Mathematics for Everything with Combinatorics on Nature

A report on the promoter Dr. Linfan Mao of mathematical combinatorics

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The science's function is realizing the natural world, developing our society in coordination with natural laws and mathematics provides the quantitative tool and method for solving problems helping with that understanding. Generally, understanding a natural thing by mathematical ways or means to other sciences are respectively establishing mathematical model on typical characters of it with analysis first, and then forecasting its behaviors, and finally, directing human beings for hold on its essence by that model.

As we known, the contradiction between things is generally kept but a mathematical system must be homogenous without contradictions in logic. The scientist Einstein complained once about the classical mathematics that "as far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality". Why did it happens? It is in fact result in the consistency on mathematical systems because things are full of contradictions in nature in the eyes of human beings, which implies also that the classical mathematics for things in the nature is local, can not apply for hold on the behavior of things in the world completely. Thus, turning a mathematical system with contradictions to a compatible one and then establish an envelope mathematics matching with the nature is a proper way for understanding the natural reality of human beings. The mathematical combinatorics on Smarandache multispaces, proposed by Dr. Linfan Mao in mathematical society nearly 10 years is just around this notion for establishing such an envelope theory. As a matter of fact, such a notion is praised highly by the Eastern culture, i.e., to hold on the global behavior of natural things on the understanding of individuals, which is nothing else but the essence of combinatorics.

Linfan Mao was born in December 31, 1962, in a worker's family of China. After graduated from Wanyuan school, he was beginning to work in the first company of China Construction Second Engineering Bureau at the end of December 1981 as a scaffold erector, then appointed to be technician, technical adviser, director of construction management department, and then finally, the general engineer in construction project, respectively. But he was special preference for mathematics. He obtained an undergraduate diploma in applied mathematics and Bachelor of Science of Peking University in 1995, also postgraduate courses, such as those of graph theory, combinatorial mathematics, … , etc. through self-study, and then began his career of doctoral study under the supervisor of Prof. Yanpei Liu of Northern Jiaotong

University in 1999, finished his doctoral dissertation "A census of maps on surface with given underlying graph" and got his doctor's degree in 2002. He began his postdoctoral research on automorphism groups of surfaces with co-advisor Prof. Feng Tian in Chinese Academy of Mathematics and System Science from 2003 to 2005. After then, he began to apply combinatorial notion to mathematics and other sciences cooperating with some professors in USA. Now he has formed his own unique notion and method on scientific research. For explaining his combinatorial notion, i.e., any mathematical science can be reconstructed from or made by combinatorization, and then extension mathematical fields for developing mathematics, he addressed a report "combinatorial speculations and the combinatorial conjecture for mathematics" in the 2nd Conference on Combinatorics and Graph Theory of China on his postdoctoral report "On automorphism groups of maps, surfaces and Smarandache geometries" in 2006. It is in this report he pointed out that the motivation for developing mathematics in 21th century is combinatorics, i.e., establishing an envelope mathematical theory by combining different branches of classical mathematics into a union one such that the classical branch is its special or local case, or determining the combinatorical structure of classical mathematics and then extending classical mathematics under a given combinatorical structure, characterizing and finding its invariants, which is called the CC conjecture today. Although he only reported with 15 minutes limitation in this conference but his report deeply attracted audiences in combinatorics or graph theory because most of them only research on a question or a problem in combinatorics or graph theory, never thought the contribution of combinatorical notion to mathematics and the whole science. After the full text of his report published in journal, Prof. L. Lovasz, the chairman of International Congress of Mathematicians (IMC) appraise it "an interesting paper", and said "I agree that combinatorics, or rather the interface of combinatorics with classical mathematics, is a major theme today and in the near future" in one of his letter to Dr. Linfan Mao. This paper was listed also as a reference for the terminology COMBINATORICS in Hungarian on Wikipedia, a free encyclopedia on the internet. After CC conjecture appeared 10 years, Dr. Linfan Mao was invite to make a plenary report "Mathematics after CC conjecture--Combinatorial Notions and Achievements" in the International Conference on Combinatorics, Graph Theory, Topology and Geometry in January, 2015, surveying its roles in developing mathematics and mathematical sciences, such as those of its contribution to algebra, topology, Euclidean geometry or differential geometry, non-solvable differential equations or classical mathematical systems with contradictions to mathematics, quantum fields and gravitational field. His report was highly valued by mathematicians coming from USA, France, Germany and China. They surprisingly found that most results in his report are finished by himself in the past 10 years.

Generally, the understanding on nature by human beings is originated from observation, particularly, characterizing behaviors of natural things by solution of differential equation established on those of observed data. However, the uncertainty of microscopic particles, or different positions of the observer standing on is resulted in different equations. For example, if the observer is in the interior of a natural thing,

we usually obtain non-solvable differential equations but each of them is solvable. How can we understand this strange phenomenon? There is an ancient saying in China which answer this thing, i.e., "know not the real face of Lushan Mountain, just because you are inside the mountain". Hence, all contradictions are artificial, not the nature of things, which only come from the boundedness or unilateral knowing on natural things of human beings. Anything inherits a combinatorial structure in the nature. They are coherence work and development. In fact, there are no contradictions between them in the nature. Thus, extending a contradictory system in classical mathematics to a compatible one and establishing an envelope theory for understanding natural things motivates Dr. Linfan Mao to extend classical mathematical systems such as those of Banach space and Hilbert space on oriented graphs with operators, i.e., action flows with conservation on each vertex, apply them to get solutions of action flows with geometry on systems of algebraic equations, ordinary differential equations or partial differential equations, and construct combinatorial model for microscopic particles with a mathematical interpretation on the uncertainty of things. For letting more peoples know his combinatorical notion on contradictory mathematical systems, he addressed a philosophical report "Mathematics with natural reality—action flows" on the National Conference on Emerging Trends in Mathematics and Mathematical Sciences of India as the chief guest and got highly praised by attendee in December of last year.

After he finished his postdoctoral research in 2005, Dr. Linfan Mao always used to combinatorial notion on the nature and completed a number of research works. He has found a road from combinatorics to topology, topology to geometry, and then from geometry to theoretical physics by combinatorics and published 3 graduate textbooks in mathematics and a number of collection on research papers for the guidance of young teachers and post-graduate students understanding the nature. He is now the president of the Academy of Mathematical Combinatorics & Applications (USA), also the editor-in-chief of International Journal of Mathematical Combinatorics (ISSN 1937-1055, founded in 2007).

Go your own way. "Now that the goal is the horizon, leaving the world can be only the back". Dr. Linfan Mao is also the vice secretary-general of China Tendering & Bidding Association at the same time. He is also busy at the research on bidding purchasing policy and economic optimization every day, but obtains benefits from the research on mathematics and purchase both. As he wrote the postscript "My story with multispaces" for the Proceedings of the First International Conference on Smarandache Multispace & Multistructure (USA) in 2013, he said: "for multispaces, a typical example is myself. My first profession is the industrial and civil buildings, which enables me worked on architecture technology more than 10 years in a large construction enterprise of China. But my ambition is mathematical research which let me learn mathematics when I was a doctoral candidate in the Northern Jiaotong University and the postdoctoral research fellow in the Chinese Academy of Sciences. It was a very strange for search my name on the internet. If you search my name Linfan Mao in Google, all items are related with my works on mathematics, including my monographs and papers published in foreign journals. But if you search my name

Linfan Mao in Chinese in Baido, a Chinese search engine in China, items are nearly of my works on bids because I am simultaneously the vice secretary-general of China Tendering & Bidding Association. Thus, I appear 2 faces in front of the public: In the eyes of foreign peoples I am a mathematicians, but I am a scholar on theory of bidding and purchasing. So I am a multispace myself." He also mentioned in this postscript: "there is a section in my monograph Combinatorial Geometry with Applications to Fields published in USA with a special discussion on scientific notions appeared in TAO TEH KING, a well-known Chinese book, applying topological graphs as the inherited structure of things in the nature, and then hold on behavior of things by combinatorics on space model and gravitational field, gauge field appeared in differential geometry and theoretical physics. This is nothing else but examples of applications of mathematical combinatorics. Hence, it is not good for scientific research if you don't understand Chinese philosophy because it is a system notion on things for Chinese, which is in fact the Smarandache multispace in an early form. There is an old saying, i.e., philosophy gives people wisdom and mathematics presents us precision. The organic combination of them comes into being the scientific notion for multi-fact-ed nature of natural things on Smarandache multispaces, i.e., mathematical combinatorics. This is a kind of sublimation of scientific research and good for understanding the nature."

This is my report on the promoter Dr. Linfan Mao. We therefore note that Dr. Linfan Mao is walk on a way conforming to the natural law of human understanding. As he said himself: "mathematics cannot be existed independent of the nature, and only those of mathematics providing human beings with effective methods for understanding the nature should be the search aim of mathematicians!" As a matter of fact, the mathematical combinatorics initiated by him in recent decade is such kind of mathematics, following with researchers, and there are journals and institutes on such mathematics. We believe that mathematicians would provide us more and more effective methods for understanding the nature following his combinatorical notion and prompt the development of human society in harmony with the nature.