

The Law and Applications of the Theory of Yin and Yang

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Abstract: “Yin and Yang” are the components that make up the phenomena of matter system and the interaction basis of pushing forward the change and transmission of matter system: 1. The quantitative basis of “Yin and Yang” is the matching of “Yin and Yang”, and its scientific connotation is the separation and aggregation, which is inevitably followed by the division and recombination of energy to form the expression of the phenomena of matter system, and it can be verified by hydrogen spectrum spectroscopy formula; 2. The qualitative basis of “Yin and Yang” is based on the nature of “Yin and Yang”. The scientific connotation is the judgment of the state of matter phenomena. 3. The qualitative and quantitative analysis of “Yin and Yang” is the basic law of the diversity of phenomena and the description of state.

1. Introduction

The nature of “Yin and Yang” is the substance that constitutes the phenomena of matter system, the quality and energy that promotes the changes of phenomena of matter system, and the theoretical basis of the whole understanding of all matters.^[1] To admit that “Yin and Yang” is the basis for qualitative and quantitative study of the phenomena of matter system. The following descriptions are their basic laws.

2. “Yin and Yang” describe the physical laws of the phenomena of matter system

“Laozi” said that everything contains “Yin and Yang”.^[2] It gave the model of “Yin and Yang” constituting everything. It pointed out that the scientific connotation of “Yin and Yang” is that “Yang” is the macro-structure of the quality system of matter phenomena, and “Yin” is the energy flow potential field matching with “Yang”. Therefore, “Yin-Yang” is the composition of phenomena of matter system, and the change of matter system is the expression of the interaction of “Yin-Yang (mass energy)”, and its law is as follows:

2.1 A General Description of the Constitutive Phenomenon of “Yin and Yang”

According to the model and scientific connotation of “Yin and Yang”, the phenomena of matter system (X) are described by Yang (mass M) and Yin (energy E), which make up the phenomena of matter system.

$$X=F(M,E) \quad \dots \textcircled{1}$$

The meaning of Formula 1 is that any phenomena of matter system always have the interaction expression of matters (mass and energy).

2.2 The Interpretation of Formula 1 on the Theory of “Yin and Yang”

Formula 1 explains the following viewpoints of the theory of “Yin and Yang”:

1) Mass and energy are inseparable components of material phenomena. Therefore, “Yin and Yang” are two inseparable parts of all material phenomena, and “Yin and Yang” have mutual interaction, interdependence and fundamental basis.

2) The existence of Phenomenon X, “Yin and Yang”, which make up phenomena, are interactional and coordinated components, have the so-called characteristics of unity of opposites, i.e. the balance of “Yin and Yang” matching.

3) Mass and energy are inseparable components of phenomena of matter system. Therefore, the

change of phenomena matter system is the separation and aggregation of mass, accompanied by the division and recombination of energy, and the transfer of phenomena is realized; that is, the separation of “Yin and Yang” realizes the transfer of phenomena of matter system.

4) Phenomenon is the expression of Yin-Yang interaction, so it is the projection of interaction in space. To explore the factors that cause the phenomenon is the key to understand the phenomenon as a whole.

2.3 Verification of the Law of Yin-Yang Theory

The phenomenal change of system is the separation and aggregation of mass, the phenomenal transfer accompanied by the division and recombination of energy, and it is the basis of verifying the law of Yin-Yang theory.

2.3.1 Verification of the division and recombination of “Yin and Yang”

The discovery of hydrogen spectrum reveals the change and transmission of macro and micro phenomena, and proves the objective existence of Yin-Yang ionization theory: ionization and energy levels, spectral phenomena, and changes in the state of elements are the changes of material separation and recombination. The empirical formula of hydrogen spectrum is deformed to reflect the existence of this relationship.

① Balmer's empirical formula for hydrogen spectroscopy

$$\lambda = 3645.6 \times \frac{a^2}{a^2 - 4} \times 10^{-10} \text{m}$$

② Formula of hydrogen spectra for division and recombination of matter (deformation formula)

$$\begin{aligned} \lambda &= \frac{2(m_e + m_p)}{m_e} \times \frac{2^n - 2^{n-7}}{2^n} \times \frac{a^2}{a^2 - b^2} \times 10^{-10} \text{m} \\ &= 3645.9 \times \frac{a^2}{a^2 - b^2} \times 10^{-10} \text{m} \end{aligned}$$

③ In the formula of hydrogen spectroscopy for division and recombination of matter, $(m_e + m_p)/m_e$ reflects the effect of mass; $(2^n - 2^{n-7})/2^n$ reflects the relationship between the division and recombination of matter as well as the separation of mass and energy; a^2 and b^2 reflect the influence of energy change ($b < a$), and the size of 10^{-10} space scale is finalized, reflecting the relationship between energy and space reorganization.

④ Spectral phenomena are realized through the change of substance (photon) and energy, which reflects the expression of the interaction between “Yin and Yang”.

2.3.2 The Significance of the Verification of the division and recombination of “Yin and Yang”

The interaction between environment and hydrogen nuclei (system phenomena) is explained through the deformation of the hydrogen spectrum formula. The expression of a phenomenon (spectrum) is the spatial stereotyping of the separation, aggregation and recombination of hydrogen nuclei (system phenomena) matter (mass and energy). The division and recombination of mass and energy and the change of spectrum of different energy levels prove the correctness of the theory of “Yin and Yang”.

3. The Inference of the Application of “Yin and Yang” Matching

All phenomena are the result of Yin and Yang matching, that is, different phenomena have parameters of “Yin and Yang” balance. These parameters are different among phenomena. So “Yin and Yang” balance is not the average of all phenomena, but a kind of self-balance of phenomena itself. It is the application of this theory that establishes the basis of the change direction of Yin and

Yang balance.

3.1 The Judgment of the State of Yin-Yang Balance

“Yin and Yang”, as components of phenomena, form the basis for judging the state of phenomena, which is an important application of “Yin and Yang” theory. Therefore, “Li Yun” of “The Book of Rites” said: if we see things from both “Yin and Yang”, we can see the both sides of something clearly.

3.1.1 The Inference of Yin-Yang Matching (I)

Yin and Yang are the components of interaction and unity of opposites. In the relationship of $X = F(M, E)$, Yin and Yang have the action intensity and direction (vector), Q_E is the action intensity of Yin, Q_M is the action intensity of Yang, then $Q_E = -K \cdot Q_M$; K is the proportional parameter and $K \geq 0$; the negative sign is the opposite direction (action opposition). A brief discussion can be discussed as follows:

① When $K = 1, Q_E = -Q_M$, the phenomena are expressed in a unified way with time, and the Yin and Yang are balanced (Taiji).

② When $0 < K < 1, Q_E < Q_M$, the phenomenon is in the process of development and growth (Shao Yang).

③ When $K > 1, Q_E > Q_M$, it indicates the process of increasing Yin and decreasing Yang (Shao Yin).

④ When K approaches infinitesimal, it indicates the arrival of the change of anode and phenomena (Tai Yin).

⑤ When K approaches infinity, it indicates the prophase of the occurrence of cathode and Yang (Tai Yang).

⑥ When K remains unchanged, Q_M increases with the increase of Q_E , decreases with the decrease of Q_E , expressing that Yang follows Yin (Yang Ming).

⑦ When determining the values of Q_M, Q_E and K must constantly depend on the relationship through the change of the phenomenon $X = F(M, E)$, the expression of the phenomenon is in an unshaped and qualitative change (Jue Yin).

The above discussion is a qualitative theory of state in the process of changing phenomena of ancient Chinese cultural cognitive system.

3.1.2 The Inference of Yin-Yang Matching (II)

Under the relationship of $X = F(M, E)$, “Yin and Yang” can be judged instantly in the process of phenomenal change according to Inference (I). When Q_X is used to express the state of the phenomena in which “Yin and Yang” change, then we can get the result $Q_X = Q_E + Q_M$. According to Inference (I), $Q_X = Q_M - K \cdot Q_M$, which has the following changes, determines the immediate state of the phenomena:

① When $K = 1, Q_E = -Q_M, Q_X = 0$, the phenomenon is in the balance of “Yin and Yang”.

② When $0 < K < 1, Q_E < Q_M, Q_X > 0$, the phenomenon is in the state of “Yang”.

③ When $K > 1, Q_E > Q_M, Q_X < 0$, the phenomenon is in the state of “Yin”.

3.1.3 Judgment of Phenomena Process by Yin-Yang Matching

Under the relationship of $X = F(M, E)$, “Yin and Yang” are changing in the phenomena. According to inference (II), whether the changing process is “Yin” and “Yang” can be determined by $\Delta Q_X = Q_{X2} - Q_{X1}$ if the phenomena change from time t_1 to time t_2 . With $Q_{X2} = Q_{M2} - K \cdot Q_{M2}, Q_{X1} = Q_{M1} - K \cdot Q_{M1}$, the process change is judged by substituting the formula:

① When $\Delta Q_X = 0$, the phenomenon is in the balance of “Yin and Yang”.

② When $\Delta Q_X > 0$, the phenomenon is in the state of “Yang”.

③ When $\Delta Q_X < 0$, the phenomenon is in the state of “Yin”.

3.2 Rules of Yin-Yang Matching

In the matching of “Yin and Yang”, “Yang” is the macrostructure of matter formation (easy to observe and measure) while “Yin” is the energy flow that matches “Yang” (difficult to observe and measure). Then the rule of matching application of “Yin and Yang” is put forward: the phenomenal change of matter phenomenon “Yang”, is the basis on which the change of “Yin and Yang” is judged.

3.2.1 The Statistic method of Phenomena Classification

The Statistic method of Phenomena Classification of “Yin and Yang” judgment refers to the statistical method of classifying and qualitative analysis of various aspects of matter phenomena and judging the state of “Yin and Yang” phenomena according to the natures, effects and functions of “Yin and Yang”. The main representatives are “Ba Gang” with “Yin and Yang” as its general outline and the classification of medicinal properties of traditional Chinese medicine.

3.2.2 The method of comparing sample values

The method of comparing sample values of “Yin and Yang” refers to the method of judging the phenomena state of “Yin and Yang” based on the standard values of common natures. For example, “Huangdi NeiJing Su Wen Ping Ren Breath Thesis” said that “If one’s pulses can be felt twice when he exhales and the same happens when he inhales and his pulses can be felt once between an inhalation and an exhalation, it means that he is quite healthy. So in daily diagnoses and treatment, the standard to follow is the pulse of a healthy person. Doctors are healthy, so they can adjust patients’ pulses according to the pulses of a healthy person. However, if one’s pulses can only be felt once when he exhales and the same happens when he inhales, it means that he lacks “Yang”. If one’s pulses can be felt three times when he exhales and the same happens when he inhales, it means that he has too much “Yang” in his body...^[3] “

3.2.3 The method of comparing samples

The method of comparing sample values of “Yin and Yang” refers to judging the phenomena state of “Yin and Yang” by comparing the samples to be identified with those have been identified by the nature of “Yin and Yang”. For example, the pulse pattern takes “Weiqi” (the breath of stomach) as “Yang”, thus obtaining the “PingQi” Pulse (the pulse means one is healthy), “Bing” Pulse (the pulse means one is ill) and “Zhenzang” Pulse (the pulse means that one is seriously ill and may die) of the five organs in humans.

3.2.4 The Replenishment Application of Phenomena Yin-Yang Matching

Phenomena are the compositions of the environment. It has the basic balance scale of Yin-Yang matching. When there is interaction exchange in the environment, there will be exchange in matters (M, E). Therefore, through the exchange in matters (M, E), the change of phenomena can be realized. Namely:

- ① The sample parameter of phenomena is in Yin-Yang balance, which is the basis of the change.
- ② The influence of environmental Yin-Yang changes on phenomena is the fundamental additional potential field to promote phenomenal changes.
- ③ The exchange of matters (M, E) is the key to maintaining the change of phenomena.
- ④ The current state of phenomena is the parametric basis of changing demand adjustment.

Grasping the two fundamentals, combining the current state of phenomena, formulating the changing direction of phenomena, and using the key to maintaining the change of phenomena are the practical methods to use the matching of phenomena.

4. Discussions

Everything has the characteristics of Yin-Yang matching. The viewpoint of Yin and Yang balance

is the exertion of this kind of understanding. The physical relationship and significance of “Yin and Yang” are the basis of understanding “Yin and Yang”. The following points are discussed:

4.1 Each phenomenon has its own balance of “Yin and Yang”

Phenomenon is the expression of the balance between yin and yang, and the sharp differences are the result of the differences between Yin-Yang matching. Therefore, each phenomenon has its own matching parameters and has the adjustment of the stage balance. Therefore, “Huangdi Neijing-Su Wen-Sijitiaoshendalun” said, “The change of “yin and yang” in four seasons is the basis of everything in the universe. So wise people choose to care more about “Yang” in spring and summer to meet the needs of growth, and they care more about “Yin” in autumn and winter for the purpose of storing energy. In this way, they follow the basic law of growth, thus developing themselves like everything else in the growing process^[4].”

4.2 The principle of judging Yin-Yang state in the process of phenomenal change is universal.

The state judgment of Yin-Yang balance has the universality of state judgment in the process of phenomenal change. It can be efficiently combined with modern examining technology in the judgment of medical indicators.

4.3 Human Life Cognition of Yin-Yang Matching

The balance of yin and Yang is the common law of all phenomena. Therefore, the process of life science must be based on the integration of energy and mass systems for the maintenance of life state, which is also a weakness of modern medicine.

To sum up, the law of Yin-Yang balance explains that the phenomena of matter system are the projection of mass-energy interaction. The maintenance of phenomena must maintain the integration of mass-energy state, and the change of phenomena is accompanied by the direction of state change, which can be judged by the change of state parameters.

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