

# SLOW MEDICINE

FIRENZE, FEBBRAIO 2020

PIER LUIGI LUISI, INTRODUCING

# The Systems View of Life

By the best-selling author of *The Tao of Physics* and *The Web of Life*,  
and the author of *The Emergence of Life and Mind and Life*

Over the past 50 years, a new systemic conception of life has emerged at the forefront of science. Now emphasis has been given to complexity, networks, and patterns of organization leading to a new kind of biology: *“biology as a network of systems.”*

This book integrates the ideas, models, and theories developed by the systems view of life into a single coherent framework. Linking a broad view through history and across scientific disciplines, it leads to a new paradigm of biology, one that is conceptually clear, rigorous, and free of restrictions on other scientific and economic knowledge of life and its applications to the systems view of life for health care, management, and ecological systems. *“A highly readable and accessible book.”*

Written for a wide range of readers, this book is a must-read for graduate students and researchers interested in understanding the new systemic conception of life and its implications for a wide range of disciplines – from economics and political science to psychology and law.

Fritjof Capra is a Founding Director of the Center for Technology of the Future, California Institute of Technology, Pasadena, California, USA. He was previously a professor of physics and has been regarded as a systematic philosopher of the philosophical and social implications of contemporary science for the past 25 years.

Pier Luigi Luisi is professor in Medicines at the University of Rome. He received his doctorate from the Swiss Federal Institute of Technology, Zurich, Switzerland (ETHZ), where he became full professor in Chemistry and became the scientific director of the Swiss Federal Institute of Technology in Frankfurt (Germany), and the scientific director of the Center for Self-Organization of Matter and Natural Systems.

Cover illustration: earth receiving solar energy and emitting photons like a black body, as originally proposed by Isaac Newton in *The Book of Opticks*, 1704, Book II, Chapter 1, section 11.

Capra and Luisi  
The Systems View of Life

# Fritjof Capra and Pier Luigi Luisi

# The Systems View of Life

## A Unifying Vision



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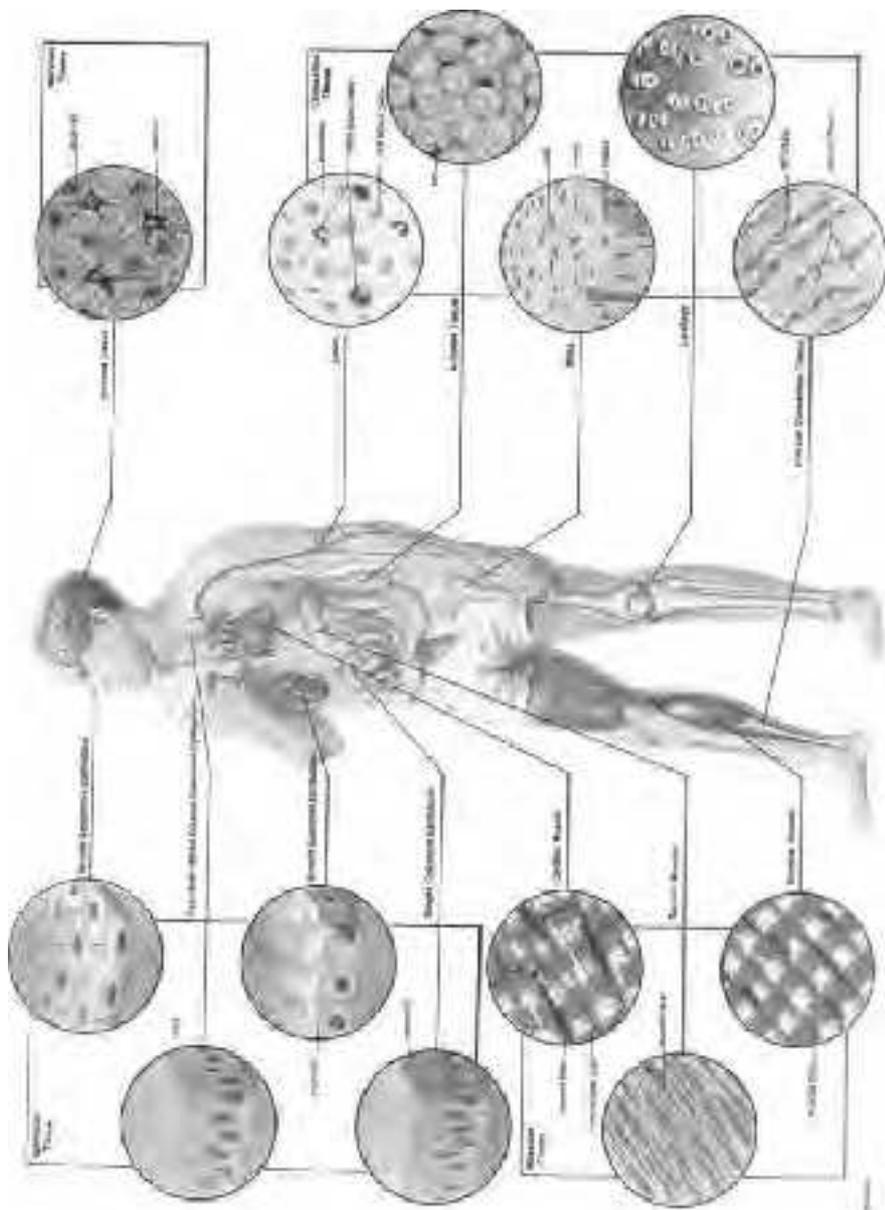
VITA E NATURA  
UNA VISIONE SISTEMICA

Fratelli Capra

Pier Luigi Lutisè

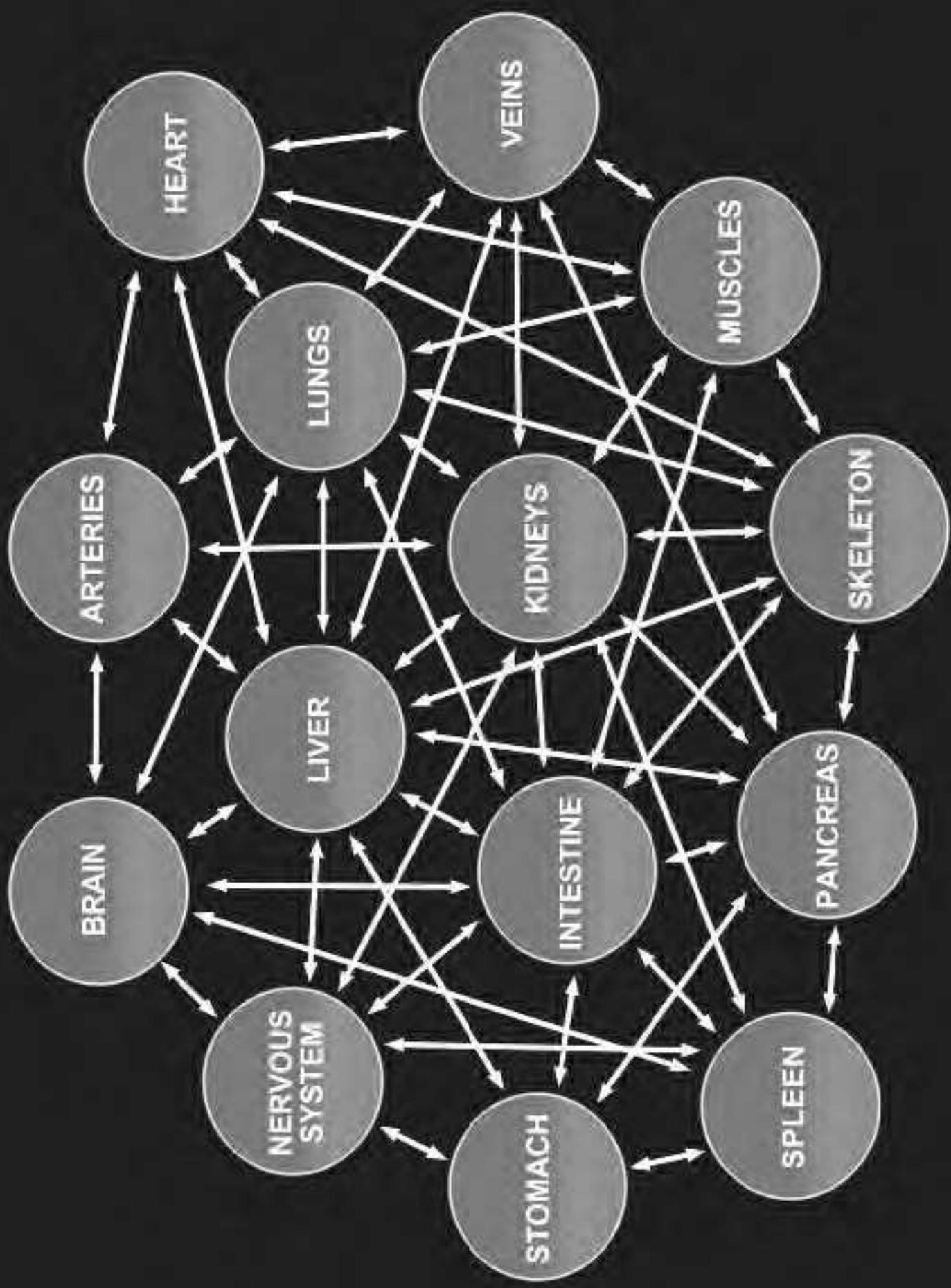


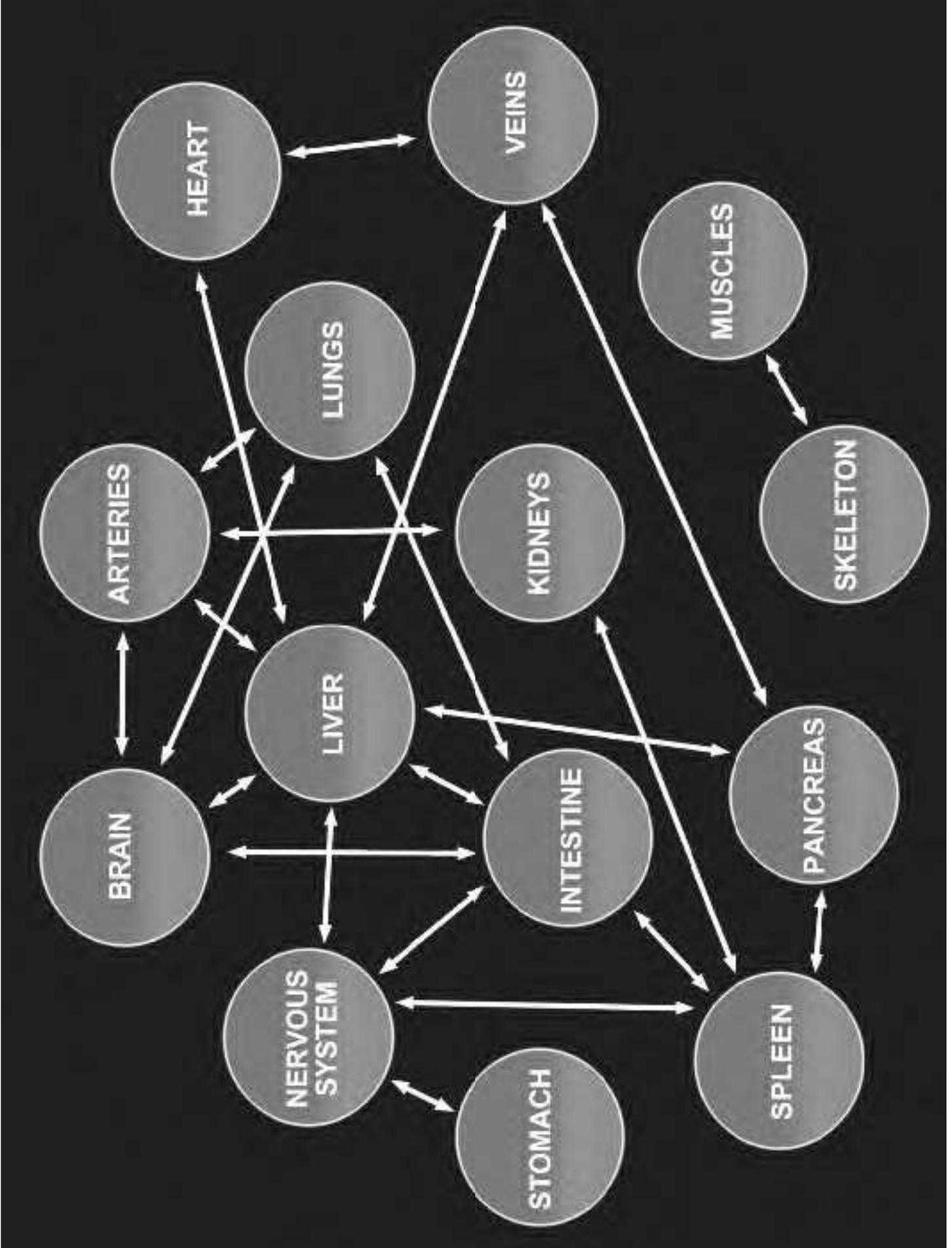
*Aboca*



59 Human Tissues  
Figure 3.1

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BRAIN

ARTERIES

HEART

NERVOUS  
SYSTEM

LIVER

LUNGS

STOMACH

INTESTINE

KIDNEYS

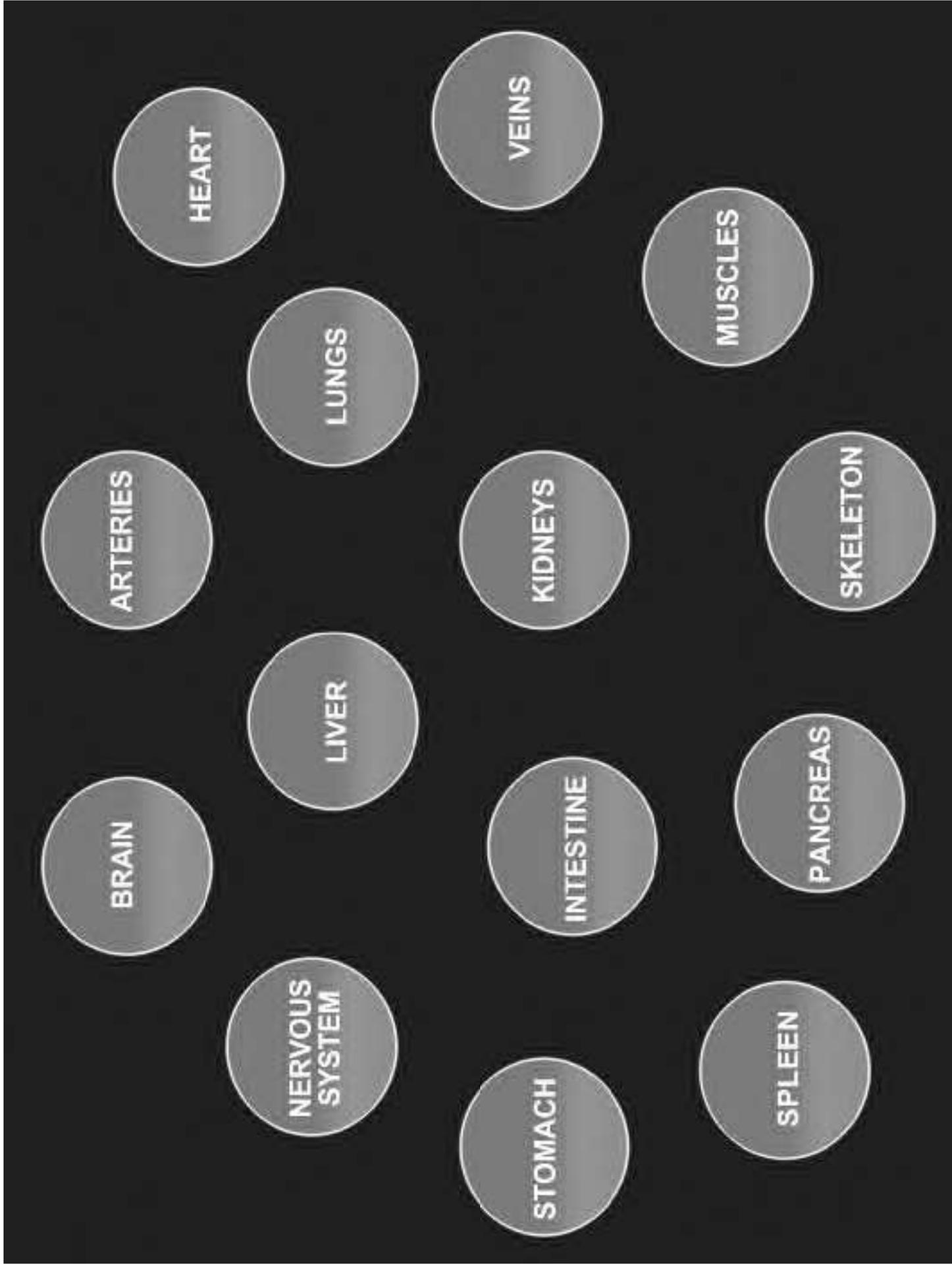
VEINS

SPLEEN

PANCREAS

MUSCLES

SKELETON



**Most of the Vedanta teachings, and also of Buddhism, sees reality as a web of causal interactions, so that all elements of the world are part of a unique gigantic dynamic network.**

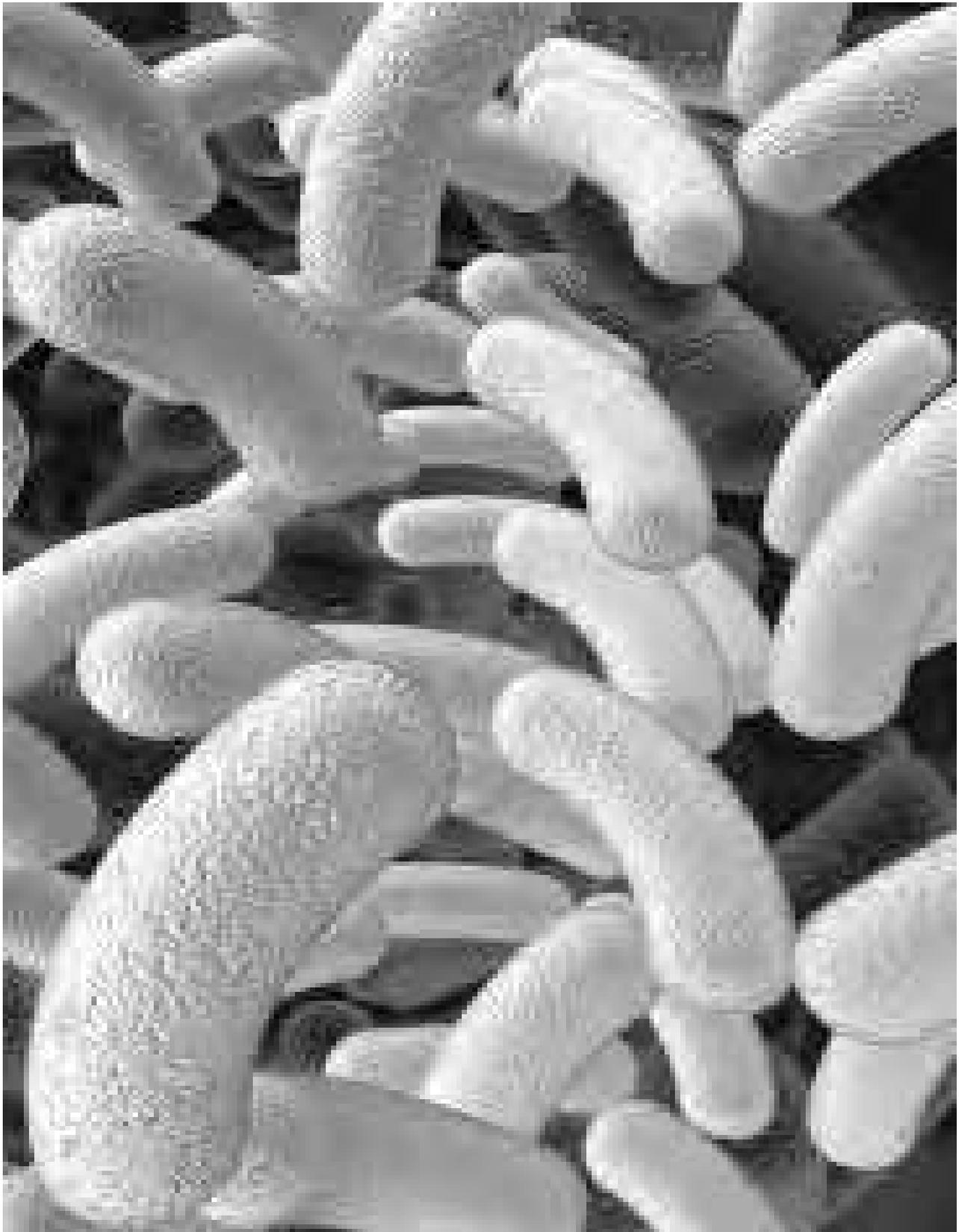
**This unitarian view has been in large part maintained till our time. Influencing also medicine and even science.**

**Instead, science and philosophy in the western world, been dominated for the last centuries by the Cartesian (Galileo, Newton) mechanistic perspective- based on the scientific analytical procedure.**

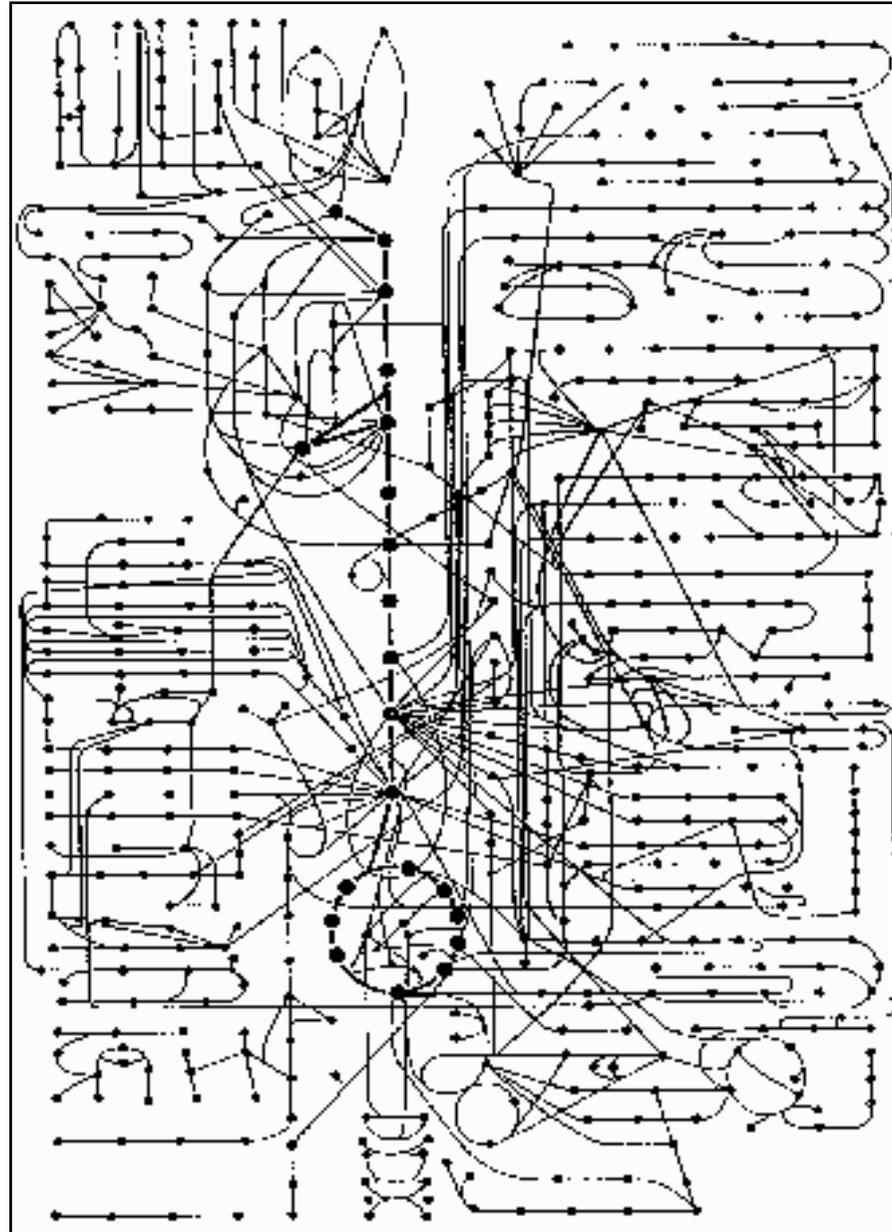
**Accordingly, to study a complex system, one has to analyse the single parts individually, and the knowledge of the whole is given by the sum of the knowledge of the single parts.**

**With a drastic division between body and mind (res cogitans and res extensa).**

**Medicine became a matter of the body.**



**A maze illustrating the chemical reactions that interconvert small molecules in cells.**



**fatto: La disfunzione di un enzima produce la malattia**

**approccio meccanicistico** della medicina classica:

studiare come funziona l'enzima, cercare i farmaci specifici, per inibirlo, o potenziarlo, eventuale approccio genetico

**approccio sistemico:** perchè è avvenuto questo? Come prevenirlo e curarlo

quali sono le cause individuali, anche psicosomatiche, ma anche il contesto ambientale e sociale?

**Cos'è la salute?**

**La si può definire in termini analitici e quantitativi**

**Pensare alla salute in analogia alla vita stessa**

**Come esperienza soggettiva di equilibrio dinamico,  
cognitivo e continuo,  
in interazione continua con l'ambiente e la società**

**Causality is indeed a central pillar of most philosophical Buddhism. In particular, the Buddhist *pratiya-samutpada* recites the following:**

**“if there is this, there is that; if there is that, there is this”-**

**implying namely not only a linear causality, and co-dependent arising, but also a kind of feedback, typical of the systemic thinking.**

**consider the cumulative effect of the two complementary concepts of co-dependent arising (pratitya-samutpada) and that of impermanence (anitya):**

**if all things are mutually linked and causally interdependent, but at the same time they continuously change, then the entire universe is not made by isolated, independent things, but is a dynamic, totally interactive process.**

# The new scientific thinking from 1930 on

- John von Neumann (1903-57)
- Gregory Bateson (1904-1980)
- Heinz von Foerster (1911-2002)
- Alan Turing (1912-54)
- Norbert Wiener ( 1894-1964)
- Paul Weiss ( 1901-2002)
- Jean Piaget (1896-1980)
- Ilya Prigogine (1917-2003)
- Maturana (1928) and Varela(1946-2001)
- **emphasizing self-organization, holistic complexity, systems thinking, emergent properties, collective properties, non-linearity**