

Day 2 - Understanding the present

Session 1:

Cultural differences as opportunities for collaboration in healthcare and medicine

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Atsushi IRIKI received his Ph.D. in Neuroscience from Tokyo Medical and Dental University in 1986. He held research associate positions at the Tokyo Medical and Dental University and then at The Rockefeller University (USA). He joined the faculty of Toho University Medical School as an assistant professor and then as an associate professor in Physiology (1991-1999). In 1999, he returned to Tokyo Medical and Dental University as a full professor and chairman of Cognitive Neurobiology.

Atsushi IRIKI is now a Head of Laboratory for Symbolic Cognitive Development at RIKEN Brain Science Institute since 2004. He has been a visiting professor of Nanyang Technological University (Singapore), University College London (UK), an adjunct professor of Keio University, Tokyo University, Tokyo Medical and Dental University, a research professor of Kyoto University, a senior fellow of the Canadian Institute for Advanced Research, and the president and CEO of RIKÆNALYSIS Corporation (RIKEN Venture, Tokyo). He is currently an Editor-in-Chief of Neuroscience Research, an official journal of Japan Neuroscience Society, and the president of Japan Neuroscience Society 2016 Annual Meeting.

Abstract

In order to care for the immediate needs of patients, medicine has to handle an etiology with features that are “as yet unknown, but known to exist”. We never know all of the causal relations of the world because the speed and capacity of our brains to process that information is limited and so is the technology to measure those phenomena. The West and the East have tried to overcome these difficulties differently: the West settled on boundary conditions and restricted a refined analysis to within such boundaries and then secured precision and reproducibility within them. This approach tries to increase the “knowns” while banishing the “unknowns” to caveats and background assumptions. The Eastern approach instead reduced complexity into a limited number of patterns for transitions of states in general forms

based on extensive accumulated experience. This sacrifices precision and reproducibility to prioritize the inclusion of “unknowns” by allowing much ambiguity to remain. Thus, Western medicine has succeeded via precision through exclusion, whereas Eastern medicine has been organic and mystic.

However, recent scientific advancements could unify both views by ameliorating the above limitations. Examples of such capabilities include: 1) Molecular imaging techniques to detect fine-scale, diffuse, and slow activities of complex network structures, 2) Mathematical theories including complex causal chain systems and higher order geometries, 3) High throughput supercomputers and sophisticated computer simulation techniques to deal with “Big Data” problems. Thus the next breakthrough in Western science may be a convergence in understanding how healthcare/medicine is an organic interaction among changes in the body, mind, and nature. Such a development corresponds exactly to a fundamental principle of Eastern philosophy “天人合一 (tiān rén hé yī)” .

In this session, I will present two examples of such attempts. First, 治未病 (zhì wèi bìng) which refers to presymptomatic states and intervention/treatment – an idea originating from the oldest Chinese medical book 黃帝內經 (huáng dì nèi jīng) 2600 years ago – to be revealed by fluctuations of a wide spectrum of genetic expression patterns. Second, 氣功 (qì gōng) which implies a form of mind-body interaction that may be revealed through the primate-specific autonomic neural network system linking the brain and multiple internal organs. And finally, I would like to propose a leading concept to unify both Eastern and Western approaches – 臟器門環 (zohki enkan / zàng qì yuán huán) meaning “multi-organ interactive ring” which, as a part of Japan’s National Science and Technology strategic plan, aims to establish a “Dynamical Human Mind-Body Simulator” as part of its next-generation medical care system.