

Commentary

First International Conference between West and East—Leonardo and Lao-Tze. Western Science Meets Eastern Wisdom. Experiences of Scientists and Intellectuals for the Creation of a New Paradigm of Modern Science

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Introduction and Speakers

Organized by Nei Dan School, European School of Taiji Quan and by the 'Tao and Science' Studies Centre, under the aegis of the Provincia di Bologna and the partnership of ASI (Alleanza Sportiva Italiana) and Luni Editrice. Goodwill of the conference is to act as a starting point to develop a net of experts, doctors and scientists, who will investigate the dynamic interactions between spiritual insight and scientific analysis to come to the creation of a new paradigm of modern science. Science, philosophy, medicine and body arts of the ancient East are reunited together to create a new ecological awareness of body and mind. Modern science, which paved the way for an outlook of reality considering the universe as a whole, in which all parts and phenomena are connected among them, can be integrated to the ancient Eastern wisdom for the control of the mind and to the body arts

(Taiji Quan, Qi Gong, Yoga) to develop a new ecological awareness, an awareness based on Nature and on the dynamic relation among all living creatures. The conference was divided in two sections: *a gathering of experiences*, of paths where science meets metaphysics to have a new language born, made of images and movement, and *a panel* to understand how Taiji Quan, the arts of movement and meditation, can prolifically meet cognitive sciences and neurosciences.

Speakers during the *Tao and Science Conference* were: **Andrea Pezzi** (Presenter and TV author); **Professor Edwin L. Cooper** Professor, Laboratory of Comparative Neuroimmunology, Department of Neurobiology, David Geffen School of Medicine, University of California Los Angeles, Editor-in-Chief, The Journal: *Evidence Based Complementary and Alternative Medicine*, Oxford University Press; **Professor Carlo Ventura** (Professor of Molecular Biology at the Faculty of Medicine, University of Bologna; Director of the Laboratory of Molecular Biology and Stem Cell Bioengineering, National Institute of Biostructures and Biosystems by the Institute of

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Cardiology of Sant'Orsola Malpighi Hospital in Bologna); *Professor Angelo Marzollo* (Professor of Systems Theory, Faculty of Sciences, University of Udine; Vice General Secretary of the International Centre for Mechanical Sciences; UNESCO ex-person in charge for Mathematics and now consultant); *Professor Giovanni Sambin* (Professor of Logic Mathematics, University of Padova); *Dottor Matteo Luteriani* (Publisher, Journalist and Master of Martial Arts), *Dottor Massimo Mori* (Doctor, Poet and Master of Taiji Quan) and *Eng. Flavio Daniele* (Writer and Master of Taiji Quan)

The following guests took part in the Conference through their representatives: *Professor James K. Gimzewski* (Department of Chemistry and Biochemistry, University of Los Angeles – UCLA; Director of the “Pico Lab” Laboratory at UCLA); *Professor Aldo Stella* (Teacher of Medical Psychology, University of Urbino; Teacher of Psychology of Cognitive Processes, University for Foreigners of Perugia); *Professor Carmelo Di Stefano* (Teacher of Teaching Didactics of the Adapted Movement and Sports Activity, Faculty of Motor Sciences, University of Bologna). **Andrea Pezzi (E-mail: andrea.pezzi@ovocom.it) served as a moderator**

Selected Abstracts

Carlo Ventura, MD, PhD: Western science has long been entangled with increasing reductionism and the development of ‘field restricted’ approaches to understand cell biology and the molecular basis of disease. It is now becoming increasingly evident that reductionism is a remarkable bias in pursuing some of the major goals of modern biology and medicine. Complex problems, including cell growth and differentiation under normal or malignant conditions (cancer), and the adaptive mechanisms of humans to multiple changes in cell signaling networks now pose the need for holistic approaches both at the molecular biology and medical levels. Such a requirement is even more urgent in spite of the emerging interest in stem cell biology, since taking a glimpse at the mechanisms underlying cell commitment and fate specification may hold promises for a revolutionary field, the so-called ‘regenerative medicine’. While moving from reductionism to holistic approaches, the cell is studied as an integrated system, behaving as a neural network with complex and sophisticated logics. Awareness of these features has progressively led to wide-ranging strategies in the investigation of gene and protein expression. Techniques such as the DNA microarray and the Serial Analysis of Gene Expression (SAGE) are now able to follow the expression of thousands of genes and signaling molecules at a time, attempting to uncover the overall plans that underlie molecular patterning and cellular decisions. This has led to the onset of the

‘OMICS’ era (genomics, proteomics) and will hopefully form the scientific underpinning for moving from basic science to a clinical practice in which physicians will learn how to deal with illness rather than disease (or even worst, diseased organs). A major sign of these cultural changes is provided by the ongoing development of nanobiotechnologies. In both the philosophical and visual sense, ‘seeing is believing’ does not apply to nanotechnology, for there is nothing even remotely visible to create proof of existence. On the atomic and molecular scale, data is recorded by sensing and probing in a very abstract manner, which requires complex and approximate interpretations. More than in any other science, visualization and creation of a narrative becomes necessary to describe what is sensed, not seen. We have growing needs for separating the ‘informational content’ of life from its ‘material substrate.’ ‘Information is thought to be the essence of life, as in the DNA code (James K. Gimzewski, University of California at Los Angeles, Department of Chemistry and Biochemistry, Director of “The Pico Lab” at UCLA).

Prof. Edwin Cooper highlighted how different alternative medicines if integrated can be useful to reclaim that holistic view of the diseased person, that an excessive specialization has made modern western medicine lose and he illustrated the work done in this direction by the biomedical journal *eCAM*. Disease has always been of enormous concern in human society. From prayers and spells to the birth of medicine as a rational science, man has developed all sorts of medical treatments to combat different illnesses and chronic ailments: According to the Chinese proverb: ‘*life is worth more than a thousand gold pieces.*’ The first objective in a serious approach to complementary and alternative medicine (CAM) should be to obtain a broad understanding, with a minimum of detail, of how CAM fits into the pattern of biology—of the way in which the nervous, endocrine and immune systems coevolved, their function and coordination with other body systems, and their development from the embryo onwards including aging. At the same time, such an outline should provide an adequate background for easy application of CAM ideas to the detail of practical CAM work in public health, clinical and medical practice, and yet not stray far away from its essence, the very biology that undergirds it. CAM is organismic, considers the whole individual and is inclusive, not reductionist nor exclusive. Concerning senescence and age-associated diseases, that accompany longer living populations, substantial attention is now focused on searching for: (i) mechanisms of aging and (ii) approaches to ameliorate or lessen the effects through the use of therapies, some of which utilize natural products from aquatic and terrestrial plants and animals. Clearly there are numerous treatments to explore and to understand long past the anecdotal information that has been passed on through centuries.

There is evidence for treatment of diseases of an ever-aging society especially in developed countries. It is of great interest that these remedies now being refined by *eCAM* approaches derives almost entirely from primitive societies where there are minimal facilities essential for analyses by an evidence-based approach.

Dott. Massimo Mori said: '[...] If the scientific research is free, the same is not valid for its technological applications, which have to serve an ecology of culture marked by wisdom, an ecology of the mind, as wrote Gregory Bateson, in harmony with nature; nature, where the uncertainty principle of Werner Heisenberg has scientific and philosophical value; harmony, comprising the clash and entropy of Ilya Prigogine as factors of transformation. A holistic view recomposing the divided self of Ronald D. Laing, giving deepness to the one-dimensional man of Herbert Marcuse.'

Prof. Angelo Marzollo highlighted the importance of combining the art of 'to say' with the art of 'to do', i.e., that the learned man, the intellectual is direct evidence of the ideas carried on by him, that the body does not contradict the mind, that the body-mind unit remains not only a theoretical statement.

Prof. Giovanni Sambin said: 'Although the theme is science, I can speak only about my specialization. The foundations of mathematics have attracted me for over 40 years. I made it my profession. Believe me, I still am not bored. I am fascinated by oriental wisdom, but I know almost nothing about it because of lack of time. I am here only because I am trying to learn Tai Ji Quan, with Master Roberto Benetti.' Mathematics is important in western science. Galilei was the first to propose that the laws of nature are written in the language of mathematics. Newton found the laws of astronomy. Leibniz and Newton introduced calculus which makes physics an exact science. This has been the base for inventions characterizing industrial revolution in XIXth century. By using mathematics, Einstein wrote his relativity. And so on. So mathematics is at the base of present-day western technological supremacy. In modern times, debate concerning foundations of mathematics has been most lively at the beginning of XXth century. One of its outcomes was the invention of programmable computers, which speaks of its importance. One of the competing theories, still living today, is constructivism. The first who proposed it was L.E.J. Brouwer 1881–1966, on the basis of mysticism. I am not a believer, but I find constructivism much more convincing than the now dominating theory, which is called classical and is considered by most scientists as an absolute truth.

To do modern mathematics one needs an abstract notion of concept, or set. In the classical approach, one has classical logic (by which all propositions are either true or false, any third possibility like abstinence is excluded) and axiomatic set theory (all sets are there

already, a static universe containing now, and ever, all possible concept-sets). The mental scheme looks as something like: classical mathematics is at the base of western science, which is the reason for technological superiority, which makes western people the owners of the world. Hence it must be that western mathematics, and all what follows from it, is an absolute truth, which can be imposed on others by force.

Needless to say, this view can be extremely dangerous. Here and in all my life, my aim is to show that a different foundation of mathematics is possible, which has the same applications, but which avoids any form of fundamentalism. A way of doing mathematics is possible, in which the will of power is replaced by harmony with nature, control is replaced by knowledge, brute external force is replaced by internal energy, the search for the 'strongest' possible theory is replaced by the appreciation of the most respectful. I want to emphasize that originally this was not motivated by some ethical or political principles, rather by the search for a better foundation of mathematics.

Master Flavio Daniele emphasized as most advanced research of the last decades of the past century in the field of cognitive sciences and neurosciences led to a new theory, revolutionizing the traditional Cartesian concept of mind. This theory, known as *the Santiago Theory of Cognition*, claims that mind can no longer be regarded as a *thing* but as a *process*. *Process*, which is *cognition* to which belong perceptions, emotions and actions, the language, the conceptual thought and all the attributes of conscience, which is peculiar to man. This view, perfectly in line with the eastern traditional thought, entails that mind with its cognitive processes goes beyond the rational aspect as *it includes the whole process of life*. A further implication of this theory, which will show its vast potential, when it will be absorbed at the general cultural level, is that mind and matter are no longer regarded as separated dimensions, but as complementary aspects of the sole phenomenon of life: *the process (the mind) and the structure (the brain)*. *Mind and matter, process and structure are indivisibly connected at all levels of life: from the simplest cell to the most complex organism*.

This connection is so deep, as most recent studies in the field of cognitive sciences has demonstrated, that we can state, '*conceptual thought, on the whole, is physically incarnated in the body and in the brain*.' This goes beyond the simple consideration that to think we need a brain and leads to state that '*human reason does not transcend body, but it is structurally shaped by our physicality and body experience*.' A further discovery of cognitive sciences, consequent to it that: (1°) *mind is deeply incarnated in the body*, and the other that, (2°) *thought is mainly unconscious*, is that (3°) '*abstract concepts are to a large extent metaphorical*.'

For the time being, present researchers have not explained in detail the neurophysiological dynamics underlying the formation of abstract concepts; however, the scientists Lakoff and Johnson state that *'the neural and cognitive mechanisms enabling us to sense and move are the same to create also our conceptual structures and our ways of reasoning.'* This statement that conceptual structures and ways of reasoning come from the same neural and cognitive structures of perception and movement, is extremely important for the practitioners of the arts of movement (taiji quan, yoga, sacred dances, ritual gestures or mudra), as it demonstrates and confirms the creative power of movement, which *no longer acts as simple instrument at the service of mind, to play the fundamental role of shaper of the cognitive capabilities (conceptual thought, speech, conscience) of the human mind.*

By paraphrasing Maturana and Varela, we could say: *Movement is 'cognition', the process of knowledge, and it is identical to the process of life self.* Nevertheless, beyond the dialectics coming from the differences, it is more and more important to reintroduce a principle, acting as basis for the man universally, a principle which is internal and unconventional, an equal able to give the equal to all psycho-biological behaviors of the human being. In Italy this kind of research has always taken place, and in recent years has made its way into the experimental evidence of a psychology able to touch this dimension.

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