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**A Study on the Integration of Religion and Science  
from the View of Unification Principle**

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## Table of Contents

Introduction

I. Religion and Science

II. Scientific Problems from the view of Unification Principle

1. UPF(Universal Prime Force) and Scientific Problems
2. DC(Dual Characteristics) and Scientific Problems
3. GTA(Give and Take Action) and Scientific Problems
4. ODUA(Origin-Division-Union Action) and Scientific Problems
5. 4PF(Four Position Foundation) and Scientific Problems
6. 3rdGB(Third Great Blessing) and Scientific Problems

III. The Integration of Religion and Science from the View of Unification Principle

Conclusion

## Introduction

Since 1993 we have reached a new providential age called the Age of True Parents and Completed Testament. From the middle of 20C to today facing 21C we have witnessed the amazing God's providence and a great progress that has never seen throughout human history.

The Divine Principle<sup>1)</sup> defines this great transformation age as the Last Days, "the time when the evil world under satanic sovereignty is transformed into the ideal world under God's sovereignty."<sup>2)</sup> Also this is the time when the evil world is transformed into the world of goodness fulfilled the three great blessings(3GBs)<sup>3)</sup> centered on God.

Here the world of good sovereignty fulfilled 3GBs is the one that fallen humankind liberate completely from the two aspects of ignorance and fully realize the goodness which the original mind desires. And this is the world where the entire humankind form one great family centered on God and serve God as their parent and live in harmony with each other in sibling love.

And this world is a messianic kingdom built on the principles of interdependence,

1. 'The Divine Principle', the basic teaching and scripture of Rev. Sun Myung Moon, is newly translated as '*Exposition of the Divine Principle*' by HSA-UWC of America in 1996. From now on the pages quoted here are from this new version. For simplicity we will quote this book as Divine Principle.

2. Ibid., p. 89.

3. 'The three great blessings' is the essential concept in Divine Principle, so we will use its abbreviation '3GBs'. Its definition and significance will be explained later on.

mutual prosperity and universally shared values realizing the ideal of creation in God's heart.<sup>4)</sup> The true meaning of the age of global village may be interpreted as such age realizing this world.

In order for us to make such world come true we should restore the complete truth by overcoming the internal and external ignorance. Religion is a method searching for the internal truth, and science searching for the external truth. Today, the Last Days, the two ways should be "integrated and their problems resolved in one united undertaking; the two aspects of truth should develop in full consonance."<sup>5)</sup> On this foundation the creation of a new culture may be possible. In this aspect to reappraise scientific problems from the view of Unification Principle elucidating the internal truth of religious problems must be very significant.

## I. Religion and Science

According to Divine Principle, for fallen people "knowledge is the light holding the power of revival, while ignorance is the shadow of death and the cause of ruin."<sup>6)</sup> As mentioned above from the dawn of human history mankind have ceaselessly searched to find the ultimate truth, religion for the internal and science the external. Unfortunately those two ways have been contradictory and irreconcilable to each other through history.

The objects of science, however, were limited in the external and resultant world of phenomena rather than the internal and causal world of essence. Today it is forced to elevate them to the level of the internal and causal world of essence. And religion also needs to be explained logically and scientifically.

Rev. Moon emphasized in the conference of ICUS, saying that "the final challenge that science confronts is this question of the ultimate reason of existence," and "the initial step in clarifying unsolved questions is first to apprehend God's purpose of creation."<sup>7)</sup> Only when religion and science are solved as one quest, we are able to resolve all the fundamental problems of life to realize the ideal world of God's creation.

## II. Scientific Problems from the view of Unification Principle

According to Divine Principle, to understand the fundamental questions of human life and the universe we must know the root principle by which humanity and the universe were created and furthermore we should understand the nature of God the creator of existences.

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4. HSA-UWC, *op. cit.*, p. 344.

5. *Ibid.*, p. 3.

6. *Ibid.*, p. 7.

7. Sun Myung Moon, *Founder's Address*, Proceedings of the 8th International Conference on the Unity of the Sciences, Los Angeles, 1979.

Divine Principle gives us crystal clear explanations on the ideal world of God's creation, the fall of human, and the restoration of the fall. These subjects have been the central topics of religious problems. To study the integration of religion and science from the views of Unification Principle we should reevaluate the scientific problems from the essential principles of Divine Principle, because the whole contents of Divine Principle, by which the religious problems are resolved, firmly stand on those essential principles.

In this paper we will discuss the scientific problems in comparison with those essential principles. Although seeming unfamiliar words to some of you, we will focus ourself on Universal Prime Force(UPF)<sup>8</sup>, Dual Characteristics(DC), Give and Take Action(GTA), Origin-Division-Union Action(ODUA), Four Position Foundation(4PF), and Third Great Blessing(3rdGB), which are the essential principles mentioned above.

## 1. Universal Prime Force(UPF) and Scientific Problems

From our experiences we know that all beings can exist by various forces. But Divine Principle explains that all forces stem from one fundamental force which is called Universal Prime Force(UPF) and which is eternal, absolute, self-existent, and transcendent of space and time. These features of UPF come from God's nature because UPF is a part of God's attributes.

To acknowledge a force of eternal, absolute, self-existent, and transcendent of space and time in the same degree of the existence of God the Creator is a tremendously important guidance in the way of scientific searching for natural phenomena. The reason is that the law of conservation(or invariance, constance) have played a crucial role in research and prediction of natural phenomena.

### (1) Universal Prime Force(UPF) and Invariance(Conservation, Symmetry)

To find certain law of conservation or invariance in the midst of ceaselessly, diversely changing features of natural phenomena is one of the greatest accomplishment of physics. This law of conservation or invariance is closely related to 'symmetry'.

If a system of the nature has symmetry of time, or is invariant to time variation, the energy of the system is conserved. If a system of the nature has symmetry of space, or is invariant to space variation, the momentum of the system is conserved.

This law of invariance is fundamentally related to the 'Variational Principle'(or Least Action Principle),  $\delta I=0$ . From this principle we can derive physical laws in Newton mechanics, Electromagnetism, Quantum mechanics, General relativity, Quantum Field theories, etc.

The fact that there exists a law of conservation or invariance in the changing world of nature, or the fact that all the myriad things in nature change centered on the law of conservation or invariance signifies the possible connection of natural phenomena to the

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8. This word is translated as 'Universal Prime Energy' in new version. Because 'Universal Prime Force' seems closer to the original Korean version, we will use this expression in order to grasp its meaning easier.

absolute, unchanging value.

## (2) Universal Prime Force(UPF) and Forces

It is well known that any forms of beings exist by one of four fundamental forces: Gravitational force, Electromagnetic force, Strong force, and Weak force. Amazingly enough the modern physics and cosmology come to verify that these four forces are originated from one single force. Going back to the early stage of the universe, these four forces unite one by one in specific ways, eventually becoming one unified force before a critical time in view of TOE(Theory Of Everything).

We may claim that this one single force is originated from UPF by which God exists. One important, resultant conclusion is that all forces should have their origin in God and, therefore, in order to investigate natural phenomena completely we should believe in God's existence the Ultimate Cause. In this respect we can have a bridge to unify religion and science.

## 2. Dual Characteristics(DC) and Scientific Problems

According to Divine Principle,

Every entity possess dual characteristics of yang(masculinity) and yin(femininity) and comes into existence only when these characteristics have formed reciprocal relationships, both within the entity and between it and other entities.<sup>9)</sup>

This is, yang-yin DC is an essential requirement for any being to exist. Divine Principle claims that there must exist another pair of DC reciprocal relationship, Sungsang(internal nature)-Hyungsang(external form) which is even more fundamental to existence than yang-yin DC. One important aspect of DC relation is that Sungsang and yang hold subject position to Hyungsang and yin, respectively. Especially that yang holds subject position and yin holds object position is very interesting point.

### (1) Dual Characteristics(DC) and Subject-Object

The DC feature(subject and object) of beings and the intimate relationship among subject and object through DC relation are emphasized in modern physics. In modern physics, because of intimate relationship between subject and object, the existence of subject is influenced by the existence of object, and vice versa. And the microscopic world is explained as a web where all entities establish one unified structure. In the wholistic structure entities and relation among them are decided by probability.

### (2) Dual Characteristics(DC) and Hidden Dimension

The four-dimension based understanding of nature in modern physics has limit in unifying the four fundamental forces. Also many trials to describe the early stage of the universe in context of the combination of microscopic and macroscopic laws have limitation. To resolve these difficulties people have attempted to extend dimensions by

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9. HSA-UWC, op. cit., p. 16.

introducing hidden dimensions.

About the possibility of the existence of dual world that is relevant to the hidden dimension Charon emphasizes,

Are there some properties of mind associated with this 'pure' matter? It is clear that 'interdisciplinary' research is needed on such a fundamental topic, ... answers to questions concerning mind processes and the relations between mind and matter would not only contribute to a better representation of our universe, ... We enter an era when science will direct its investigations toward a unified physical and spiritual world."<sup>10</sup>

Charon tries to relate the being of purpose to an imaginary universe(hidden universe) and the being of laws to a real universe, making a complex universe. Combining purpose and law as real and imaginary part in a complex number, we may be able to get a unification of value(religion) and law(science).

### (3) Dual Characteristics(DC) and Uncertainty Principle

In modern physics we find unique pair relationships that we are not able to define each one exactly at the same time. This is called uncertainty principle discovered by Heisenberg. The uncertainty pairs are between position and momentum( $\Delta X \times \Delta P \geq \frac{\hbar}{2}$ ), and between time and energy( $\Delta t \times \Delta E \geq \frac{\hbar}{2}$ ). Introducing the concept of complementarity Bohr attempted to interpret this unique intrinsic principle residing in nature. The uncertainty relation and the concept of complementarity are very similar to the intimate relationship of subject and object through DC principle.

### (4) Dual Characteristics(DC) and the Spiritual-Physical World

According the principle of DC the existing world is composed of DC world: spiritual invisible substantial world as internal subject part, and physical visible substantial world as external object part. The invisible substantial world can not be conceived through physical senses but through spiritual senses.

In Divine Principle we find the fact that the invisible substantial world was created prior to the visible substantial world. This fact can give a profound impact to the research about the origin of the universe. Surprisingly to believe, the modern physics calculates and predicts the possible situation of the very early universe at  $10^{-43}$ s just after the beginning of the universe. It is impossible, however, to predict the possible status before the moment of creation. From the creation order of those two worlds the world before the beginning of present universe can be the invisible substantial world.

## 3. Give and Take Action(GTA) and Scientific Problems

In Divine Principle Give and Take Action(GTA) is explained as an action generating all the forces the entities need for existence, multiplication, and action, by forming a reciprocal base(or common base) according to UPF, and then by giving and receiving well. Therefore,

10. J. Charon ed., *The Real and Imaginary* (An ICUS Book, 1987), pp. viii-ix.

in order for GTA to take place there should be (1)UPF, (2)DC relation as subject and object, (3)process of forming a reciprocal base, and (4)process of well giving and receiving on the reciprocal base.

UPF and the forces generated by GTA have a DC relation: Sungsang and Hyungsang, subject and object, cause and result, internal and external. Accordingly, any kind of forces existing in nature has root in God. This means that without believing in God we can not understand and describe completely the phenomena occurring in the nature.

#### (1) Give and Take Action(GTA) and Particles' Interactions

The interactions among particles, the fundamental nature of the universe, are proceeded by interchanging virtual particles. This process of interchanging is giving(emitting virtual particles) and receiving(reabsorbing virtual particles), namely GTA process. This GTA processes of virtual particle take place not only between particles but also within a particle itself, and even in vacuum state.

We can imagine GTA process as a joyful, beautiful, endless cosmic dances of virtual particles: creating and annihilating, emitting and reabsorbing among particles and even within a particle.

#### (2) Give and Take Action(GTA) and Energy-Particle Interchange

From the processes in the elementary particles and the theory of relativity, we observe that the definite visible particle transforms into a indefinite invisible energy and vice versa. Considering the GTA process of energy-particle interchange, it is impossible to define a definite independent being. That is, any being or process or interaction is only one temporary form or process or interaction of wholistic, prevailing energy in the universe.

As we can not imagine any independent separate being in nature, GTA process urges us to change our view from static to dynamic(dancing, oscillating) reality, and from static to dynamic harmony(or valance).

### 4. Origin-Division-Union Action(ODUA) and Scientific Problems

In Divine Principle, Origin-Division-Union Action(ODUA) is defined "a process in which out of God, the Origin, two entities are separately manifested and reunited in oneness."<sup>11</sup>

The process projecting God's DC into discrete substantial objects of God is UPF within God → forming reciprocal base within God → engaging in GTA within God → generating GTA force within God → engendering multiplication within God → projecting God's DC from God into discrete substantial objects of God. The process to produce Union is that the DC(subject and object) as God's objects form reciprocal base → engage in GTA → reunite into one.

From the process of ODUA we find a three-step process: origin(God), division(God's two objects), union(oneness of two objects). Also from ODUA we find that there exists a process or a flow of time when any being springs forth. In other words the passage of time requires for the creation of an entity. Also in the process of completion all things are designed to reach completion only after passing through three ordered stages of growth: the formation stage, the growth stage and the completion stage.<sup>12</sup>

When DC of subject and object engage in GTA there produces GTA force, and by GTA force they can maintain existence, interactions and multiplication. By ODUA,

11. HSA-UWC, op. cit., p. 24.

12. Ibid., p. 41.

therefore, any development can come out.

#### (1) Origin-Division-Union Action(ODUA) and Pair Creation-Pair Annihilation

From the experiments of elementary particles in particle accelerator we observe a process of pair creation and pair annihilation of particles. For instance, from energy[Origin] a pair of electron( $e^-$ )-positron( $e^+$ )[Division as DC] can come out and some time later annihilates to reunite into energy[Union].

#### (2) Origin-Division-Union Action(ODUA) and The Process of the Universe

Looking at the process of the universe from the state of beginning to now, physical researches show that there existed a perfect symmetry in the very early universe. As time goes on there occurred certain stages of symmetry breaking in the universe, so called SSB(spontaneous symmetry breaking). By this process physicists explain the mechanism producing elementary particles. This process may be explained by ODUA(of higgs bosons).

If we apply the profound structure, mechanism and capability of ODUA, for instance, DC relation, GTA process, the harmony of purpose and laws, and etc., to natural laws and phenomena, we may be able to discover a brand new aspects of nature untouched ever since.

### 5. Four Position Foundation(4PF) and Scientific Problems

According to Divine Principle, in order to establish Four Position Foundation(4PF) each one of the four entities(origin, subject partner, object partner, union) in ODUA must form three object base<sup>13)</sup> and fulfill the three object purpose(3OP). In order to form three object base we need four entities through ODUA. For ODUA we need GTA, for GTA we need DC, and for DC we need UPF of God.

Accordingly, the procedure of establishing 4PF is UPF(of God)  $\rightarrow$  DC  $\rightarrow$  GTA  $\rightarrow$  ODUA  $\rightarrow$  3OP  $\rightarrow$  4PF. Here we should pay attention to the fact that 4PF includes UPF(of God), DC, GTA, ODUA, and 3OP in itself and that 4PF is impossible to be established without God. Divine Principle says that nothing can exist without establishing 4PF, signifying that nothing can exist without God.

Because all the features of UPF(of God), DC, GTA, ODUA, and 3OP are included and maintained in 4PF, 4PF has an enormous potential applicability within itself. If we apply the significance, the rich structures and the diverse mechanism in 4PF to natural phenomena we are sure to reveal many hidden mysterious aspects of nature, deepen our understanding, and appreciate the beautiful, harmonious, and joyful creation of God. Divine Principle explains

The 4PF is the fundamental foundation of goodness. It is the realization of God's purpose of creation. It is the fundamental foundation for the life of all beings, providing all the forces necessary for their existence and enabling God to abide in them. Therefore, the 4PF is God's eternal purpose of creation.<sup>14)</sup>

#### (1) Four Position Foundation(4PF) and Spherical Motion(Mode of Existence)

Divine Principle explains that all beings which have completed 4PF exhibit circular or

13. This is similar to the 'reciprocal(or common) base' in GTA. In some sense we may say that the 'reciprocal(or common) base' in GTA is 'two object base.'

14. HSA-UWC, op. cit., p 25.



spherical motion and hence their mode of existence always becomes three dimensional.<sup>15)</sup> So in an ideal world where God's purpose of creation fulfilled, all individual beings embody God's DC and initiate spherical movements to build the foundation for God's governance. Here the spherical movements mean not only physical and geometric shape but also any harmonious invisible aspect.

Atoms, solar system, celestial bodies, and the whole universe exist in three dimension, keeping the modes of 4PF.

## (2) Four Position Foundation(4PF) and Mathematical Physics

Divine Principle says that one aspect of God's nature is mathematical and that God is a Being of number three<sup>16)</sup>. Therefore, Divine Principle says, "All created beings, having been conceived in the likeness of God, manifest their existence, movement and growth through a course of number three."<sup>17)</sup> This number three is related to ODU process in 4PF. So Divine Principle says that 4PF is the root of number three, four, and twelve.

About the reason of possibility describing nature in mathematics Divine Principle says,

God exists upon His Principle, which has a numerical aspect. The universe, with human beings at its center, was created based on numerical principles to be the unfolding of the dual characteristics of the invisible God as His substantial object partner. This is the reason science, which seeks to discover the external laws governing the universe, progresses through research conducted with the aid of mathematics.<sup>18)</sup>

## (3) Four Position Foundation(4PF) and Space-Time Continuum

Divine Principle says that once any being builds 4PF it reaches completion as an existence having the dimensions of space and time.<sup>19)</sup> That is, all beings exist in the structure of 4PF and 4PF has the dimensions of space and time. Therefore, the space-time continuum introduced by the Einstein's theory of relativity can be applied to the nature. Because of dual relativity of DC in 4PF the space and time can not be absolute and independent, namely, there are neither absolute space nor absolute time, as claimed by the theory of relativity.

## (4) Four Position Foundation(4PF) and Symmetry(Invariance)

Because 4PF has fulfilled three object purpose(3OP), 4PF has a perfect symmetry in every aspect. And 4PF is the eternal base of God's creation. The eternity of 4PF may be explained in relation to the perfect symmetry of it. According to the physical principle of symmetry-invariance(conservation) relation, if there exists a symmetry in any system the system has invariance(conservation) in it, too. This aspect of principle may come from that of 4PF. One important conclusion is that the value of 'absoluteness (unchangeness, invariance, conservation)' is intimately related to the law of symmetry.

In this perspective, Rev. Moon's efforts to unify sciences centered on absolute values through ICUS conference are, therefore, very persuasive and significant in realizing God's

15. Ibid. pp. 25-26.

16. The nature of number three in God stems from the fact that "God is the absolute being in whom His DC exist in the harmony."(Ibid., p. 41)

17. HSA-UWC, op. cit., p. 41.

18. Ibid., pp. 294-295.

19. Ibid., p. 297.

ideal of creation.

#### (5) Four Position Foundation(4PF) and The Universal Harmony

The fundamental origin of UPF, ideal relationships in DC, ceaselessly force-generating interaction by the love and beauty of GTA, the symmetric and complete fulfillment of DC and GTA in 3OP, and etc. are all dwelling in 4PF. Because of this richness and wholistic harmony in 4PF, we can describe the nature through 4PF in such amazing ways much richer, deeper, and better. Capra praises the ways describing the universe of oriental religions(Hindus, Buddhists and Taoists),

... in all of them the world is conceived in terms of movement, flow and change. This dynamic quality of Eastern philosophy seems to be one of its most important features. The Eastern mystics see the universe as an inseparable web whose interconnections are dynamic and not static. The cosmic web is alive: it moves, grows and changes continually. Modern physics, too, has come to conceive of the universe as such a web of relation.<sup>20)</sup>

Bohr, Nobel laureate and the leading physicist of Copenhagen interpretation of quantum theory, also emphasized existence through interactions with others, saying "Isolated material particles are abstraction, their properties being definable and observable only through their interaction with other systems."<sup>21)</sup>

All these arguments are natural conclusion from the features of 4PF. In 4PF we can find the most dynamic, changing, harmonious, beautiful, peaceful, and joyful aspects(structure, relationship, dance, etc.) of God's creation. Furthermore, because 4PF is the purpose of God's creation as mentioned above, in 4PF we can find the genuine harmony and unification of purpose(value) and laws, and hence that of religion and science.

#### 6. The Third Great Blessing(3rdGB) and Scientific Problems

According to Divine Principle, the third great blessing(3rdGB) of God means the perfection of a human being's dominion over the natural world. To fulfill this blessing, 4PF of dominion must be established centered on God. Human beings(subject) must give love and the natural world(object) must return beauty to become completely one.<sup>22)</sup>

All things as individual embodiments of truth and objects of God are substantialized according to human's DC. Divine Principle says that there are hierarchy centered on human.

The universe is composed of countless individual embodiments of truth, mutually related to each other in good order from those of the lowest level to those of the highest level. Among them all, human beings occupy the highest level.<sup>23)</sup>

Because human beings are created as the center of harmony of the universe, the place where God and human unite become one is the center of the whole cosmos.

20. F. Capra, *The Tao of Physics*, (Boston: New Science Library, 1985), p. 192.

21. N. Bohr, *Atomic Physics and the Description of Nature*, p. 57.

22. HSA-UWC, op. cit., p. 35.

23. Ibid., p.28.

(1) The Third Great Blessing(3rdGB) and Anthropic Principle(AP) ( Teleological Unity of Sciences )

The Universe must have those properties which allow life to develop within it at some stage in its history. According to anthropic principle(AP) which seek to link aspects of the global and local structure of the universe to those conditions necessary for the existence of living observers, the specific values of universal constants such as Newton's constant of gravitation, speed of light, Planck constant, etc. are attuned for the existence of human.

The so-called Strong Anthropic Principle(SAP) is defined as "The universe must have those properties which allow life(human) to develop within it at some stages in its history."<sup>24</sup> This AP aspect of describing natural world is a part of 3rdGB features.

(2) The Third Great Blessing(3rdGB) and Unification Physics(Unification Science)

Because the third great blessing(3rdGB) is simply a 4PF of human(subject) and natural world(object) centered on God, 3rdGB has all features of 4PF within itself. Therefore, the most complete description of natural world through physics or natural sciences should be in the frame of 3rdGB. We can not separate any being in the natural world from human. In this aspect we may say that unification physics is a physics in the 3rdGB, and that unification science is a science in the 3rdGB.

(3) The Third Great Blessing(3rdGB) and Theology of Nature

The theology of nature may be defined as a theology describing natural world or a theology describing from the natural laws in the 3rdGB. The essential point of 3rdGB is to be the God's eternal object of goodness which should be realized in God's ideal world of creation, kingdom of God both in heaven and on earth.

### III. The Integration of Religion and Science from the View of Unification Principle

Early in 1930s Planck, Nobel laureate of physics, foresaw the possibility of the advent of new physics, saying that "Science keeps going to the goal which intelligence can never grasp but which a poetic insight can comprehend."<sup>25</sup>

Chew, physicist of Berkeley, also advocated the coming of it, saying that "Now the struggle with the ongoing advanced physics goes beyond the realm of physics and signifies a brand new form of human efforts that may not proper to call it physics."<sup>26</sup>

So far we have searched for the unity and harmony in view of the Unification Principle. Throughout the Divine Principle all the features of UPF, DC, GTA, ODU, 3OP, 4PF and, in total, the three great blessings(3GBs) play a decisive role to solve various

24. J. D. Barrow & F.J.Tipler, *The Anthropic Cosmological Principle*, (New York: Oxford University Press, 1988), p. 21.

25. G. Zukav, *op. cit.*, p. 432.

26. *Ibid.*, p. 432.

religious problems. Simply speaking, the Divine Principle explains the original world, the fall of human and the restoration of the fall from the perspectives of God's ideal of creation.

Since the God's ideal of creation has its essence in 3GBs, the three parts of the Divine Principle can be explained by 3GBs. In other words, the religious problems can be solved in view of 3GBs. By the same features of 3rdGB out of 3GBs we have tried to solve various scientific problems. Therefore, we can resolve the religious problems and scientific problems in view of one concept the 3rdGB, overcoming the internal and external ignorance. In other words, the two ways of religion and science can be integrated and their problems resolved in one united undertaking; the two aspects of truth can develop in full consonance.

## Conclusion

From the arguments above we learned an enormously potential applicability to scientific matters within these concepts.

If we apply the significance, the rich structures and the diverse mechanism in 3rdGB of 4PF to the natural world we can reveal untold mysterious aspects of God's creation, deepen our understanding, and appreciate the true, good, beautiful, harmonious, and joyful creation of God. The love and beauty relationship between human and natural world in 3rdGB of 4PF brings the highest level of the harmony of truth, goodness, beauty, peace, joy, and etc.

The 3rdGB puts value (purpose of creation) and laws (laws of creation) into together, culminating in the ultimate goal of the unification(integration) of religion and sciences. Now the evil world is transforming into the world of goodness fulfilled 3GBs. The Divine Principle the new truth and the Completed Testament, revealed by Rev. Sun Myung Moon the Lord of Second Coming, attempts to solve all problems including religious and scientific ones.

We hope that this on-going paper can contribute a portion to fulfil the goal of Unification Principle, the New Truth, and also the goal of ICUS.

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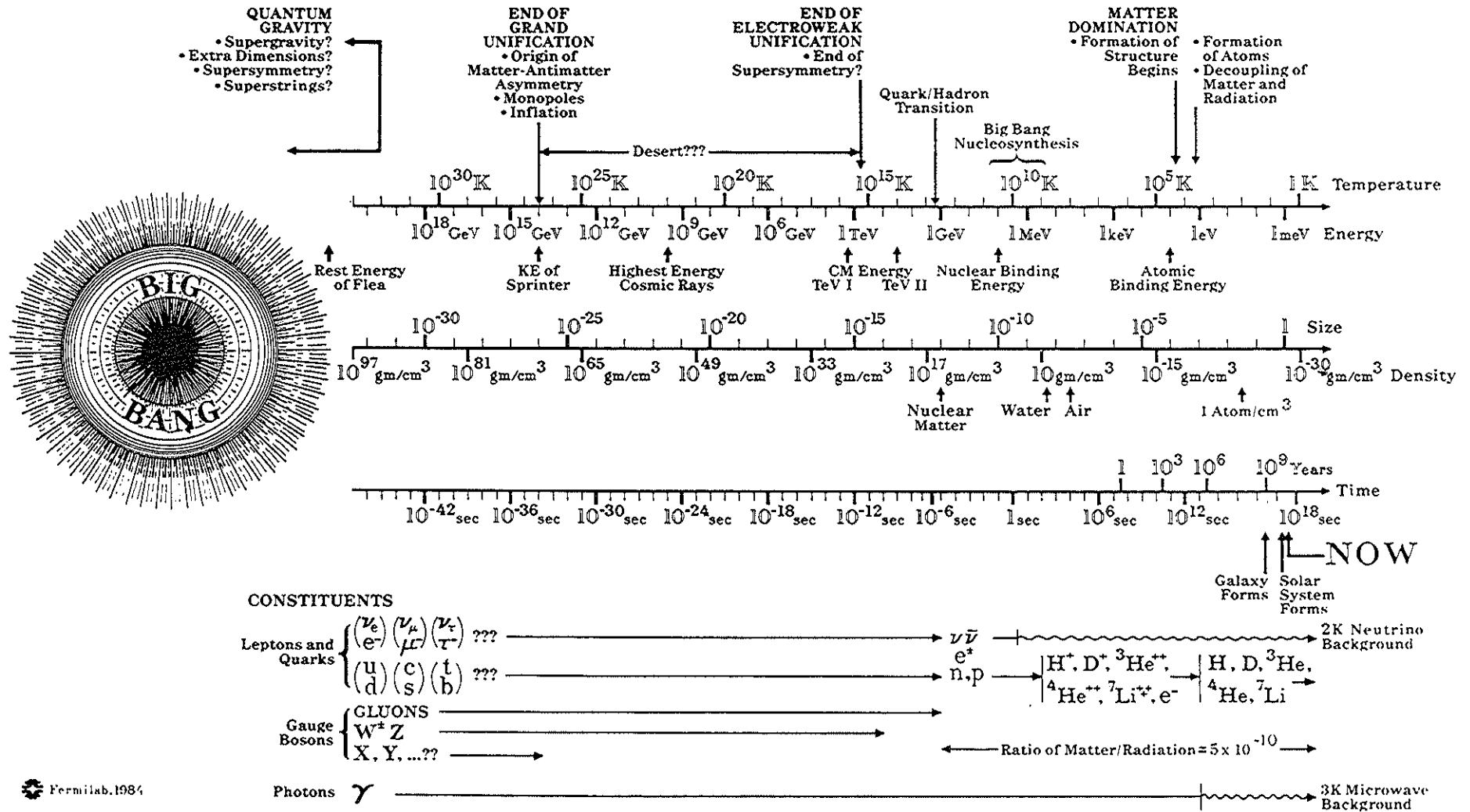
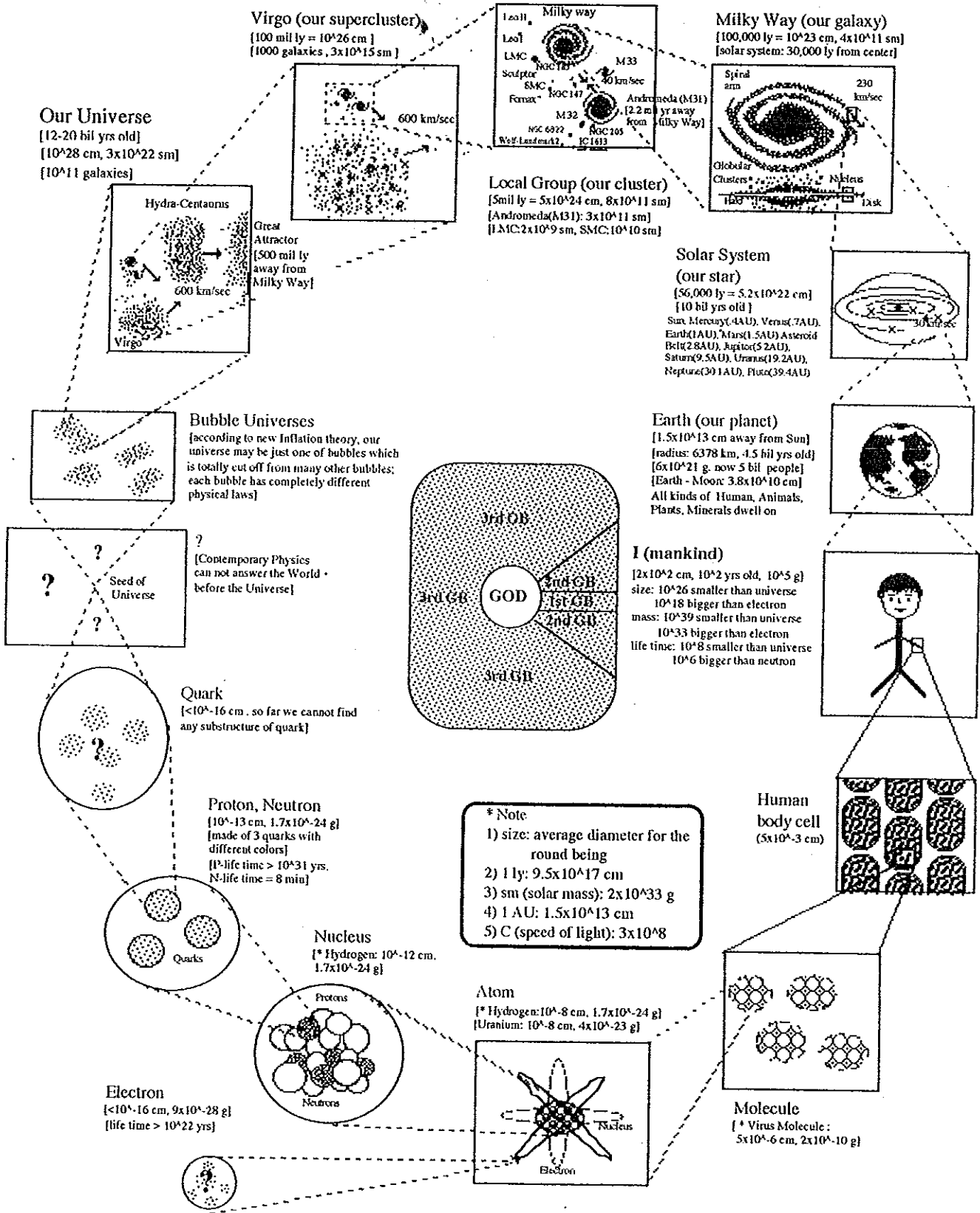


Figure 7-3. The relationships of temperature, energy, size, density, and time that existed in the very early universe; they can be traced by studying the chart vertically. The bottom chart shows the point at which the original "soup" converted into such matter as quarks and leptons. (A Fermilab Photo; used by permission.)

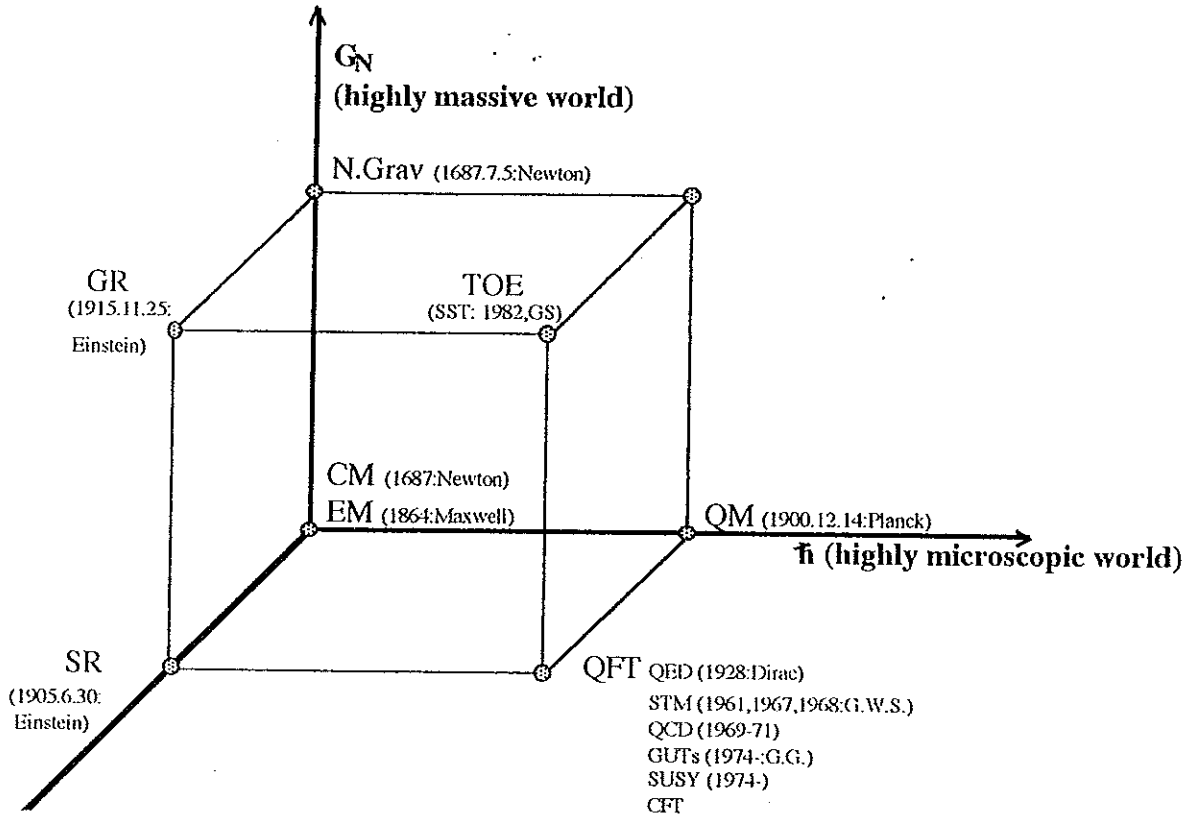
# D. 3GB IN VIEW OF GOD AND HIS HIERARCHY OF PHYSICAL WORLD



## 2. CONTEMPORARY PHYSICS [C.PHYS]

### A. DEVELOPMENT OF PHYSICS

#### 1) Schematic viewpoint centered on universal constants (C, H, $G_N$ )



**NOTE**

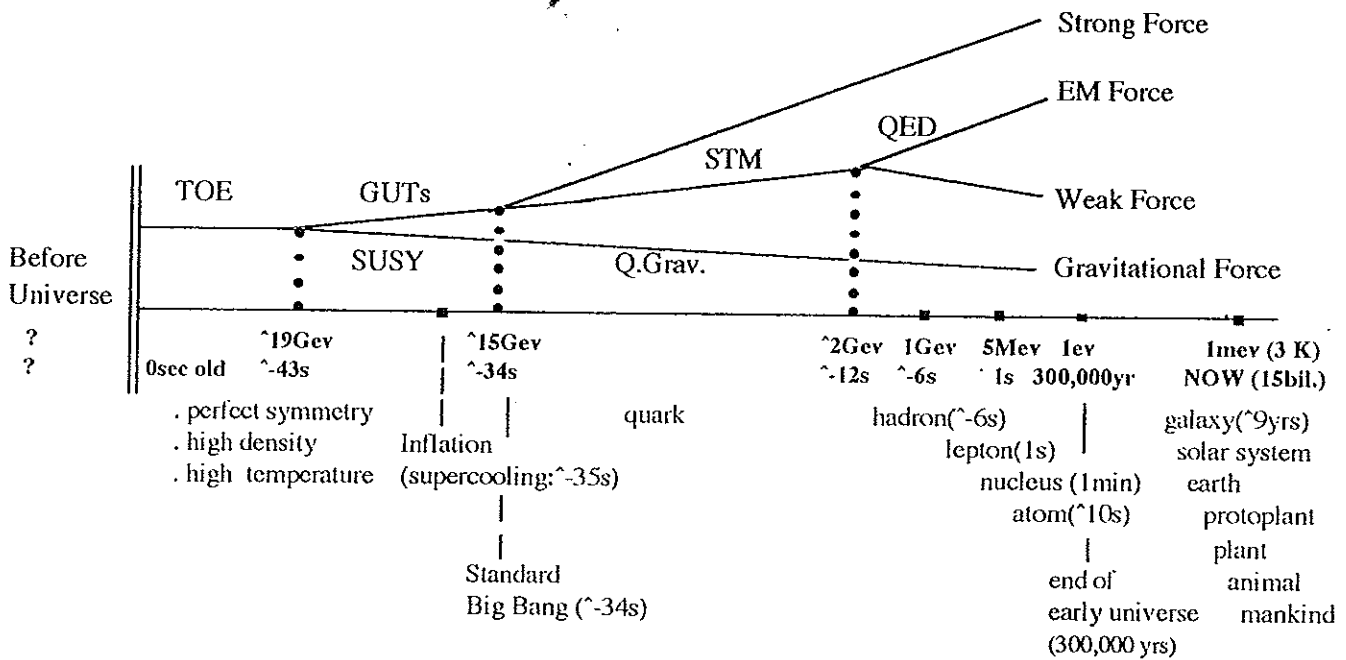
CM: Classical Mechanics  
 N.Grav.: Newton's Gravitation  
 QFT: Quantum Field Theory  
 STM: Standard Model  
 CFT: Conformal Field Theory  
 C: speed of light (300,000 km/sec)  
 $G_N$ : Newton's constant ( $6.67 \times 10^{-11} \text{ N m}^2/\text{kg}^2$ )

EM: Electromagnetism  
 SR: Special Relativity  
 QED: Quantum Electrodynamics  
 GUTs: Grand Unified Theories  
 SST: Superstring Theory  
 h: Planck constant ( $1.05 \times 10^{-34} \text{ joule}\cdot\text{sec}$ )

QM: Quantum Mechanics  
 GR: General Relativity  
 QCD: Quantum Chromodynamics  
 SUSY: Supersymmetry  
 TOE: Theory of Everything

## C. UNITY OF PHYSICS (UNIFICATION OF PARTICLES/FORCES)

### 1) In view of energy scale & progress of universe



### 2) In view of interactions

