

Discoveries – on Demand

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In this talk, I will introduce our hypothesis about the structure of the Primary Language of the human brain, which goes back to J. von Neumann who hypothesized its existence in 1957. According to von Neumann, the Primary Language should have empowered all the Secondary languages, i.e., human symbolic languages and sciences. I will explain how this is accomplished with introduction of the Language of Visual Streams. This talk includes the details of communication between the primary and conventional languages and sciences and demonstrates examples of such communication. We assume that there exists a universal meta-algorithm, the so-called Algorithm of Discovery (AD), the ultimate tool utilized by the human brain for discovering new algorithms and perfecting the existing ones. The AD makes discoveries via visual streams within the primary science and then reflects them in the secondary science, the conventional one. One of the goals of our research is to understand the AD to the level, which will permit producing discoveries on demand. Our approach to understanding the AD is to replay manually past discoveries by applying the simulated AD. Execution of the AD consists of a series of thought experiments that turn a piece of the primary science to the conventional one. The Discovery of the Double Helix, the 3D structure of DNA (by Watson and Crick), will be replayed in the talk. More examples will be included in my tutorial.

Short Bio



Boris Stilman received MS in Mathematics from Moscow State University, Russia, and two PhDs in Electrical Engineering and Computer Science from National Research Institute for Electrical Engineering, Russia. In 1972-1988, Dr. Stilman was involved in the research project PIONEER led by a former World Chess Champion Professor Mikhail Botvinnik. At the same time, in Moscow, based on his 17-year experience with project PIONEER, Dr. Stilman developed Linguistic Geometry (LG), a new theory for solving abstract board games. In 1991-2018, Dr. Stilman continued development of the theory and applications of LG at the University of Colorado, USA. A leap in the development LG was made in 1999, when he (with a group of scientists and engineers) founded STILMAN Advanced Strategies (STILMAN). Over the last 20 years, a growing number of applications of LG developed at STILMAN passed comprehensive testing and powered intelligent defense systems in the USA and abroad. In 2010, Dr. Stilman broadened the scope of his research on intelligent systems via investigating the structure of the Primary Language of the

human brain including the Algorithm of Discovery. Dr. Stilman published several books and over 200 research papers. He is a recipient of numerous R&D awards including those from USSR Academy of Sciences, US Government agencies such as DARPA (USA), major US defense contractors such as Boeing and Northrop Grumman. More information about Dr. Stilman and his research can be found at

http://www.stilman-strategies.com/bstilman/boris_papers/RESUME.pdf