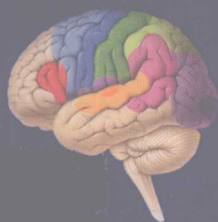


大脑功能模式（型）理论： 记忆、思维和意识的秘密

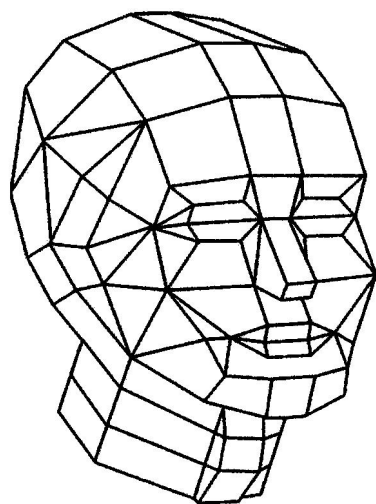


THEORY ON THE BRAIN'S FUNCTION PATTERN (MODEL) :
SECRET OF MEMORY, THINKING AND CONSCIOUSNESS

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THEORY ON THE BRAIN'S FUNCTION PATTERN (MODEL) :
SECRET OF MEMORY, THINKING AND CONSCIOUSNESS

席 有 著



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内 容 简 介

作者从神经解剖学、神经元分子生物学、哲学、辩证逻辑学、心理学、社会学等多学科方面综合研究认为,人类大脑具有基因遗传决定的生理结构和特性,其功能就是在客观事物情境刺激下,大脑功能区、细胞柱,尤其是不分功能区的有关神经元、突触、树突棘等发生微观形态改变,并彼此协同作用、联合互动建构为多种印迹路径图式,即大脑功能性记忆模式。在客观事物情境变化对记忆模式的不断刺激下,大脑会建构巨量的不同层次的模式(型)。模式(型)多种形态的激化就是大脑记忆、思维、意识、主观世界和精神境界等一系列大脑功能秘密的展现,此即为大脑功能模式(型)理论。这一理论对神经科学、心理学、哲学有关的问题给出了科学的解释。

这是一本生命科学研究领域世界性前沿的专著,可供神经科学、哲学、心理学、社会学等专业大学生、研究生和学者阅读,也可供生命科学研究相关的科研工作人员学习和参考。

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序

FOREWORD

这是一本用科学和哲学等综合学科研究大脑功能的专著。

关于大脑记忆、思维、意识的功能，历史上许多学科分别进行过长期的研究，并在各自研究领域内取得可喜成果，但至今未得出令人信服的结论，目前依然是生命科学研究的全球性最前沿课题。

作者对大脑功能研究进行过长期努力，经过多年对多学科的精心钻研，用哲学观点进行分析，认为大脑基因遗传决定的生理结构和特性与大脑记忆、思维和意识功能之间的联系，中间必定有个过程发生和中介环节的建构的过程，才使二者发生质的联系，这就是大脑功能模式(型)环节建构，这也是作者研究该项题目采取的第一进路。第二个研究进路，认为记忆、思维、意识、自我主观世界、超越自我主观世界梯级层次建构关系，不能分别进行研究。梯级层次建构系列与各梯级层次、梯级层次之间是整体与局部、局部与局部、复杂与简单、上层与基础的关系，既是相互紧密联系彼此渗透和依存的关系，又是互相转化和循环发展的可逆系统的关系。

进路的正确选择，是研究宏观战略的需要。具体写作过程，作者以自己的渊博知识为基础，采用多学科综合的研究方法，从神经生理学、神经解剖学、神经分子生物学、脑科学、哲学、辩证逻辑学、社会学、心理学等多学科吸取营养，建立了一套相对完整的“大脑功能模式(型)理论”。这一理论的创建，打破了自然科学与社会科学壁垒，是高度抽象、深刻感悟和进入哲学境界后完成的著作。

大脑功能模式(型)理论提出的新观点、新概念，可以解释人为什么会建构记忆、思维、意识功能，记忆、思维、意识功能展现与客观事物情境为什么具有一致性等，还能解释哲学与心理学学科至今仍不能说清楚的问题，如人为什么能建构自



我主观世界,什么是自我主观世界的性格、能力、气质、意志、情感(情绪)等心理特征模式,什么是主观世界和客观世界并存的二元论,为什么主观世界可以有限地改造客观世界等。可以回答至今心理学一直想要解决的问题,如人为什么会做梦,为什么会产生宗教信仰,人是否有“灵魂”、是否有天才和灵感,什么是人类个体的聪明才智等,这些与基因遗传有什么关系? 亲子情感模式格外亲、濒死经验、说谎、偏见等。上述所有问题和现象是人类至今无法说清的问题,用大脑功能模式(型)理论完全解释得通。

作者是我大学的老师,也是我心目中最尊敬的老师。他在古稀之年能完成如此大作,与他一生不懈追求、历经艰辛的奋斗精神有关,与他的学风师德、人格魅力是分不开的。作为学生有幸提前拜读了“大脑功能模式(型)理论”书稿,又一次得到老师的教诲,真是人生之幸。应老师之邀,为老师大作作序,献上我衷心的祝贺。

中国科学院虚拟经济与数据科学研究中心研究员 崔 福

2010年2月

前言

PREFACE

人的头脑通称为大脑。大脑具有由基因遗传(统一性和多样性)决定的生理结构和特性,其功能就是记忆、思维和意识。大脑何以能够建构记忆、思维和意识?自古以来,人们对此孜孜以求,但因为不像客观事物那样真实显性地存在,所以至今仍是一个不解之谜,也是目前生命科学研究领域世界性的最前沿课题。

人类对这个问题从各个方面、多学科(自然科学与社会科学)进行了长期的探索,各自学科又从不同的研究领域建立了相应的认知观点,但受到实践性活动和技术性实验的严重限制,今天人们对大脑记忆、思维和意识研究取得的成果依然是相对无奈的探索性研究。

目前大脑功能研究的进展情况说明,问题的真正解决还需要多学科的联合攻关,在学科间的边缘交叉地段寻找联结并建立关系,才可能做出有意义的突破。本书就是以脑科学基本原理、神经解剖学、神经元分子生物学、辩证逻辑学、哲学和心理学及心理学研究的成果为起点,从微观科学、以量子水平(神经递质的分泌就是量子水平)研究方式为出发点,对这一问题进行了深入全面的探讨。目前大脑基因遗传决定的生理结构和特性的研究成果为一端,同时大量的哲学、心理学、脑科学等研究对大脑记忆、思维和意识功能研究经验性探索成果为另一端,从哲学角度看问题,认为两端之间联系发生的过程和中介环节建构,才是解开大脑建构记忆、思维和意识的秘密的关键。本书就是从发生的过程和中介环节建构入手,以全新角度和独特的思路,破解大脑记忆、思维和意识功能秘密的最新研究成果。

记忆功能是客观事物情境模式刺激通过人自己的感觉系统(中介),使大脑生



理结构组成部分(尤其是神经元、突触、树突棘)形态改变并建构系统性的路径和生物场域内体态能势(简称生物场势)调整而产生的。大脑生理结构相关的形态改变,即印迹之间发生相互联系,彼此协同作用,并超越了临界点,即建构为一种路径(路径建构与部分形态改变的印迹之间是相辅相成的关系)。形态改变部分即印迹路径联合互动转化形成网状结构的图式,是大脑相关功能区之间建构的印迹路径图式过程,也是建构记忆功能过程。任何神经事件活动对大脑结构组成部分刺激而发生形态改变,即进行的把握和改造,建构的是模态化程式印迹路径图式,就是建构模式,这个模式具有记忆的功能,称作记忆模式的建构。大脑内在性记忆模式的建构与外在的刺激性客观事物情境模式保持着高度的一致性,是物理(经验)实在模式在大脑中的存在。人的大脑可以建构大量的记忆模式,且不断积累并储存,使大脑具有了建构主观世界的基础性资源,资源的积累才使大脑真正建构了自己主动认识客观事物的基础性功能。记忆模式即印迹路径图式具有多次多元的选择性和建构性、很强的开放性和发展的生物场域体态能势变化的稳定性。不同单元、级别、式样和种类记忆模式建构的结构复杂程度,决定了人对客观事物感觉或知觉的不同深度的认识水平。

思维功能是在客观事物变化的情境模式再刺激时,人的大脑本身存在的生理结构和特性,决定已建构的所有记忆模式(感觉或知觉)之间进一步发生局部形态再改变,相互联系、彼此协同作用、联合互动转化为网状重叠的联系,即所有的记忆模式之间重新组合,再建构转化为思维模式。大量的思维模式建构,是记忆模式之间的重新组合再建构的产物,是在记忆模式基础上的再建构模式,所以具有虚拟性;是其对大量记忆模式广泛的选择和提纯而建构的思维模式,所以又具有概括性。思维模式是通过记忆模式与客观事物情境相联系,所以与客观事物的关系具有间接性和抽象性。具有高度的虚拟性、概括性、间接性和抽象性的思维模式,是高度超越客观事物虚拟实在的模式。虚拟实在的思维模式具有反馈功能,反馈功能促进记忆模式加快建构速度。大脑建构的思维模式通常会转化为虚拟性记忆模式,并加以保存。虚拟记忆模式之间(亦可以和物理实在记忆模式)进一步重新组合再建构思维模式,是更为强烈的虚拟实在的模式,如此多次循环,层级滚动发展,使思维模式更为强劲虚拟,成为自我主观独立自主的根据。思维模式打破了记忆模式与客观事物保持一致性原则,对客观事物(模式)具有任意的把握和改造的可能性,把握和改造过程及其结果存在着不确定性、创新性和虚拟性,是人类创造发明的根据。创造发明是否具有客观真理性,这不是一个理论问题,而是一个实践问题。思维模式重新组合再建构具有阶段性的过程,阶段性建构的思维模式成果是知性思维模式,知性思维模式发展、相对完善的、具有结论性思维模式的建构,就是理性思维模式建构,所有思维模式建构是一个过程,永远不会有最后相对完善的结论。



思维模式大量的建构,成为大脑建构自我主观世界的上层资源。由基础资源(记忆模式)和上层资源(思维模式)共同建构的自我主观世界(自我),是粗糙的自我主观世界,与客观世界紧密联系又有本质的独立性和质的区别,它建构在客观世界基础之上(记忆模式与客观事物保持一致性原则),又超越并把握和改造客观世界(思维模式打破了记忆模式与客观事物保持一致性原则)。主观世界与客观世界既统一又对立的关系,就是哲学意义上的主观世界与客观世界二元论并存的根据。主观世界的最高境界和基本虚幻特性就是意识模型的参与。

“意识不是终止的空话”。意识功能是所有的记忆模式(指不同单元、级别、式样和类型记忆模式)和多重多维的思维模式(不同量度、各种各级的知性和理性建构形式)之间内在性整合组构中生成和发展的过程展现,也是大脑生理结构功能性可以“突现”的模型表现。客观事物情境模式刺激再次发生使大脑建构的记忆模式(包括原来参与思维模式建构基本完善的或需要新建构的记忆模式)和具有创新性、不确定性和虚拟性的思维模式激活和约束条件,二者整合组构而生成和发展过程产生的模型。模型具有向物理实在回归运作的开放性,对所有模式(记忆和思维模式)又有反馈功能,并促进其建构,是人类个体自我主观世界特有的最高境界和特性的反映,这种模型称为意识模型。意识模型是在记忆模式和思维模式经过多次多元、多重、多维的各种形式整合组构基础上发生的,是生成和发展的过程并可以突现的模型。意识模型包括有意识和无意识两种模型。意识模型不突现时,在大脑是以记忆和思维模式分散而潜藏(没有保存形式)于大脑所有模式之中,是无意识模型;在新的特殊的情境刺激下无意识模型转为显性突现,是有意识模型。意识模型更加具有不确定的虚幻性。

意识模型与所有模式(记忆模式与思维模式)的总和就是自我主观世界建构的全部。自我主观世界表现的形态,就是不同情境模式刺激以模式或模型分别或相互转化发展的形态展现。意识模型表现是自我主观世界主体的最高境界,突现的意识模型对客观世界进行把握和改造,就是人类意识模型把握和改造客观世界活动具有目的性的根本源泉。自我主观世界的异化就是超越自我主观世界,即超我。超我的所有言行,就是进入精神生活境界的活动。

记忆模式、思维模式、意识模型、自我主观世界建构是梯级层次演进、分化发展的关系,是人类认识客观事物并不断向高层次认识发展的因果关系,应该是人类种系进化表现在大脑演进、分化和发展的基本过程。即人类大脑进化经过几次升华质变建构的自我主观世界来源于客观世界,又超越客观世界,与客观世界具有本质区别,并创造性地主导着客观世界的建构,成为与客观世界并存的自我主观世界。同时,这种向上发展的因果关系展现过程,其梯级层次都是过渡的开放的关系。这种关系也表现在人类个体大脑生长发育重复着人类种系演进、分化和发展的基本路径上。



记忆模式、思维模式、意识模型、自我主观世界建构之间,具有系列的物理实在与虚拟实在统一的特性,并相互紧密地联系、作用和转化,所以记忆模式、思维模式、意识模型、自我主观世界建构等随着个体从婴幼儿生长发育开始,逐步出场展现,其建构速度越来越快。记忆模式是物理实在,也是最低层的存在,在向上转化的各梯级层次虚拟实在中无处不在,即使在自我主观世界建构中,也将有记忆模式存在并建构其中才得以成立。其中记忆模式从大脑建构最低层到最高层,始终起着积极支撑各级虚拟实在的建构作用,所以人类个体大脑所有系列建构,直至自我主观世界建构,依次逐个梯级层次加强着自我主观性建构,又不是完全纯粹的主观性建构。随着梯级层次发展始终由多到少,伴有相对的客观性因素的存在。

记忆模式、思维模式、意识模型、自我主观世界建构、超越自我主观世界即进入精神生活境界(超我)的系统理论建立,为研究有关大脑功能运行机制建立了一套模式(型)理论,简称大脑功能模式(型)理论。从研究的出发点和方法,到过程及其结果,有许许多多新观点的提出,完全走出各有关学科原来传统的范畴和轨迹。所以大脑功能模式(型)理论会对目前有关学科的研究提出的问题给予明确、科学而令人信服的说明和解答。

从哲学的观点看问题,人类科学发展常常总是被迫在起点上重新开始研究,因为人们从来对现存的任何事情不认为是天经地义、理所当然的。“对任何现存事物的肯定理解中同时包含着否定的理解”等这些观点,正是大脑功能模式(型)理论的建立的基础,也是本书立论的出发点和动力源泉。本书题目是一个庞大繁杂的具有系统性的总题目,六大章为分题目,各段标题又是为论述分题目而设置。不同梯级层次的题目研究的内涵,有其各自创新观点和提法,各具独立性和独特性,每一创新观点和提法之间又具有相互联系、彼此交织的系统性和统一性,构成相对完善的整体。部分内容具有各自特性的表述,部分内容又前后对照呼应。所以,本书是一部具有前瞻性、创意性科学新理论研究的大脑功能模式(型)理论专著。

应该指出,大脑功能模式(型)理论的许多观点是最新提出的,而且仅仅是一家之言,肯定是不够完善的,不能说是已经达到相对完整的理论。正如麦克斯·普朗克所讲:“在科学的发展中,一个概念从来都不会是刚开始就以其最后的完整形式出现,就像古希腊神话中雅典娜一下子从宙斯的头里跳出来的那样”,所以本书观点肯定会有很多值得商榷之处,希望感兴趣的专家给予批评指正。大脑功能模式(型)理论有待修改、有待完善,也说明大脑功能模式(型)理论还有更加广阔的发展空间。

此书在写作和出版过程中,得到许多专家和领导的指点、支持和帮助,尤其得到中国科学院虚拟经济与数据科学研究中心崔福研究员的大力指导。还有内蒙



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席 有

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PREFACE

Human's cerebrum is collectively called brain. Brain has the special physiological structures and characteristics which were mainly determined by the genes (oneness and diversity). The functions of the brain include memory, thinking and consciousness. How, you may wonder, does the brain be capable of establishing these functions by itself? Down the ages, human beings endlessly explore it in order to reveal it. However, the functions of brain does not exist as the objective things and events, it was still an unsolved mystery so far. How could the brain remember, think and sense? It is still the leading front in the research field of life science at the present time.

Human beings have explored the question for a long time and from many aspects as well as different subjects (natural science and social science), the different subjects have established the diverse categories and created their own cognizing viewpoint, all these works had a great scientific significance for carrying out research on physiological structures and characteristics of the brain. However, nowadays, with the severe restrictions of practical activities and experiment technologies, the research on brain's memory, thinking and consciousness still keep in exploratory.

The research progress on brain's function showed that it really called for the cooperation of multi-disciplinary efforts to answer the key questions, find the links in the margin fields among the disciplines, and establish the relationships. Only by this way, can we make breakthrough on understanding the brain's com-



prehensive function. The starting point of this book is based on the research results of the fundamental theory of brain science, neuroanatomy, neuron molecular biology, dialectical logic, philosophy, and psychology, a fully and profoundly discussion has been carried out by the method used in micro-science, and on the level of quantum (for example, secretion of neurotransmitters is on quantum level). Now we regarded the consequences of the physiological structures and characteristics which were depended on the genetics as one side, and regarded the research results of the fundamental theory of brain science, neuroanatomy, neuron molecular biology, dialectical logic, philosophy, psychology, as the other side, looked into the questions from the philosophical point, we concluded that the relations between two sides and the configurations of mediate processes are the critical points which may only solve the problems. The book started from the processes of signal generation and mediate connections establishment with the fresh prospective and special thoughts, had the latest and scientific significance in the study of brain memory, think and sense.

Memory functions are the parts of brain physiological structures (neuron, synapse, neurogram) changes in forms and created the ways of system and the modulations of the physical appearance in the biocycle which were stimulated by the objective things through our own sense system. (mediums). The parts of components of the brain physiological structures changes interacted each other beyond the critical points, and then configured the routes (the route creation and form changes are supplemented each other). Form changed parts, namely, are the web-like pictures which were formed by the print routes associated and interacted each other, and the procedures between the brain function regions created the print route pictures, that is the process of memory configuration. Any kind of nervous event activities would change the brain structures by the stimulations, namely, certainty and modification, created the modeling formula print route patterns, namely, called construction mode, which had the function of memory, was definite as mode construction. The construction of the memory modes were highly consisted with the objective things modes, which was the physic (experiences) real existed in the brains. The human brains can construct a plenty of memory modes and then accumulated and stored them, which endowed the brains with the resources that created the subjective world basics, constructed the functions of the brains which brain cognize the objective things by itself. Memory modes, namely, are the stabilities of print route pattern have repeatedly, multielement,



constructive, strongly openness and the shifts of the developed bio-field. All of the constructed modes in different unit, level, pattern and sort, had their complexities, which were the human sense to different things or sense levels.

Thinking functions, are when objective things modes were stimulated again, the memory modes which were depended on the physiological structures and features will shifted, interacted, cooperated each other, and then become the net-like relationships, that is, all the memory mode will reassemble and construct to thinking mode. Many thinking mode constructions are memory mode reassembled and constructed products, and also is mode based mode, so it has the virtuality; and also is the sense mode which the brain chosen and purified the modes, so it has the generality. Thinking mode interacted with consciousness mode each other, so they can be more indirect and abstractive with objective things. The highly virtuality, generality, indirect and abstractive consciousness mode are highly beyond the objective things virtual real modes. Virtual real sense mode has the functions of feedback, which can enforce the memory mode enhancing the speed of construction and promote the brain's construction modes to construct the virtual sense memory. Among the modes, they will reconstruct thinking modes, these modes are more powerful, and so many cycles can make the new mode more powerful, and then will become the basic that one can be one's own master. The consciousness mode have break the consistency between the memory mode and objective things, has the possibility to create and modify the objective things, the procedures and results of create, modify existed the non-determinacy, innovativeness, and virtuality, all of which are the foundation of human innovations. Whether or not creations and innovations have the objective reality is not an academic problem, but a practical issue. Thinking mode reassembled and reconstructed is periodical process, the results of the thinking modes which were built in the different steps are intellectuality thinking mode, intellectuality thinking mode development, relative consummation, conclusive thinking mode constructions, namely, construction of rational thinking mode. All the thinking mode constructions never will have a consummative conclusion.

The constructions of the thinking mode become the important upper layer resources in which brain creates the subjective world. The subjective world which was built by basic resources (memory mode) and upper layer resources (thinking mode) together is a rough subjective world, which had not only a close relationship with objective world, but a difference in essence and radical independence, it



was established in the basic of the objective world (the principle of identical between memory mode and objective things). Meanwhile, beyond, hold and change it (thinking mode has broken the principles). The relationship of unity of oppositeness between objective world and subjective world is the foundation which two worlds can exist together in philosophical notions. The highest stage of the subjective world and basic fantasy features are the participation of the consciousness mode.

“Consciousness is not an ended talk without real contents”. Consciousness functions are processes in which all the memory modes (different modes in units, classes, patterns, types) and diverse thinking modes (different constructed types in measurements, classes, intellectualities and reasons) to integrate, develop and interact each other, as well as the model which brain's physiological structures and functions can emergent. The participated memory modes, namely, as the restrictive and active conditions in which objective things modes stimulated and appeared again and became creative, non-determinacy and virtuality, they integrated and evolved into the mode in the developed processes. The modes have the openness which can return to the physic reality as well as the feedbacks functions to all the modes and enhance the construct functions, and also is the specialized feature reactions and highest level in human individual, these are called consciousness mode. Basic in repeatedly, multivariant, multiplex types were integrated and constructed, these modes are emergent modes which can be appeared in the generated and developed processes. The consciousness modes contained conscious and unconscious modes. When conscious modes are not emerged, sense and thinking mode will be hided in the brain modes in some dispersed types, this is so-called unconscious modes. When brain was stimulated by the scenes in the outside, the unconscious modes will emerged at once again, to become conscious modes, these modes have more indeterminate fantasy than the former.

The sum of consciousness modes with all other modes (rememberance modes and thinking modes) is the whole construction of the individual subjective world. The displaying types of the individual subjective world are the modes changed each other by different scenes stimulation. Consciousness modes expression is the highest level in the human individual subjective world, the emerged consciousness modes changed the objective world, which is the root that human beings can hold and changed the objective world in their own ways. The alienation of the individual subjective world is beyond the individual subjective world, namely, beyond us.



Beyond all our words and behaviors is to turn out to be our spiritual life activities.

The relationships of individual subjective world evolved step by step and differentiated, developed among memory, thinking modes, consciousness patterns, are the reasons that why human can know the objective things continuously, as well as human beings evolvement in the process of brain changes, differentiations, and development. Namely, after several evolvements, human brains can created their own subjective world which not only come from the objective world, but also beyond that, and had essential differences. Creativity dominated the constructions of objective world to become the individual subjective world which can be existed with objective world together. Meanwhile, the gradient level of upward developed consequence processes is the transition opening relationship, which displayed that the growth and development of human brain repeated the ways of human evolvement, differentiation and development.

Memory, thinking, and consciousness modes possess characteristics of physical and virtual existence, they are closely connected, affected and transformed. Therefore, with the beginning of the development in infants, memory, thinking, consciousness modes and the constructions of the individual subjective world, all of which will be shown step by step, and the speed becomes faster and faster. Memory modes are physical existence, and the lowest level of existence which existed in all the processes of the gradient level transformations upwards, Even in the processes of individual subjective world constructed, memory modes are also involved in. From the lowest level to the highest level of brain development the memory modes played a supportive role in the establishment of the virtual existence. Therefore, all the system constructions in human brain till the constructions of the individual subjective world, starting enforcing individual subjective constructions one by one in gradient level, however, it is not the true subjection. With the development of the gradient levels, memory modes are always coexisted with objective factors from more to little.

The establishment of the systemic theory on memory, thinking, consciousness modes and the constructions of individual subjective world and surpassing our own subjective world to the existence status, is served for the methods (modes) theories used for research on the mechanism of brain work, e. g. brain functions theory for short. A lot of new viewpoints from the research starting-point and method to the processes and results, thoroughly walked out the categories of the former subjects. The theory will favor scientific and convincing an-



swers to the questions brought forward by related principles.

From philosophical point of view, the development of the human science was always forced to research from the starting point, because people never thought anything is unalterable principle. The establishment of the brain function theory, the challenge to the research results did in the past, and the jumping-off place and the driving-force of this book are based on the standpoints that The understanding to anything existed currently would be both positive and negative, The title of the book is a huge complex systematic topic, and was divided into six chapters (units); every chapter was designed for the exposition of each sub-heading. The contents and formulations of different sub-title have their own special and independent innovative points, and each point interacted with other formulation to become relatively perfect unit. Some parts of the contents have special expression and some also symmetry in the book. As a result, the book is a completed work in which brain and creative way.

What we should pointed out here is that theory of brain function is the latest point of view, and only an opinion from author. Limited by author's experiences, it might not be perfect enough. As Max Plank said before, "In the development of science, concept will never appear as the completed form at the beginning just as Athena jumped from Zeus's head in ancient Greece mythology". Therefore, the book is not flawless. The interested scholars, experts and readers are welcome to bring me critics and point out the mistakes so that correction could be made. Theory on brain function pattern (mode) remains to be modified and perfected, and also indicates that brain function pattern (mode) still has an immense space to be developed.

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