Primary Data Entry

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Abstract— **This paper outlines three studies in a session of the track "Primary Data Entry". The research attempts to understand social interaction modalities, by studying philosophical, physical, psychological and neurological grounds of cognition. The goal of the study is to understand how social interaction shapes the mind. The papers of the special track deal with three research issues:**

(i) whether the mind reduces to physical properties;

(ii) whether social interaction contributes to the increase in results of a group mental activity;

(iii) what are the neurobiological grounds of intentionality.

This knowledge may help to (1) develop advanced online curriculum, and (2) create a new approach to study contactless brain-computer interface. This article shows that the contributions of this track address research issues that are of high importance for education, medicine and a wide range of high-tech applications from communication to artificial intelligence.

Keywords- artificial intelligence; brain-computer interface; coherent intelligence; consciousness; emotional contagion; interactional synchrony; mental disorders; social entrainment; embodied cognition.

I. INTRODUCTION

In medicine, patients with a wide range of mental diseases (e.g., with a lack of social skills and bilateral communication) would increase a relevant and appropriate treatment, by involving all possibilities of social interaction, especially those that at an early stage of development shape the newborns' mind, which does not yet support abstract thinking and communication abilities.

Smart prostheses with the possibility of contactless brain management are another area of research that connects the needs of medicine with the development of high technologies. Artificial intelligence is a crucial issue in the 4th industrial revolution. The ability to integrate (contactless) the human brain with a computer may contribute to another approach to artificial intelligence, creating a bridge to the next stage of human progress.

In education, the increasing knowledge domain, multicultural environment, and online learning development require improving teaching methods. In specific, studies show that group collaboration in problem-solving can significantly increase memorization by 28%, the effect of which increases to 30% in a month [1]. This efficiency is achieved by the students overcoming the difficulties through their insight. However, the problem-based learning method's results to accelerate learning are not significant enough in respect of efforts required because 'switching on' the phenomenon of insight in students is an unpredictable process [1]. One solution is to establish teaching methods that encourage higher-order thinking with deep levels of information processing. Online curriculum already changed teacher-student interaction introducing high-tech in education. The impact of high-tech on understanding and memorizing in students is an essential issue for the further research. The current research tends to understand the impact of social interaction on 'switching on' insight and introducing it predictably and reliably. In the spectrum of its applications, the more relevant and significant issue is an advanced curriculum for students with communicative disabilities and very young children.

II. SUBMISSIONS

According to Reznikoff [2], consciousness cannot be reduced to physical data. The first paper "The Visual Consciousness Space: A mathematical proof of the irreducibility of consciousness to physical data" [2] presents arguments that the consciousness space is not completely reducible to physical reality. One of the main consequences of this article is that research of the mind cannot be limited only by knowledge in actual science. This finding opens a window for empirical research on a wide range of hypotheses, even if they seem to contradict the theoretical foundations of Social science.

The second paper "Intentionality VS Chaos: Brain Connectivity through Emotions and Cooperation Levels beyond Sensory Modalities" [3] presents the outcome of 24 online experiments in 2020. According to Danilov and Mihailova [3], primary groups show empirical evidence of a more significant accuracy in problem-solving in the coherent intelligence state. The outcome demonstrates inter-brain connectivity through ongoing emotions and motion dynamics, creating cooperation levels beyond sensory modalities.

The third paper "New Findings in Education: Primary Data Entry in Shaping Intentionality and Cognition" [4] proposes new insights on the neurobiological origin of

intentionality. According to Danilov and Mihailova [4], two processes may shape intentionality in the pure reason: (i) cognition begins from separating sensory stimuli: Long-Term Potentiation can be induced in neurons of particular Modality- Specific gateways (ignoring other stimuli)– selective induction promotes selective sensitivity to the chaos of stimuli. (ii) Neurons can learn spike-timing-dependent plasticity in social interaction: immature neurons learn the timing code to modulate certain synaptic strength, which triggers either Long-Term Potentiation or Long-Term Depression.

The Chief of the Special Track complements the above opinions that according to the received view in science, any theory of knowledge and/or cognition is accepted in a broad consideration if it obeys physics laws, those that we already know. He believes that this comment is also relevant to Physics laws that we do not yet know. The mathematical proofs also reflect logic arguments on an issue within the framework of the actual science paradigm. The statement that consciousness cannot be reduced to physical data may also mean that some laws of Physics have not yet been discovered. Research of the mind should consider any reliable hypothesis within the framework of the modern paradigm of science even if these hypotheses contradict the axiomatic foundations of Social science such as Sociology and Psychology. The Chief of the Special Track believes that social interaction is also subject to Physics laws, and as all the motion of matter, it obeys the laws of Physics. Therefore Social sciences must take Physics into account, defining their own laws. Psychology, Sociology, their branches, and Physics can together contribute to understanding the notions of social interaction and cognition.

III. Conclusions

The special track invited to discuss Primary Data Entry– the ground of shared intentionality–from an integrated perspective: Psychology, Sociology, Neuroscience, and Physics. It proposed the hypothesis of two fundamental properties of the nervous system that promote intentionality in the pure reason:

1. Cognition begins from separating sensory stimuli;
2. Neurons can learn spike-timing-dependent plasticity in social interaction.

In the presented papers, the data obtained from the empirical studies and the hypotheses resulting from their outcome are consistent with the knowledge within the framework of the modern scientific paradigm.

This approach is the basis for further research on developing an advanced e-learning curriculum and the study of contactless brain-computer interfaces.

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References

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