Summaries

MUZEUM HISTORII POLSKI

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Zdzisław Augustynek
The common basis for space and time
The conceptual framework of the article consists of three basic terms: „quasi-simultaneity", „co-location" and „genidentity" (with their negations). Within this framework the author formulates and discusses his main thesis: if two events are not genidentical, then they are either spatially or temporally separated. This thesis expresses the fact, that, loosely speaking, time and space have their common basis in difference of things.

Marek W. Bielecki
Time and becoming in artificial and natural cognitive systems
In my paper I review the main strategies adopted by two leading schools in cognitive science, symbolic artificial intelligence (AI) and connectionism, in modeling time-dependent phenomena such as learning. In particular, I briefly mention shortcomings of the non-monotonic logic approach that dominates symbolic AI. I also discuss the problems that beset the recurrent networks approach advocated by connectionists (e.g., S. Grossberg) and philosophers (e.g., P. Churchland), who focus their attention on oscillatory behavior of such networks. I point out that neither approach adequately captures essential features of the dynamics of human temporal awareness. Finally, I develop certain ideas borrowed from neurophysiologists (e.g., W. Freeman) and system theorists and describe the brain-mind, the entity that is capable of producing temporal awareness, as a self-organizing system that exhibits chaotic dynamics and generates a dynamic structure that resembles the chaotic hierarchy of Rössler.

Tomasz Bigaj
Qualitative theories of space-time
This is an attempt to formulate (along the line of H. Field's nominalization program) purely qualitative versions of two theories of space time: Galilean and Minkowskian theories. The starting point is to present qualitative theory for affine geometry, which is based only on one primitive predicate: „between". Then it is shown that with the help of this predicate whole mathematical structure of affine geometry can be reconstructed as

a simple definitional extension. As a next step it is shown in details how the same procedure can be carried out for both theories mentioned above.

Jacek Juliusz Jadacki
Elementary ontic relations
With the help of six primitive predicates the author formulates twenty-seven basic onological theses. The primitive terms used are referring to the so-called elementary ontic relations, which are not reducible to each other. These are: the relation of being a part, the relation of being localized, the relation of having a property, the relation of exemplifying a type, the relation of temporal precedence, and the epistemic relation — knowing that.

Józef Misiek
Is definition of simultaneity a convention?
The author points out that Reichenbach made a mistake in his famous argument for the conventionality of the definition of simultaneity. Then a remedy for this difficulty is proposed, and afterwards Reichenbach's thesis is reconsidered.

Elzbieta Pietruska-Madej
Pragmatic and apragmatic aspects of scientific discovery
In the paper the main topics in modern reflection on scientific discovery are highlighted. Among them are: difference between the context of discovery and the context of justification; case studies from the history of science; a search for the logic of discovery; and philosophical aspects of scientific discovery.

Witold Strawiński
Theory reduction and structural assumptions
In the article different kinds of theory reduction are distinguished and discussed with respect to additional assumptions which are usually added to the reducing theory. A particular kind of so-called geometrical structrural assumptions are analysed, and some outline of their possible classification is presented.

Michał Tempczyk
An influence of fractal theory on models of physical phenomena
The central topic of this article is the analyse of a role which modern mathematics plays in developing empirical theories. This is done with the help of an example of how fractal theory is applied to physics.

Anna Wójtowicz

What logic can be accepted by a philosopher?

In this article several metalogical properties which are interesting and important from the philosophical point of view are discussed. Examples of non-classical logical systems which posses these properties are presented.

Krzysztof Wójtowicz

On the problem of set-theoretic realism

The paper is devoted to the problem of the existence of mathematical objects. The ideas of Gödel and the Quine-Putnam indispensability argument are discussed. A «qualitative» version of this argument, in which the results of *reverse mathematics* are used, is presented.

Piotr Wrześniewski

The concept of complexity in light of self-organizing systems theory

During the last decade several authors (Kaufman, Casti, Kampis) have published scientific monographs as well as popular science books heralding the emergence of a new paradigm of science — the science of complexity, which promisses unification of natural sciences. This paper attempts to analyse the meaning of the concept of complexity in both everyday language and the framework of self-organizing systems theory. The paper consists of four parts.

The first part discusses the main tenets of the alleged new paradigm and typical criticisms it encounters. The second part articulates the formal correctness and material adequacy conditions, that the definition of 'complexity' should satisfy. The third part discusses meanings of the concept: from opposition simplicity-complexity prevalent in everyday language to self-organizing system triad: perfect-order-complexity-complete chaos. It also lists and critically discusses potential candidates for an adequate definiton. The reasons explaining why none of the presented approaches is succesful are subsequently discussed. The conclusions analyse plausible reasons for such a state of affairs.

Jan Żytkow

Scientific and computer reductionism and content of consciousness

Our consciousness is a challenge both for the scientific and the computer reductionism. In the article I show that in everything which appears in our awareness there is an element which cannot be captured by scientific experience and computer models. Because our minds interact with the material world, only interactionism is compatible with our whole experience. But there is no sense to demand that the mechanism of this interaction should be given, because such mechanism cannot exist. Subsequently I reject evolutionary arguments for materialist monism. At the end of the article I point

that interactionism does not exclude the possibility of progress in modeling scientifical-
ly external observational aspects of consciousness.