

The background features a traditional Chinese ink wash painting of Laozi, an elderly man with a long white beard, riding a dark bull. Above him is a large Taijitu (Yin-Yang symbol). To the right, there is vertical Chinese calligraphy. The text is overlaid on this background.

The 2016 CESNUR Conference  
**RELIGIOUS MOVEMENTS IN A GLOBALIZED WORLD:  
KOREA, ASIA, AND BEYOND**

**The Prospective Aspect of the Cosmogonic Models  
in Laozi and T'ianti Teaching's Text**

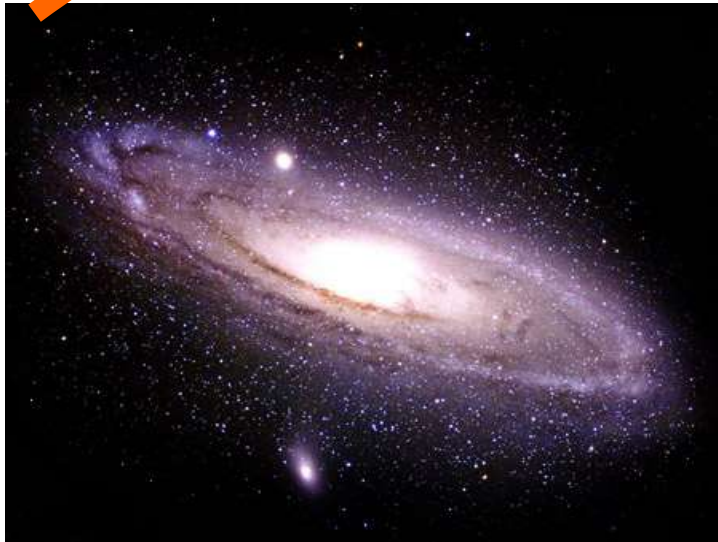
**Anthro-Celestial Research Institute, T'ienti Teachings**  
**天帝教天人研究學院**

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**July 06 (Wed), 2016**

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Where Is Life's Safe Dwelling Place?

# Solar Generation

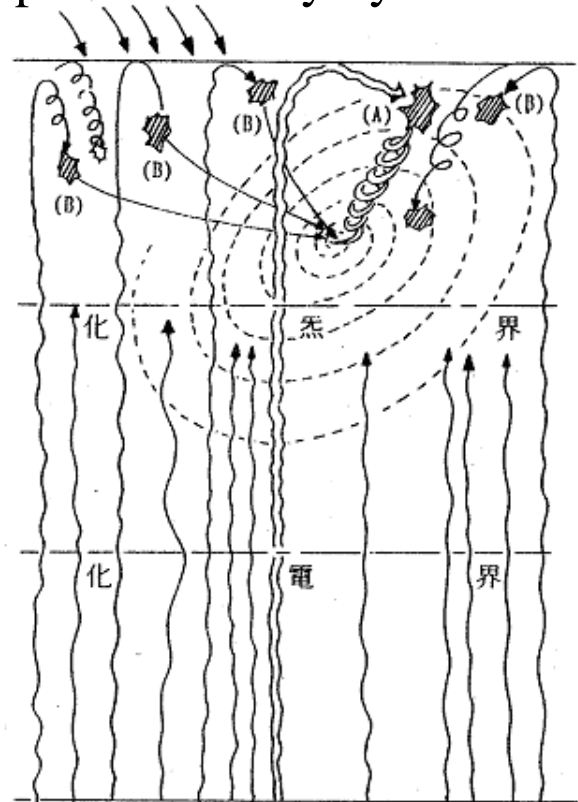


Laozi 老子



## Spiral Harmony System

※附註：  
 (A) 代表各旋和系之恒星 (如太陽系中之太陽)。  
 (B) 代表各旋和系之行星 (如太陽系中之地球等)。



- (A) Stars in a spiral harmony system
- (B) Planets in a spiral harmony system

# Outline

- 1. Preface: Heaven-Human Union and Cosmogogenesis**
- 2. Theories of Fixed Star Formation**
- 3. Lee Yuchieh's Theory of Star Formation**
- 4. Laozi's Theory of Star Formation Compared to Others'**
- 5. Conclusion: Two-Lis Model of Pneumo-genic Formation Model**

# 1. Preface: Heaven-Human Union and Cosmogenesis (1/3)

- China's sages stressed Heaven-Human Union
  - Valued harmonious relations with nature, stressing experiential understanding.
  - In wisdom texts of our forebears, are there records related to astrophysics and cosmogenesis?

# 1. Preface: Heaven-Human Union and Cosmogenesis (2/3)

- Understanding of star formation by present astrophysicists:
  - Nebular hypothesis (18th century)
  - Solar nebular disc model
    - Arrived at through observation of solar systems and other stellar systems by induction

# 1. Preface: Heaven-Human Union and Cosmogenesis (3/3)

- Our model of star system formation is not yet fully developed.
  - Astrophysicists continue to observe celestial phenomena; they continue to develop models of “star system formation” and work to establish a complete model of the cosmos.

## **2.Theories of Star Formation**

(1)Nebular hypothesis

(2)Solar Nebular Disk Model (SNDM) or Solar Nebular Model

(3)Other theories related to planet formation



# **(1) Nebular hypothesis** (1/4)

- Nebular hypothesis is basis of present solar system formation theory
- Posited by Swedenborg, Kant, and Laplace in the 18th century.
- 1734: Swedenborg posits that the solar system is formed by a nebular gaseous, cloudlike body.

# (1) Nebular hypothesis (2/4)

- 1755: From observation of nebular objects, Kant posits *Natural History and Theory of Celestial Bodies* :
  - Proto-matter in the cosmos was evenly distributed throughout space in speck like, elemental form.
  - Due to gravity the specks began to coalesce and move in a swirl.
  - Under further effect of gravity, it contracted and gradually flattened, until it finally formed a stable system including a star with planets.

# (1) Nebular hypothesis (3/4)

- 1796: Laplace posited the first explanation of solar system formation based on physics (doctrine of cosmic systems)
  - It begins from a huge, super-hot, gaseous nebular body, which gradually contracts as it cools.
  - Owing to the conservation of angular momentum, it contracts and spinning quickly, and takes on flat disc shape due to gravitation and centrifugal forces.
  - In contraction, each portion of material that reaches equilibrium of gravitational and centrifugal forces may be left to form a ring spinning around the center.
  - Several rings form one by one.
  - By this process the nebular center coalesces as a star, and the ring-like bodies around it coalesce into separate planets.

# (1) Nebular hypothesis (4/4)

- This nebular hypothesis of Kant and Laplace is normally called the Kant-Laplace Hypothesis :
  - At the beginning, this hypothesis suffered many criticism, mainly because it seemed to call for higher angular momentum of the sun than has been observed.
  - Earlier 1980s: New planets confirmed to be surrounded by ring disk of relatively low temperature gas and dust.
  - The nebular hypothesis was again considered to be important.

## **(2) Solar Nebular Disk Model(SNDM)**

(1/5)

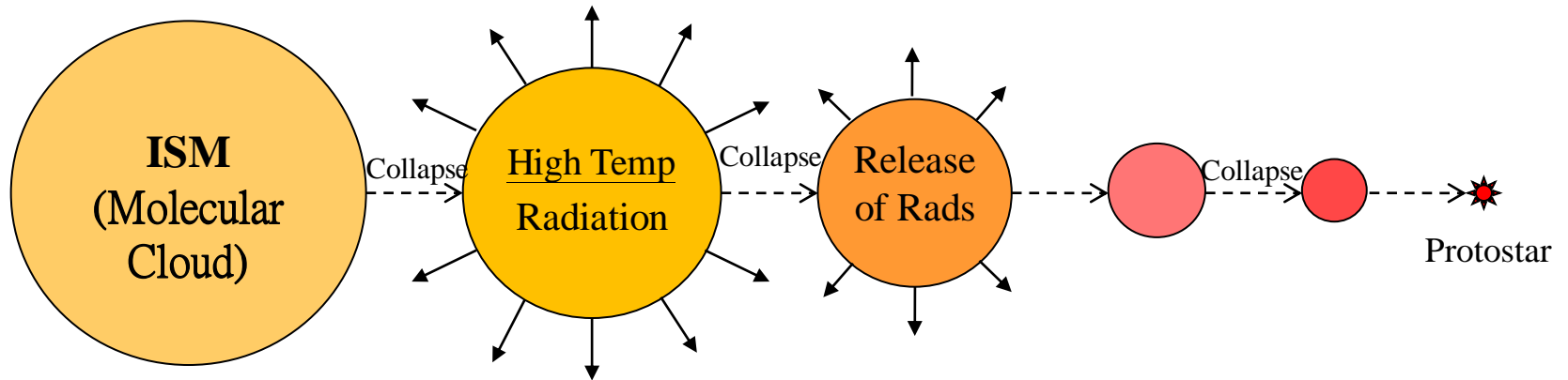
- SNDM developed from the above-mention Nebular Hypothesis.
- The sun formed from giant, molecular clouds of relatively dense matter described as a Interstellar Medium- ISM.
- Formation of planets is a complex process :

## **(2) Solar Nebular Disk Model(SNDM)**

(2/5)

- Due to gravitational instability, ISM coalesces into fine clumps.
- Gravitation causes clumps increase in mass and density until they collapse.
- Energy of collapse transforms to internal energy in the nebula, producing outward radiation pressure.
- Radiation pressure and gravity reach equilibrium, forming a sufficiently dense sphere—a protostar (in which hydrogen fusion has not yet begun).
- A proto-planetary disk usually forms in the vicinity of the protostar, and under certain conditions it gives birth to planets.
- Formation of a Sun-like star usually takes around 100 million years.

# ISM Contracts and Radiates While Forming Protostar



ISM-Interstellar Medium

## **(2) Solar Nebular Disk Model(SNDM)**

(3/5)

- A nebula ( often called interstellar medium--ISM ) is a non-stellar body containing rarefied plasma, gas and dust, occupying interstellar space.
- Which is an amalgam of atoms, molecules, ions, magnetic fields, electromagnetic waves and cosmic radiation, ranges in density from hundreds to hundreds of millions of mass particles per cubic meter.



## (2) Solar Nebular Disk Model(SNDM)

(4/5)

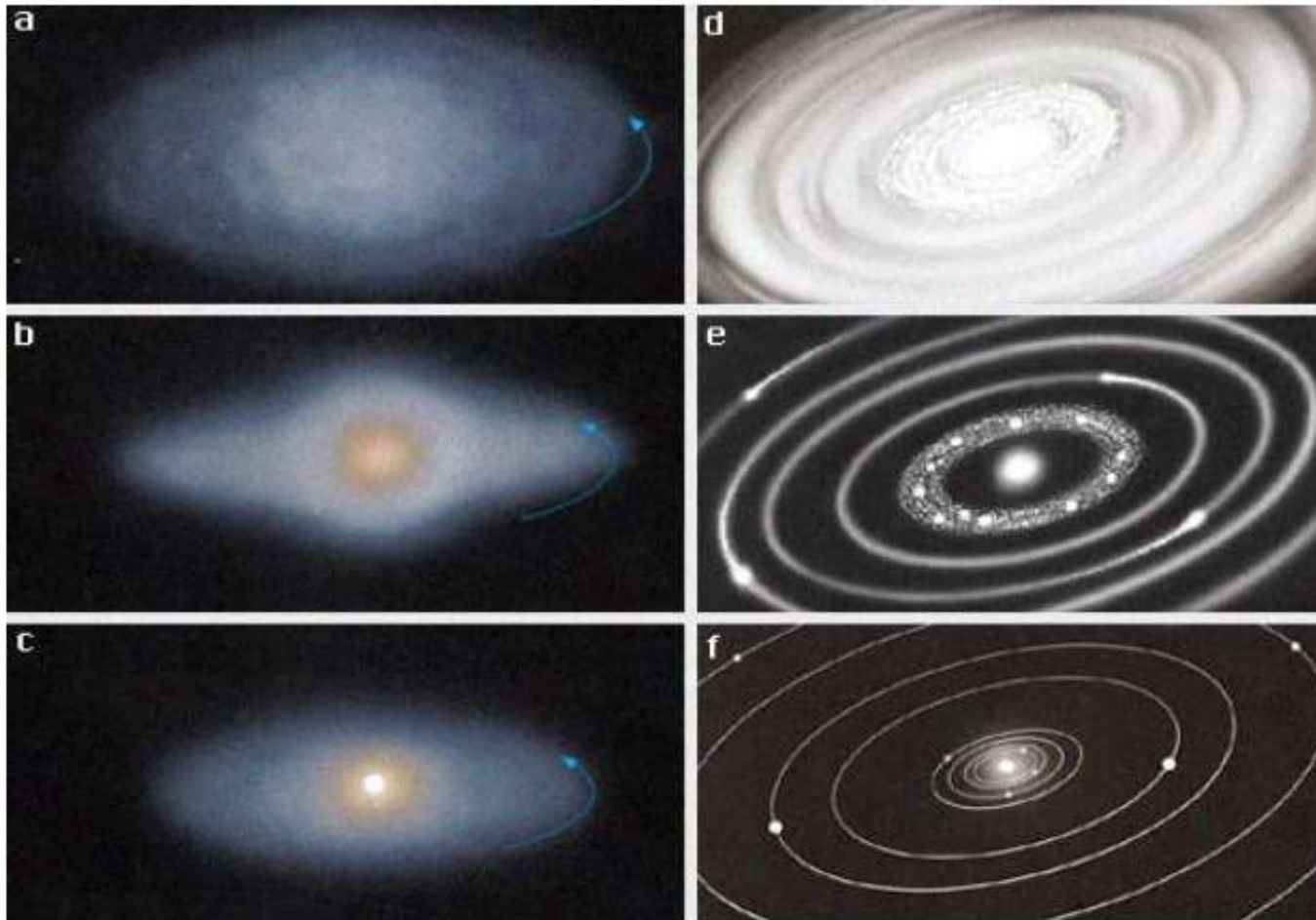
- Chief chemical elements of ISM are hydrogen, helium with some metal and non-metal elements. Studies have found organic radicals such as OH, CO and CH<sub>4</sub>, and even molecules of up to 8-9 atoms.
- Interstellar matter is of two kinds:
  - Interstellar gas includes gaseous atoms, molecules, electrons and ions. Elements present are largely consistent with those within stars.
  - Interstellar dust consists of granular particles app. 10<sup>-5</sup> cm.—including ice, graphite and silicates—interspersed among interstellar gases and having around 10% of their mass.

## **(2) Solar Nebular Disk Model(SNDM)**

(5/5)

- The currently accepted hypothesis of planet formation is called accretion :
  - Each planet forms within the “solar nebula,” from a disc-like cloud of gas and dust left over from the sun’s formation.
  - Planets begin forming from dust particles that are in nebular orbit around the star.

# Solar Nebular Theory



**(a-c) contraction and collapse ; (d-f) accretion**

### (3) Other Theories Related to Planet Formation

(1/3)

1. Envelope hypothesis: Posited in 1944 by Soviet scientist Otto Schmidt, it held that while the sun was passing across some coalescence of interstellar gas, it might draw in dust and clouds to become a new envelope layer, which eventually formed planets around the sun.
  - This argument solved the problems of the sun's angular momentum being less than of its surrounding planets and of the sun originating before the planets.
  - It was harshly attacked by Safronov, who felt that time needed for a thin cloud envelope to develop into planets would exceed the age of the solar system.

### **(3) Other Theories Related to Planet Formation**

(2/3)

2. Protoplanet theory: Posited in 1960 by W. H. McCrea, saying that the sun and planets formed separately from similar nebular. The smaller planets were then captured by the sun's gravitational field.
  - This position is controversial: if each planet were captured singly, it would be hard to explain the facts that all the planets orbit around the sun in the same direction.

## (3) Other Theories Related to Planet Formation

(3/3)

3. Capture theory: Was posited in 1964 by Woolfson, inferring that the solar system is formed from tidal interactions between a star and a separate protostar of lower density. Due to gravitation from the sun, some scattered matter from the protostar's atmosphere was drawn in, whereupon they collapsed by their own gravity, thus forming planets.
  - The capture theory predicts that the sun and its planets will have different ages, but ages of planets and the sun actually have been shown to be from around the same time.

But.....

- How (by what form...) did the nebula gain angular momentum and begin to spin?

### 3. Lee Yuchieh's Theory of Star Formation (1/2)

- In 1937-45 during the Anti-Japanese War, Lee Yuchieh lived in seclusion on Mt. Hua.—reading, nourishing *Qi*, meditating, and praying. He delved into “heaven-human studies” and immersed himself in the cosmic realm.
- In 1944 he brought forth his *New System of Religious Philosophy* (in 1961 retitled *A New Realm*).



# 3. Lee Yuchieh's Theory of Star Formation

(2/2)

- The book posits ideas related to star formation, and he used the term “spiral harmony system” to describe star systems.
- He posited a three-stage genesis of spiral-harmony systems:
  - (1) Origin state
  - (2) spiral harmony regime in operation
  - (3) Formation of spiral harmony system (star system).

# (1) Origin State (1/2)

- **Original Chaos-Form** : A chaos state happens when spiral harmonizing force has disappeared from an earlier system, so that the space in its vicinity becomes a vast fluid-filled site.
  - The space of the original system is pervaded with a vast fluid, roiled by self-generated turbulence, which is called chaos.

# (1) Origin State (2/2)

- **Interplay of Etropicity and *Ch'i***: In the vast chaotic expanse, due to the fluid's **internal turbulence**, heat generates friction and this produces **a thick and agitated vapor**.
  - **This vapor separates from the fluid and ascends**. When it reaches the space it is suited to, it produces great quantities of **etropic stuff** (emitting light simultaneously). This **etropic stuff** is more buoyant than the vapor, and thus it continues ascending.
  - Eventually it transforms into a body of *Ch'i* (an **etropic *Qi* body**), which is called **innate [pre-Heaven] *Ch'i***.

## (2) Spiral harmony regime in Operation (1/3)

- **Coalescence of polyhedral Bodies** : Once a *Ch'i* body has ascended to extreme height, it may come in contact with the boundary of another spiral harmony system.
  - Due to influence of vortical force from that system at the boundary, it gradually transforms into a coalesced polyhedral body (it is also an etropic *Ch'i* body); then it descends in a spiral.
  - At the same time it emits large quantities of light and heat, like the meteors people see in the human world.

## (2) Spiral harmony regime in Operation (2/3)

- **Arising of spiral harmonizing force** : This polyhedral coalesced body, hot and radiant, descends to the above mentioned level where etropicity transforms to *Ch'i*.
  - When that happens, it meets with **etropic material** that continues to ascend.
  - The torsion of moving against each other causes a **ceaseless** spinning movement. At this point the **spiral harmonizing force** is underway.

## (2) Spiral harmony regime in Operation (3/3)

- **Operation of spiral harmonizing force** : After spiral harmonizing force gets underway, it is ceaselessly driven by the *Ch'i* substance that continues to ascend, thus giving rise to a rapidly swirling, light-and-heat-emitting *Ch'i* body.
  - Also, due to influence of the *Ch'i* body's containment and interfusion, it goes from large to small, from revolving irregularly to revolving regularly.
  - Finally it becomes an elliptic circular shape which proceeds in its revolutions unceasingly. At this point the spiral harmony regime is in operation.

# (3) Formation of spiral harmony system (Star System) (1/2)

- **Dynamics of the Primitive Nebula** : The spiral harmonizing force which initially arises in each spiral harmony system is the gravity center of each emergent system, and it is the sun in a solar system. At this point in the solar system's center and at its periphery there is a vast aggregation of high-velocity spiral etropic *Ch'i*, resembling a whirlpool in water.
  - All relatively small objects near in its vicinity are drawn in; once drawn in they become part of the high-velocity swirling.
  - Thus those relatively small polyhedral *Ch'i* bodies that “rose through space from below, then proceeded to descend once more,” once they approach the vicinity of the spiral harmonizing force, are drawn in by that force, and they follow its endless swirling. These will become the planets and satellites that form after the sun forms.
  - When these planets are drawn in by the spiral force can no longer escape. Instead they go on moving cyclically on the paths of *Ch'i* substance.

# (3) Formation of spiral harmony system (Star System) (2/2)

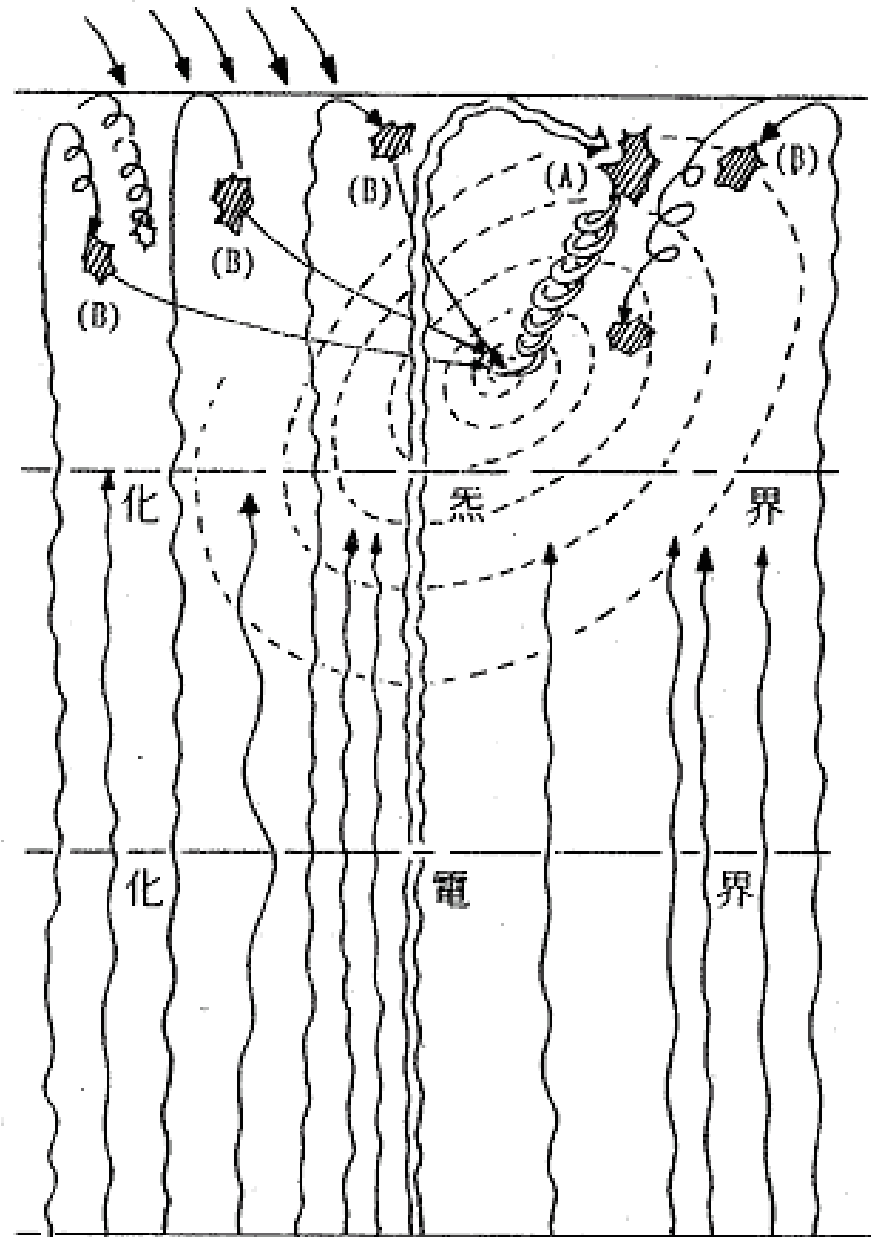
- **Formation of a new star system:** Thereupon the celestial bodies in this sector develop from chaos to become a new spiral harmony system.
  - After the new system is formed, it continues to rely for sustenance provided by the hydro-etropic, dynamic energy which acts in all orientations--upward and downward, forward and backwards, rightward and leftward.
  - Only in this way can it the workings of the spiral harmony system be maintained, with what is provided in the up-down orientation giving it fixity and what is provided in left-right and front-rear orientations letting its workings proceed.
  - If the aqueous resource is ever depleted from the spiral harmony system, then the celestial bodies in this region will be reduced again to chaos. All the mountains, rivers and landforms will be destroyed and dissipated as etropic *Qi* substance pervading the expanse of space.



# Spiral Harmony System

- (A) Stars in a spiral harmony system
- (B) Planets in a spiral harmony system

※附註：(A) 代表各旋和系之恒星（如太陽系中之太陽）。  
 (B) 代表各旋和系之行星（如太陽系中之地球等）。



# How ‘Spiral Harmony System Theory’ Differs from Astronomical Theory (1/3)

## Key points of “spiral harmony theory” and how they fit together :

1. In a state of chaos, due to an energy gain, the interstellar cloud which exists mainly in a fluid phase at first gives rise to a phenomenon of *Qi-driven* separation [or fractioning].
  - “*Qi-driven*” means “pneumo-genic,” referring to a process that happens through *Qi* transformation.
2. Interstellar nebular *Qi* which is subject to separation gradually goes upward and to a far point. It undergoes qualitative and quantitative change, as well as aggregation.

# How ‘Spiral Harmony System Theory’ Differs from Astronomical Theory (2/3)

3. In the course of this interstellar cloud’s workings, it may touch the nebular boundary of a neighboring star system, with interactive effects that produce a revolving pattern.
  - Each clump of interstellar cloud may gain initial angular momentum and projecting velocity,
  - and as each clump interacts different position, then while coming back they may have different projecting angles.
  - That being so, according to degree of centripetal aggregation during their downward rotation, their pressure or radiant energy will find release and be emitted as light and heat.

# How ‘Spiral Harmony System Theory’ Differs from Astronomical Theory (3/3)

4. As mentioned above, because of the gain of **angular momentum**, the **nebular cloud** rises to a **spinning state** (**spiral harmonizing force**).
  - Through a stepwise process of **contraction** and even **collapse**, **it forms the core structure of a star or planet**.
  - What is more, it may form one of several initial disks and spin about ceaselessly.
  - Ultimately **the spinning formation which incorporates the most nebular material** becomes the sun of that solar system. (In formal terms **it has the highest angular momentum**.)
5. **Disks with relatively lower angular momentum will be drawn in to form planets and satellites**. Once the star, planets and satellites are positioned, the star system gradually stabilizes.

# 4. Laozi's Theory of Star Formation Compared to Other Theories



# *Daodejing, Verse 25*

- There was something featureless yet complete, born before heaven and earth.
- Silent—amorphous—it stood alone and unchanging.
- Round and tireless in its workings; we may call it Mother of heaven and earth.
- Not knowing its name, I style it the “Way (Dao)”; if forced to name it, I would call it “great.”
- “Great” comes from “disengaging”, “disengaging” is followed by “going far away”, “going far away” is followed by “reversal (return)”.
- The Way is great; Heaven is great, earth is great; mankind is great.
- Within the realm there are four greats, and humans are one of them!
- Man patterns himself on earth; earth patterns itself on Heaven; Heaven patterns itself on the Way; the Way patterns itself on nature.



# Paraphrases of *Daodejing*, Verse 25

Scripture text	Meaning
<u>There was something featureless yet complete, born before heaven and earth.</u>	>>There was a protean entity complete in itself; it already existed before genesis of Heaven and earth.
有物混成，先天地生。	有一樣東西混然自成，在天與地生成之前即已存在。
<u>Silent—amorphous—it stood alone and unchanging.</u> <u>Round and tireless in its workings; we may call it Mother of heaven and earth.</u>	>> It subsisted in silence, not changing its formless state. (As relatively high-energy nebular <i>Qi</i> ) it first separated from the chaos and proceeded in unchanging upward course; then it formed a circular shape and went about its workings ceaselessly; finally it formed a matrix-like body to bear all living things.
寂兮寥兮，獨立而不改，周行而不殆，可以為天下母。	它在寂然無聲、寥兮無形的狀態下變化，(較高能量的雲氣)首先特出地脫離了混沌的狀態，方向不變地往上運行隨後形成圓周狀態運行不已，最後形成可以作為承載萬生萬物的母體。

# Paraphrases of *Daodejing*, Verse 25

Scripture text	Meaning
<u>Not knowing its name, I style it the “Way (Dao)”</u> ; if forced to name it, I would call it “great.”	>>Not knowing a term, I call it the “Way (Dao)” (profound laws of change, realized in an entity); if I have to describe its qualities, I would call it “great” (vastly complex and encompassing).
吾不知其名，字之曰道，強為之名曰大。	我不知道如何稱呼它，姑且叫它作「道」(奧妙之變化法則與實體)，勉強形容它的性狀而稱之為「大」(結構複雜龐大且無所不包涵)。
<u>“Great” comes from “disengaging(or separation)”</u> , “disengaging” is followed by “going far away”, “going far away” is followed by “reversal (return)” .	>>The generative procedure of this “Great Dao (an encompassing entity of profound transformations—namely a stellar disk) first entails the separation of nebular Qi; it is swept far away and then it comes back around.
大曰逝，逝曰遠，遠曰反。	這個「大道」(無所不包涵之奧妙變化實體—恆星盤)生成的規則程序首先是雲氣脫離，然後遠去，之後又回返。



# Paraphrases of *Daodejing*, Verse 25

## Scripture text

## Meaning

The Way (Dao) is great;  
Heaven is great, earth is  
great; mankind is great.  
Within the realm there are  
four greats, and humans are  
one of them!

>>One sees that such an entity of profound transformation is inclusive, all-encompassing, and hard to expound upon, which is also true of Heaven, earth and human beings. In this entire space-time domain four things can be called “great” (encompassing and hard to expound) and one is mankind.

故道大，天大，地大，人亦大。域中有四大，而人居其一焉。

可以看到：這個奧妙變化的實體是無所不包涵、無所不包容、難以言詮的，而天也是、地也是、人也是。在這整個時空之中有四樣東西可稱為大(無所不包涵、難以言詮)，而人居於其中之一項。

Generative laws of man come from earth;  
earth's laws come from heaven;  
heaven's laws come from Dao;  
the Dao's are naturally.

>> That being so, generative laws of man come from earth; generative laws of earth come from the heavens; generative laws of the heavens come from the Way (Dao); the Way's (Dao's) generative laws are spontaneous, inherent processes.

人法地，地法天，天法道，道法自然。

(由前述之程序及內容可以理解)人生成的法則來自於地，地生成的法則來自於天，天生成的法則來自於道，而道的法則則是自自然然，混然自成，不假造作。

# Comparing Three Star Formation Theories

<u>Stage</u> 程序	Astronomy 天文物理星雲理論	Lee Yuchieh 李玉階先生旋和論	Laozi 老子二十五章
0	<b>Astronomy:</b> Chaos, solar proto-nebula 混沌，前太陽星雲	Chaos 混沌	There was something featureless but complete. 有物混成
1	-----	Due to an energy gain, the interstellar nebular <i>ch'i</i> which initially exists in a fluid phase separates from the chaotic state. 最初以流體型態存在之星際雲氣獲 得能量，脫離混沌狀態	<b>Disengaging:</b> <b>separation</b> (“Great” comes from “disengaging”) 逝：脫離（大曰逝）
2	-----	Interstellar nebular <i>ch'i</i> goes upward to a far point. It undergoes qualitative and quantitative change, as well as aggregation. 星際雲氣向上遠去、逐步產生質與 能的變化並相互聚集	<b>Far-away (going to a            far point )</b> (“disengaging” is followed by “going far away”) 遠：遠去（逝曰遠）

# Comparing Three Star Formation Theories

<u>Stage</u> 程序	Astronomy 天文物理星雲理論	Lee Yuchieh 李玉階先生旋和論	Laozi 老子二十五章
3	-----	<p>This interstellar cloud may touch the nebular boundary of an external star system, with <b>interactive effects</b> that produce a revolving pattern. This causes <b>each clump of interstellar cloud to gain initial angular momentum, projecting velocity and projecting angle</b>. Moreover, they will come around to their original interstellar space, at which time they will emit light and heat.</p> <p>該等星際雲氣可能與系外恆星之星雲邊界產生迴旋形式的交互作用，使各股星際雲氣獲得初始角動量、投射初速及投射角度，並回返原星際空間，同時發出光與熱</p>	<p><b>Reversal</b> (“going far away” is followed by “reversal (return)”.)</p> <p>返：回返（遠曰反）</p>

# Comparing Three Star Formation Theories

<u>Stage</u> 程序	Astronomy 天文物理星雲理論	Lee Yuchieh 李玉階先生旋和論	Laozi 老子二十五章
4	Due to kinetic [gravitational] effects the nebula collapses. Due to certain causes it gains [sufficient] <b>angular momentum</b> and begins to spin constantly.	Due to spiral harmonizing force, the nebular chi gradually contracts into a star center or a planetary center and rotates unceasingly. According to its spiral harmony status, it incorporates <b>the greatest possible [surrounding material]</b> (from the center which in formal terms has the highest angular velocity), to become the eventual center of that star system.	“Round and tireless in its workings”
	星雲因重力作用而收縮，某種原因獲得角動量而旋轉	雲氣因旋和力逐步收縮形成恆星或行星中心而旋轉不已，並依旋和形態容納最大者(形式上以擁有最大角動量者)成為最後之恆星中心	周行而不殆

# Comparing Three Star Formation Theories

<u>Stage</u> 程序	Astronomy 天文物理星雲理論	Lee Yuchieh 李玉階先生旋和論	Laozi 老子二十五章
5	The nebula continues to collapse. When pressure [from endogenic energy] and gravitation reach a balance, it becomes a proto-star, and the planets form by accretion within the solar nebular disk.	Nebular disks of lower angular momentum are drawn in to become planets and satellites. After the star, planets and satellites are [properly] positioned a stable solar system is formed.	“We may call it the Mother of heaven and earth.”
	星雲持續坍縮，壓力與引力平衡，形成原恆星，行星在恆星星盤中吸積形成	角動量較小之星盤被捲入形成行星及衛星，穩定之恆星系統在恆星、行星及衛星定位之後逐漸形成	可以為天下母

# Other Classical Passages for Reference

(1a/4)

Laozi, Verse 21 : “The countenance of great virtue is that it follows the Way alone. The Way objectified is blurred and nebulous. How nebulous and blurred! Yet within it there are images. How blurred and nebulous! Yet within it there are objects. How cavernous and dark! Yet within it there is an essence. Its essence is quite real; within it there are tokens.”

--- In a nebulous state, an all-encompassing entity of profound transformations is formed. Various states [of development] and material objects are latent within it. In this elusive, deeply founded state there exists an “essence.”

- 老子第二十一章：「孔德之容，惟道是從。道之為物，惟恍惟惚。惚兮恍兮，其中有象；恍兮惚兮，其中有物；窈兮冥兮，其中有精；其精甚真，其中有信。」
  - 無所不包涵之奧妙變化實體在恍惚之狀態中形成，其中含藏了各種狀態與物質，特別是在幽微深邃的狀態中有「精」之存在（窈兮冥兮，其中有精）。

# Other Classical Passages for Reference

(1b/4)

---(Re: Verse 21) Here “essence” is the most rarefied *Qi*. We can use Lee Yuchieh’s terminology: “What we describe as *Ch’i*”, from the perspective of physics, is a subatomic state possessing the fineness of molecules, atoms, ions, plasma and so on. In its marvelous changes from one state to another, it harbors laws and data of various birth-death transformations. (“Its essence is quite real; within it there are tokens.”).

- 此處之精，應是氣之精華，應該可以用李玉階先生所稱之「炁」來描述，以物理學的角度來看，應該是包含比分子、原子、離子、電漿…等更細微的次原子狀態；在各種狀態之精妙變化中，隱含了各項生滅變化之規律與信息（其精甚真，其中有信）。

# Other Classical Passages for Reference

(2/4)

- Guanzi Inner Chapters : “What is called ‘essence’ is the most rarefied kind of *Qi*... When a human being takes birth, Heaven provides essence and the earth provides physical form. These are joined to make a human being.”
- 管子內業篇 : 「精也者，氣之精者也，…凡人之生也，天出其精，地出其形，合此以為人」



# Other Classical Passages for Reference

(3/4)

- *Huainanzi*, “Treatise on Patterns of Heaven” : “The Way begins in vacuity; vacuity engenders the cosmos; the cosmos engenders *Qi*; *Qi* engenders particular properties. The clear yang goes outward to become Heaven; the heavy turbid part coalesces to be earth. The synthesis of purity and subtlety concentrates on transformation; the heavy turbid part is put through travail. Thus Heaven is completed first, and only then is the earth stabilized. The inherent essences of earth and heaven are yin and yang. The concentrated essence of yin and yang make the four seasons. The expanded essence of yin and yang make the myriad things.”
- 淮南子天文訓：「道始於虛霏，虛霏生宇宙，宇宙生氣，氣有涯垠，清陽者薄靡而為天，重濁者凝滯而為地，清妙之合專易，重濁之凝竭難，故天先成地後定，天地之襲精為陰陽，陰陽之專精為四時，四時之散精為萬物」

# Other Classical Passages for Reference

(4/4)

- Liezi, “Heavenly Tokens” Chapter : “What is pure and buoyant rises and becomes Heaven; what is turbid and heavy descends and becomes earth. Thus Heaven and earth contain an essence from which the myriad things are engendered.”
  - This shows a relation between “essential *Qi*” and the engenderment of Heaven, earth, mankind and the myriad things.
  - Deep investigation into this subatomic state—having the fineness of molecules, atoms, ions, plasma and beyond—which has been called “rarefied *Qi*,” “inherent essence,” “concentrated essence,” and “expanded essence,” promises to have profound significance for understanding the formation of life and genesis of the cosmos.
- 列子天瑞篇：「…清輕者上為天，濁重者下為地，沖和氣者為人，故天地含精，萬物化生」
  - 顯示天地生成之初始狀態，以及天、地、人、萬物生成與此「精氣」之關係。
  - 深入解析「氣之精者」、「襲精」、「專精」、「散精」或「炁」之內涵，以及分子、原子、離子、電漿…等更細微的次原子狀態，對於了解生命的形成以及宇宙的生成，有其深邃的意義。

## **5. Conclusion: Two Lis Model of Star Formation by *Ch'i*-Driven Forces** (1/3)

- (1) In this paper we have seen a model of star formation that is fairly inclusive, especially with respect to the treatment of the subtle, elusive transformations and processes of *Qi* and *Ch'i* transformations and processes.

## 5. Conclusion: Two Lis Model of Star Formation by *Ch'i*-Driven Forces (2/3)

- (2) If we do not look into Lee Yuchieh's theory, there is probably no way to understand the content of Verse 25 in *Laozi*.
- From a scientific standpoint, the position of these two past worthies should optimally be supported by establishing a mathematical model and validated through actual observation.
  - We are curious as to how the two of them, living in their historical settings, were about to gain insight into the process of star formation?

## 5. Conclusion: Two Lis Model of Star Formation by *Ch'i*-Driven Forces (3/3)

- (3) To show our respect for these two past worthies, Laozi (Mr. Li Dan 李聃) and Mr. Lee Yuchieh (李玉階), we would like to attach a name to this hypothetical model of star formation: “The Two Lis Model of Star System Formation by *Ch'i*-Driven Forces.”
- Firstly, this indicates that the model was proposed independently by these two past worthies.
  - Secondly, it indicates that the model deals with elusive, subtle stepwise transformations of *Qi* and *Ch'i*.
  - Thirdly, that a considerable amount of work needs to be completed, and that this endeavor is up to those of us in succeeding generations.

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