How do Physicists Create Time

Fernanda Samaniego Trento, Italy.November 2015

Content

Some observations and criticisms
Some Conclusions

Bohmian notion Scientific Creativity

1.1. Creative Minds





David Bohm sees significant learning as being dependent on creative acts.

1.2. Imagination – Rationality cycle

IMAGINATION

RATIONALITY

(Mutual and simultaneous invasion)

1.3. Metaphysics: Artmotion



1.4. Scientific Creativity

"A scientist is seeking to learn something leading ultimately to a new perception of the wholeness, beauty and harmony in the structure of natural process" [where] "...structure is, in essence, a hierarchy of orders, on many levels."

"The scientist is perhaps not basically different from the artist, the architect, the musical composer, etc., who all want to *create* this sort of beauty, coherence, and harmony in their work"

D.Bohm On creativity, 1996.

"The Ending of Time" (Conversations with Krishnamurti)

2. Different theories oftime

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99 Anaximander

sos Francesco Patrizi

se Galileo

۶۶ Newton (1st?)

999 Blok Universe

%% Evolutionary Blok Universe

2.1 Anaximander



2.1 Anaximander



In Sparta, Anaximander used a gnomon (a shadow-casting rod structure) to measure the number of hours in the day

2.3 Francesco Patrizi (1529–1597)

%% Pre-modern scientific thinker. *Nova de universis philosophia* **%%** Notion of time based on duration (*manentia*).

www When applied to physical bodies, duration implies a certain relationship of bodies to the space they occupy.

%% Questions the traditional relationship between time and eternity.

2.5 Galileo Galilei(1564-1642)





2.6 Isaac Newton (1642 - 1727) 1st?



Classical vs Relativistic



2.7 Albert Einstein (1879–1955)



2.8 Blok and Evolutionary Universes



3. Analysis

3. Some observations

Philosophy of science in Bohm
Clear familiarity with Kuhnian concepts of Scientific Change- Paradigm replacement.
Otto Neurath's Coherentist Epistemology.
Observations are "theory-laden" (Hanson)

3. Some observations

Solution in the realism/idealism debate
Realism
Structural Realism?

3. Some criticisms

99 Whighistory

99 There are other kinds of scientific creativity

%% Are structures really universal?



Giordano Bruno (1548-1600)



2.2 John Philoponus (c. 490 – c. 570)



"Since the universe is a finite body, it cannot exist for an infinite time."

Relations Matter – Timeand Space – Light

Conclusions

%% David Bohm's notion of scientific creativity only describes *one* aspect, and its only valid in the physics domain.

Solutions of theoretical change described by philosophers of science as Kuhn, Hanson and Neurath.

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Thank you

