

Significance of a comprehensible model of reality

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Picture of reality

- Defines the background for human existence
 - where we are, what can be done
 - The main features of an accustomed paradigm last long





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- Three deep revolutions in western culture
 - Antiquity, the turn of modern era, now
 - Fundamental metaphysical presuppositions are in change





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The historical process is guided by natural science and philosophy

Both are important for understanding the nature of reality

Antiquity: Reality is comparable to an organism

- the whole includes a soul and is able to regulate itself
- the constitution of the whole is reflected in humans





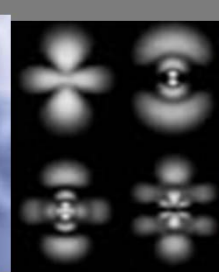
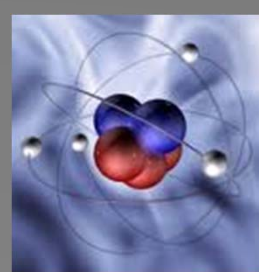
Reality consist of matter in motion
-you cannot find a soul

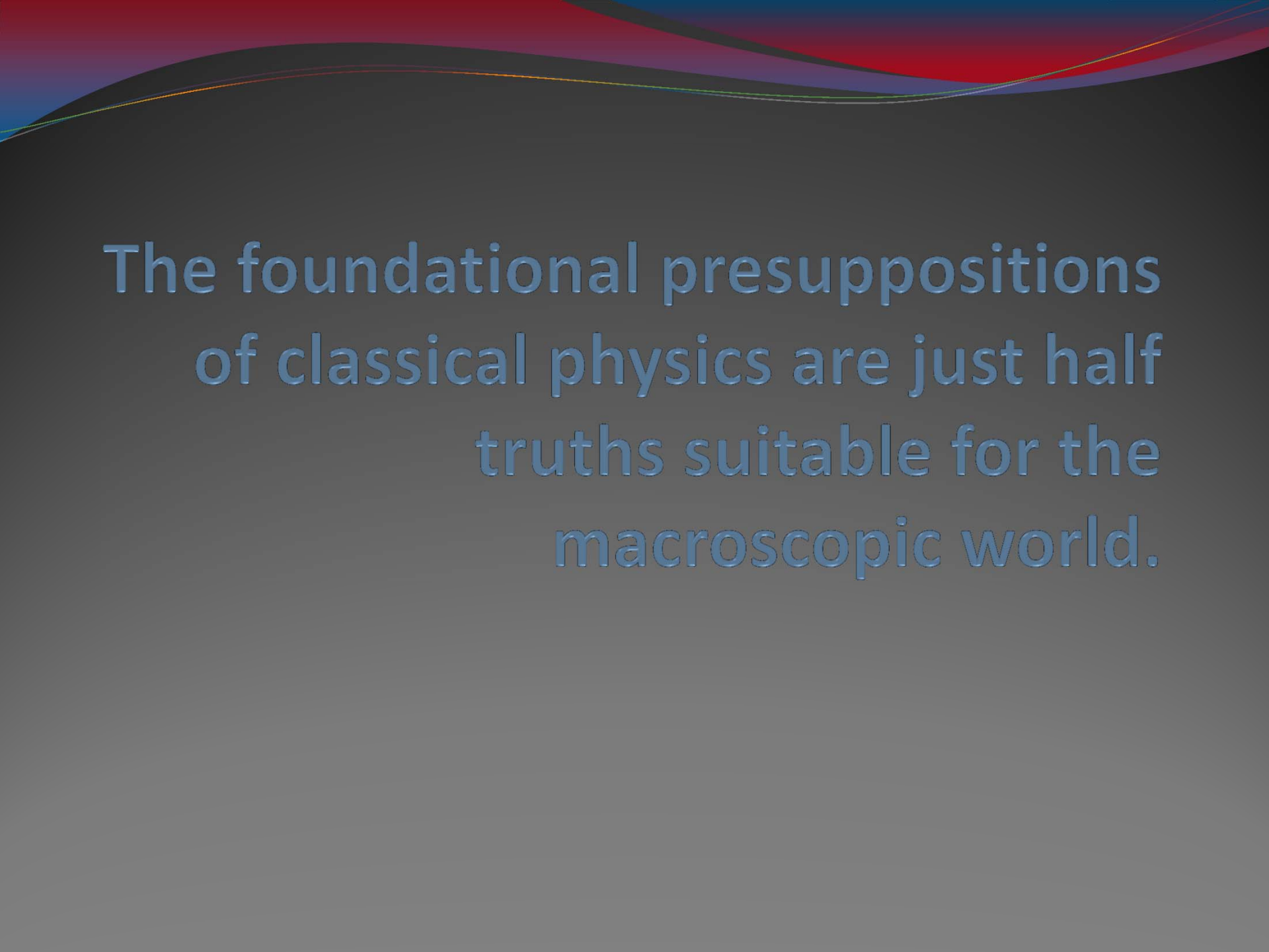


Reality is comparable to a clockwork
mechanical, quantitative, and without purpose

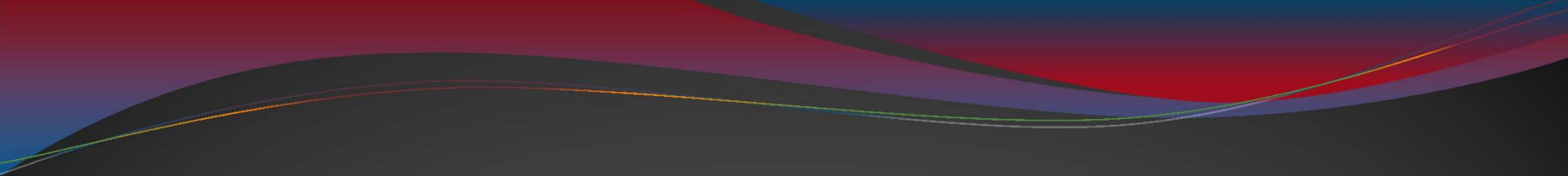
Modern physics collapsed the common world view

- Theory of relativity connected time and space
 - Body's velocity, length or kinetic energy are not invariant properties but depend on the frame
- Quantum phenomena are impossible to understand
 - wave-particle dualism, entanglement, statistical predictions, measurement problem ...



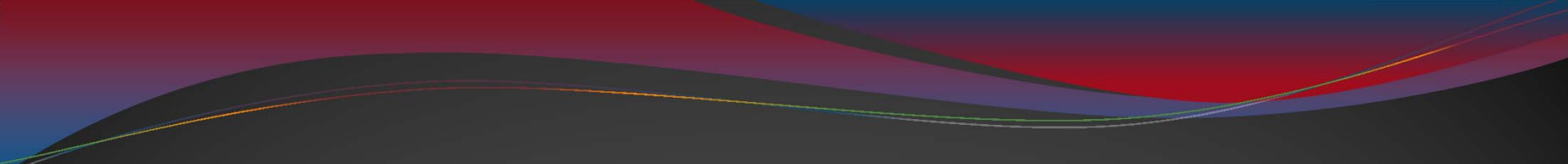


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Good bye atomism, reductionism, determinism,
locality, detached external observer...



A new general map is needed to enable navigation when dealing with quantum phenomena, complex systems, evolution, all kind of subtler connections and relations prevalent in nature.

What is the basic stuff everything is made of?

What is the relation between the parts and the whole?

What is the role and locus of humans?

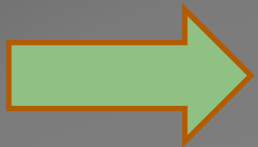
Construction of theories, including world views, demands creativity.

Theories are human constructions.

- they contain unobservable terms
- their truth can be falsified but never conclusively verified

Logic and mathematics are indispensable tools but they do not straightforwardly lead to valid theories.

- and theories cannot be understood without a conceptual interpretation



Quest for genuine natural philosophy,
empirical metaphysics

In a paradigm change

the growth in physical understanding of reality has characteristically been related to achieving a proper conceptual change, a new perspective.

- clarification of the basic principles and notions leads to further knowledge on the interrelations between the relevant concepts like substance, energy, motion and space.
- discovery of more fundamental invariances and interconnections entail that a wider variety of phenomena can be treated by one and the same mathematical formalism.

Most covering formalisms penetrate furthest into reality.

A proper view into nature most probably demands a framework unifying the quantum theory and the theory of relativity.

- a suitable formalism cannot start from the existing (incompatible) principles but demands a new perspective

Valid alternative theories are essential in providing solid material for further metaphysical inquiry

Two broad formalisms with different perspectives into a holistic universe.

Arto Annala:
The least action
formalism

Tuomo Suntola:
The Dynamic
universe

Common for both:

- Natural evolution is included
- The parts are governed by the whole
- Stable systems are resonance structures
- Room for autonomous humans

Least action formalism

Statistical mechanics of open systems

- adds the idea of open evolution to the present postulates (QM,RT)

Everything consist of energy naturally dispersing from higher densities to lower ones by using the steepest available paths.

- closed and open actions, mass converts into energy in radiation

- Explains quantum phenomena

 - Treatise of measurement problem comparable to Bohr's ideas

- Compatible with complex systems

The Dynamic Universe

A covering new framework with a minimal amount of postulates.
Reveals an unexpected link between mass, energy, motion and space.

- mass is a fundamental invariant which links everything together into a holistic composition
- localized objects are described in terms of resonant mass-wave structures

- Re-establishes the universal frame of reference
- Gives a comprehensible model of the constitution and evolution of the universe.
- Covers correctly relative, cosmological and quantum phenomena

Comparison of some metaphysical implications

LA

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Basic stuff

Energy exhibited
in actions

Mass excited by
energy

Stable structures

Closed actions

Resonate mass
waves

Cause of evolution

Dispersion of energy
(inside 3D)

Evolving 4-sphere
(causes 3D manifestation)

Space and time

Generated by closed and
open actions

Coordinate quantities

Lawfulness based on

Maupertuis' principle of
least action

Zero-energy
principle

The universe seems to be an active, hierarchically leveled whole containing systems within systems. (reminiscent to an organism rather than a clockwork)

The configuration leaves room for causally active humans who nevertheless always remain subordinate to the balanced action of the whole.

Thank you!

