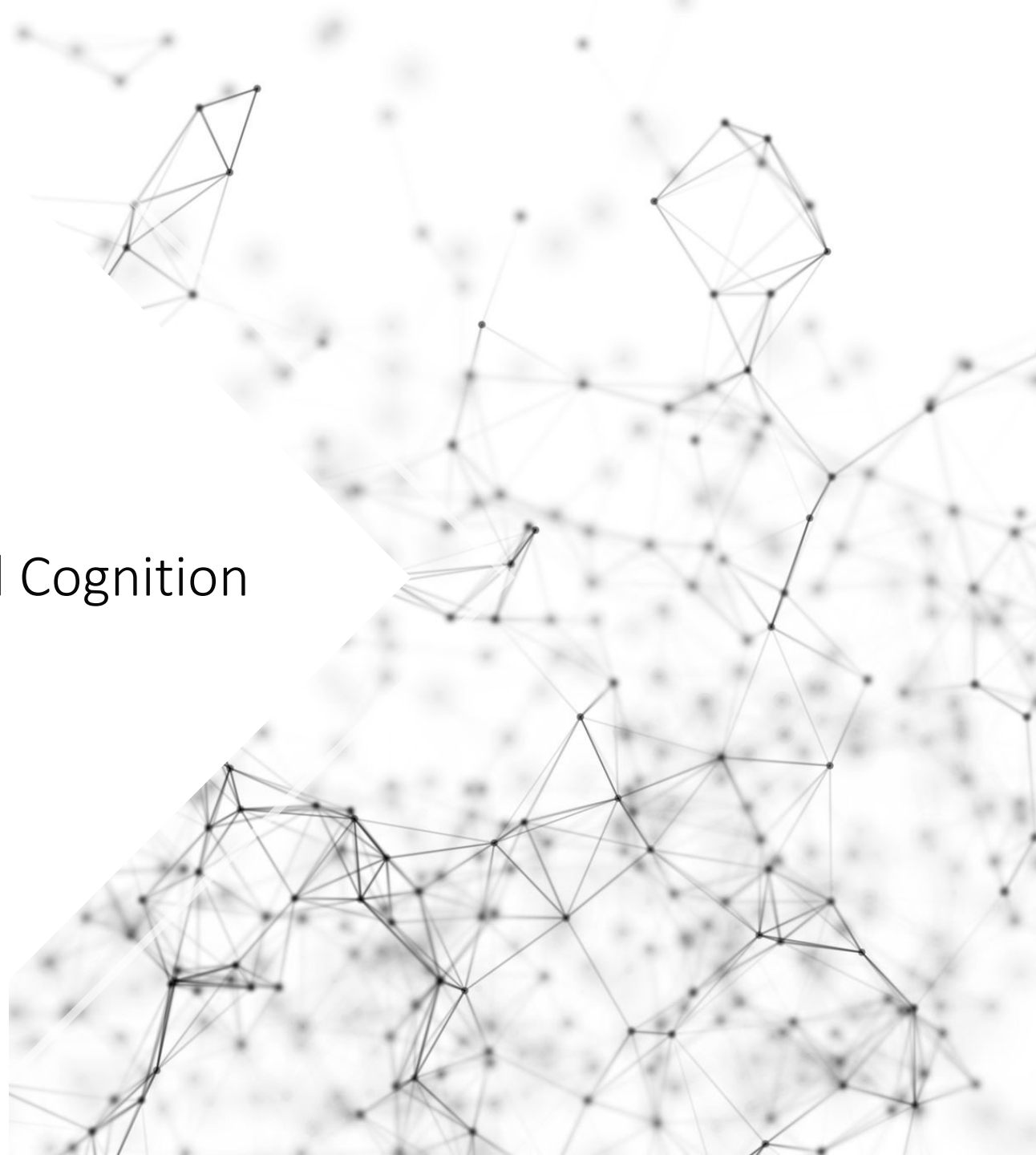
THE POWER OF THE  
COGNITIVE NONCONSCIOUS

*N. Katherine Hayles*





## Ecological Cognition

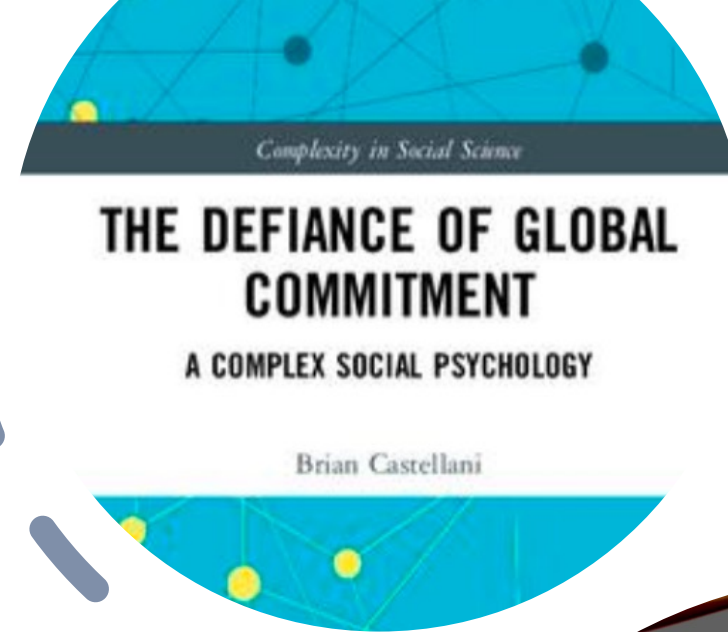


The background of the slide features a complex network diagram. A central globe is depicted with a semi-transparent red banner across its middle. The globe is surrounded by a dense web of nodes (represented by circles of varying sizes) and connecting lines (edges), suggesting a global network or social structure. The nodes are distributed across the globe, with some clusters being more prominent than others. The overall aesthetic is modern and technological, emphasizing global connectivity and social networks.

# Collective psychology and Global Civil Society

- RESEARCH FOCUS

- Cataloguing collective psychologies and their conflicted relationships they have with each other.
- Exploring the role globalisation and global civil society have on these collective psychologies.
- Understanding how these conflicted negotiations impact how we address current global social problems.
- Developing a psychology of complexity



## WESTERN CIVILISATION AND ITS GLOBAL DISCONTENTS

Or, why is living in a complex world so alienating?



## APA DICTIONARY OF PSYCHOLOGY

### **Collective Psychology**

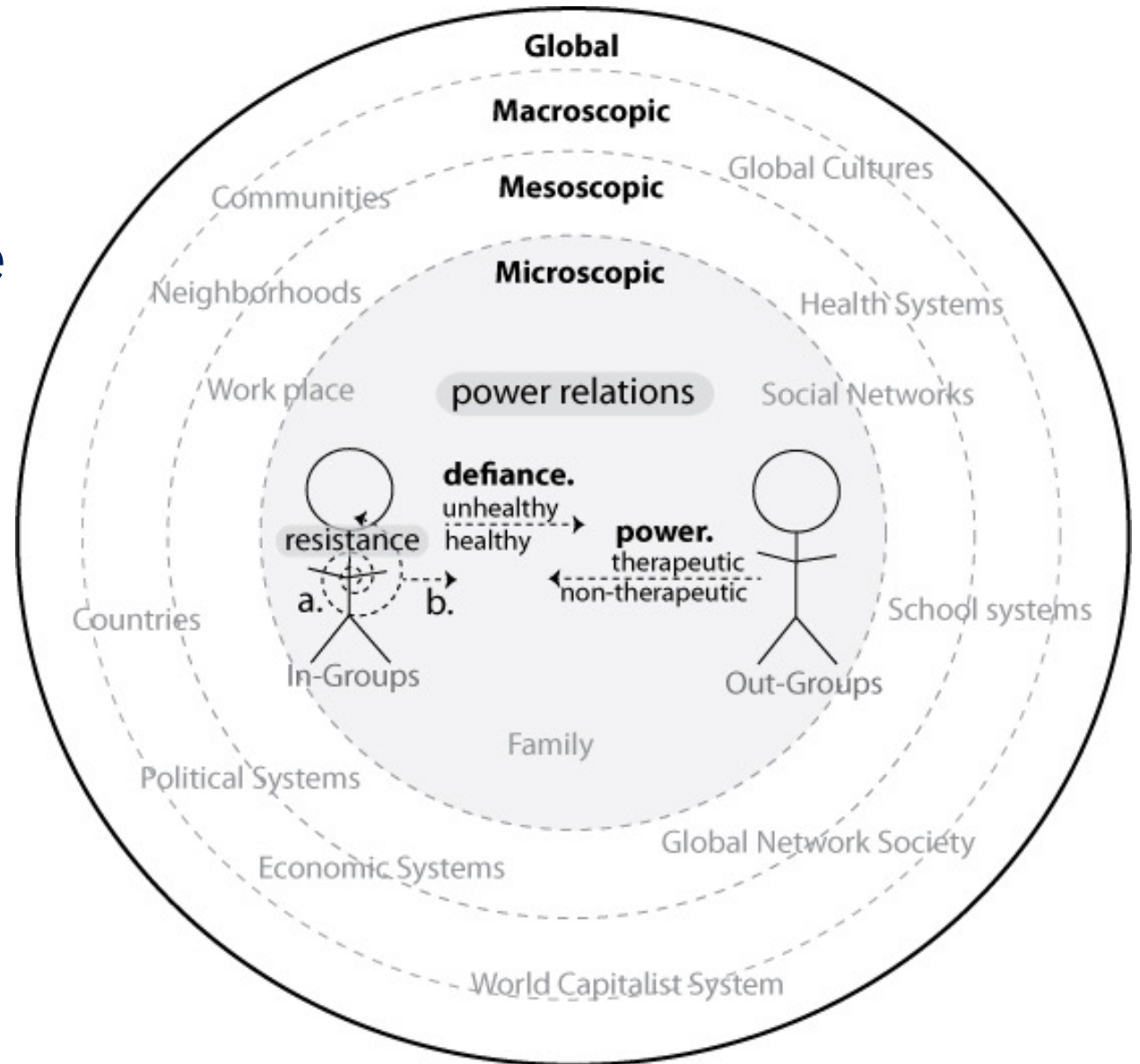
The mental and emotional states and processes characteristic of individuals when aggregated in such groups as audiences, crowds, mobs, and social movements. The term is mainly associated with early theorists in this area, such as Gustave Le Bon.

### **Our Definition**

#### **Collective Psychology**

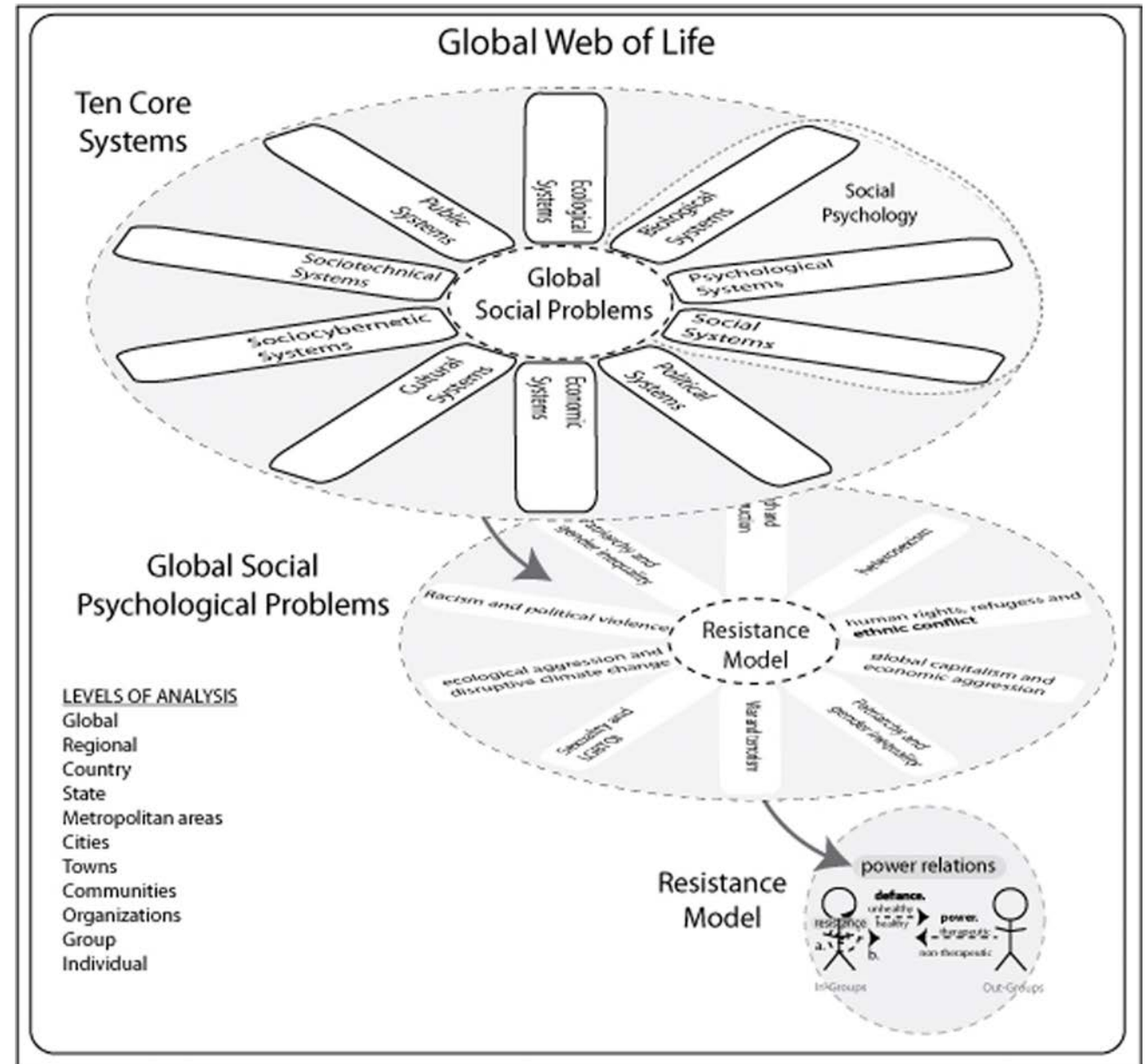
- A shared psychology (involving similar thoughts, emotions, opinions, concerns, grievances, and beliefs) that exists within and across a group of people.
- The aetiology is both internal to the psychology of individuals and external to the psychology of the wider social systems of which those individuals are a part.
- It is therefore both a top-down and bottom-up phenomenon.
- The key here is the notion of shared experience, that emerges through the network of communications, relationships and linkages amongst people.

Collective psychologies are fundamentally relational both within group and between groups



Collective psychologies  
need to be decentered onto:

- relations of power
- inequalities
- their evolving histories
- geopolitical setting
- current social problems
- politics
- economy
- culture
- geography
- ecology





In the United States overall...

**8% are Watchful.** They're waiting to see what happens next.



**9% are Cost-Anxious.** They want the vaccine but can't afford the time or cost.



**4% are System Distrusters.** They feel the health care system doesn't treat them fairly.



**14% are Covid Skeptics.** They don't believe the threat.



The New York Times

# Meet the Four Kinds of People Holding Us Back From Full Vaccination

By Sema Sgaier

May 18, 2021

# Other examples

- The collective psychologies around:
- Brexit
- Global warming
- Refugees and immigrants
- The Alt-right movement
- Women's right and domestic violence
- Advancing the rights of LGBTQ+ communities
- Global capitalism

Thank you