World Journal of Education and Humanities
ISSN 2687-6760 (Print) ISSN 2687-6779 (Online)
Vol. 2 No. 2, 2020
www.scholink.org/ojs/index.php/wjeh

Special Issue

On the Concepts of Space And Time

Prof. Zhiyong Dong[1*]

[1] Northwest University, P. R. China

[*] Prof. Zhiyong Dong, Northwest University, P. R. China

Received: October 10 18, 2019 Accepted: October 22, 2019 Online Published: October 30, 2019

doi:10.22158/wjeh.v2n2p129 URL: http://dx.doi.org/10.22158/wjeh.v2n2p129

1. Introduction

Time is a very important concept in subjective disposition, because people quite often use the concept in their thinking and linguistic expression every day. In all the existent forms of Latin language, there are the phenomenon that the usage of each verb is linked with the concept of time, that is, the phenomenon of tense. The people can refer definitely to a matter, or a thing, or an event, and can have the notions of causality and law, after they have got the concept of time. Therefore, time is a very important concept, which the subject dialectics have to deal with.

2. Notion of Time

Humans have used the concept of time for many years. However, humans have not answered the question of what is concept or notion of time properly, as the scholars in the Middle ages had pointed for almost two thousand years ago. For instance, Aurelius Augstinus, the famous philosopher of the Occident, at the 5th century said, in his book *Confesiones*, "What is then time actually? I know it if no one asks me. I do not know it if someone asks me or I would like to explain it." (Note 1) Tianbao Xia, a present scholar in China published an article in *Peking Daily* in the year of 2012, saying that "Time, a very simple matter which seems everybody appears to know it. However, it is so complex and mysterious that no one has pointed out its essence properly until now, and the physicians and philosophers still have serious headaches for it." (Note 2) He said actually by the above words that human beings had not defined the concept of time properly until now, because human beings have not answered the question of what is the abstract end, or what is the essence, or what is the genus, or what is the differentia of the concept of time properly, or what is the closest genus, or what is the closest differentia of the concept of time properly, until now. (Note 3)

The contemporary dictionaries and encyclopedias of all countries have the item of time. All of them enumerate that the word of time refers to more than one sense. For instance, the term of time has 12 senses as noun in *Oxford Advanced Learner's Dictionary with Chinese Translation*, which was

published by Oxford University Press and the Commercial Press in 1988. The dictionary is quite popular in present China. The senses are as follows: 1, all the days of the past, present and future; 2, the passing of all the days, months and years, taken as a whole; 3, portion or measure of time; 4, point of time stated in hours and minutes of the day; 5, time measured units; 6, point or period of time associated with or available or suitable for, a certain even purpose, etc.; 7, occasion; 8, used to indicate multiplication; 9, period of time, more or less definite, associated with certain events, circumstances, persons, etc.; 10, the conditions of life, the circumstances, etc., of a period characterized by certain quantities; 11, Greenwich/local/summer/standard time; 12, style of rhythm depending upon the number of beats in the successive bars of a piece of music. Besides, the word time is used as verb and has got at least three senses. They are as follows: 1, choose the time or moment for; arrange the time for; 2, measure the time taken by or for; 3, regulate. (Note 4) There are three senses in *Contemporary Chinese Dictionary*, which is quite popular in present China. They are as follows: 1, one existent form of matter, a successive system which is composed of the past, present and future, and the expressing form of continuity of change and movement of matter; 2, a period of time associated with the beginning and end; the time of the rotation of the earth is 24 hours; 3, point of time stated in hours and minutes of the day, for instance, it is three thirty. (Note 5)

From the senses or contents of the concept of time of the two popular dictionaries above, we can see that it either refers to the process or result of the measure or scale of time, or refers to the other dominant thinking moments which are linking with the result of the measure or scale, such as the conditions of life, or the circumstances, or a period characterized by certain quantities, no matter in English or in Chinese. There are the meanings of multiplication, or the conditions of life, or the circumstances which have no direct connection with the measure or scale of time in English. Above all, or the crux is that any of the meanings of time above is neither the genus, nor the essence, nor the abstract end , nor the differentia of the concept of time. All of them are existent forms, or sub-concepts, or specific concepts of time. They are more concrete than the concept of time itself. All of them are the sub-concepts of time, which the concept of time contains or implicates.

We should first think the concept of space and the other concepts, such as animal, fruit, etc., which can not be contained or implicated by the concept of time, if we want to define the concept of time from the perspective of genus and specific difference, or if we want to answer the question of what is the essence of the concept of time properly.

Then we should expound the recessive moments which connect the merge of the dominant thinking moment of time, that is, to explain why people have to form and express out and use the concept of time.

The dominant thinking moment refers to a point of thinking which can be stated by a word, or by an epitomizing point which can be stated by a word as I explained clearly in the above chapters.

Relatively, the concept of time is a more abstract thinking moment than its subordinate thinking moments, such as the concepts of the measure of time, or the scale of time, or the absolute time and the

relative time, etc. Time is the upper seat concept of the concepts of the measure of time, and the scale of time, and the absolute time and the relative time, etc. Only through the concept of time can its inferior concepts, such as the measure of time, scale of time, the absolute time and the relative time, etc., be connected properly with the whole of human knowledge, which the human beings have got previously, and then help the humans to think and practice efficiently. Vice versa the concept of time can merge only because humans have got the concepts of the measure of time, or the scale of time, or the absolute time and the relative time, etc., which are the smaller concepts than the concept of time, or inferior concepts of the concept of time.

The recessive thinking moments are the thinking moments which are antagonistic equally in abstraction with the dominant moments of thinking. The recessive thinking moments are the thinking moments which an idea, or a concept, or a word has gone through, when the idea, or the concept, or the word is forming, like the concepts of the measure of time, or the scale of time, or the absolute time and the relative time, etc., in the process of forming the concept of time. A recessive thinking moment can not be expressed or stressed by the same word or phrase with the dominant thinking moment, though humans can make recessive thinking moment dominant and use other words or phrases to express or stress it, like the words or phrases of the measure of time, or the scale of time, or the absolute time or the relative time, and, etc. Recessive thinking moments are called sememe in linguistic science as I explained in the above chapters. For instance, if we want make clear what is vertebrate from the abstract end, we must first make clear what is vertebra from the abstract end. We must make clear a series of concepts, such as metabolism, energy, etc.

I think, the aim for humans to create the concept of time is to quantify the processes of subjective and objective existence, and their beings, and their duration and their changes, in order to make the cooperation and division of human activities efficient, that is, to increase the collective power of humans in production and war, and so on and so forth. Humans would not had created the concept of time, if humans did not want or need to make the cooperation and division of human activities efficient.

The historic facts prove that the persons who takes part in the real cooperation and division can not appear at same place in the same order because of the physical limit, because each participant needs a certain space to survive and take part in the cooperation. The other persons else can not occupy the same place if someone else has occupied a place in the same historical process. Therefore, the organizer of each cooperation has to prescribe the order and place of each participant in order to make the cooperation and division of human activities be able efficient. For instance, each regulatory agency has to resolve the problem of establishing the monitoring stations globally for each satellite launching, and to resolve the problem of making each participant of the launching be on duty on time, that is to monitor the launching in a certain order, in order to make the satellite enter the proper orbit. Another example is that each community, from the most ancient time till now, has to resolve the problem of relieving guard in order to get the all weather warning capacity of the whole community, because each member of the group, which is on duty to warn, can only stand guard for a certain duration every day.

Each member of the group has to eat, sleep, etc., to survive in the other time every day, otherwise he could not go on living, to say nothing of being on duty. Therefore, the concept of time merged, or was created, or was formed first to meet the requirement of making the cooperation and division of human activities efficient, and resolving the problem of the order in which each human participates to do the collective activities, in the circumstances that most of the human activities are collective.

Secondly, humans found that the characteristics of the social and natural factors of the environment in which humans are living are different and are changing, and the speed of changes are different too. Fir instance, wood can be used as fuel to cook. Seeds, and fruit, and flesh of animals can be used to allay humans' hanger. Some people can live for decades, others may live for only a few months. From the most ancient times, it happens quite often that one community is annexed by a stronger community, like what happened in the end of Zhou Dynasty about twenty three hundred years ago in Chinese history that the state of Qin annexed the other six comparatively big states in China. Humans need quantify the natural and social factors and resources in which humans live. These factors and resources include the changes of the factors, such as the order of the changes of the factors, the speed of the changes, the duration of the changes, and so on so forth, in order to make good or better use of the factors and resources. These are the most important reasons for humans to put forward the concept of time.

Therefore, the genus, or abstract end, or essence of the concept of time is the thinking moment, when we make the concept of time be antagonistic to the concepts of space, the measure and scale of space and time, the absolute time, the relative time, the absolute space, the relative time, etc., that is, when we make the concepts as the context of the concept of time, that is, to connect the concept of time with the these concepts, and consequently confine the concept of time with these concepts. The differentia of the concept of time is the quantification of order and duration of the existence and changes of each subject and object.

The order refers to what happens first, what happens second, what happens the third, and etc. The duration refers to the speed of the changes of any subjectivity or object. In other words, the aim for humans to put forward the concept of time is connected directly with the desire and hope of the efficient cooperation and division of human activities, and the quantification, and the measure, and the scale of the subjective vital motion and life cycle, and the quantification of the measure and scale of the order and duration of any existence and change of the objective environment, in which each human community lives and survives.

The concept of time becomes a dominant thinking moment after it has been expressed by a word in languages. Humans can explain clearly the thinking moments of the measure of time, the scale of time, the absolute time, and the relative time, etc., only through the thinking moment of time. Relatively, the concept of time is a thinking moment, or a concept, which is more abstract or bigger than the thinking moments or concepts of the measure of time, and the scale of time, and the absolute time, and the relative time, etc., in the process of the human thinking. The concept, or thinking moment, of time, is

the upper-seat concept of the concepts, or thinking moments, of the measure of time, the scale of time, the absolute time, and the relative time, etc. And the concepts, or thinking moments, of the measure of time, and the scale of time, and the absolute time, and the relative time, etc., can only connect or link properly with the whole system of the knowledge which the humans have got, and help humans in practice and thinking better and more efficient through the concept of time. Vice versa, humans can form the upper-seat concept of time, only after the inferior concepts when they have been created, or established, or formed, that is, the inferior concepts, or thinking moments, of the measure of time, and the scale of time, and the absolute time, and the relative time, etc., have been created, or established, or formed.

The humans can establish or create the correct idea, notion and conception about causal relations, and can explore, study and describe the relations between subjects and objects, and can direct the human activities efficiently, after humans have established the concept of time and the ideas of order and duration about the existence and changes of the subjective and objective entities. For instance, the humans would guess and speculate that the less harvest of grain in autumn because of the overgrown rank grass in the cultivated land in summer in the coming autumn, if humans see that there is too much rank grass and the harvest of grain was not as much as in last autumn. The humans would summarize the law that too much rank grass would reduce the harvest of grain after the phenomenon repeats a few times. And the humans would try to reduce the rank grass in order to increase the harvest of grain to increase the absolute degree of their living standard. Therefore, it is very important for humans to establish or create the concept of time in the process of establishing the correct concept about causal relations, and can helps humans very much in their thinking and practice. It can help the humans to recognize the laws of natural and social developments. It is one of the foundations for humans to organize the efficient cooperation and division of their practice for humans to establish or create the concept of time.

The concept of time is a concept which has the publicity, that is, it needs everybody to get to know and understand, because the final aim for humans to put forward the concept of time is to have efficient cooperation and division in their activities. However, the concrete measure and scale of the time can not be carried out without the concept of space in order to meet the publicity of the concept of time. It because only through the concept of space that humans can find some objective phenomena which each person concerned can feel in person, and which can not be changed by the individual will of any person. Humans only take some objective phenomena which each person concerned can feel in person as the coordinate, or symbol, or indicator, that is, the scale of time. Then each person concerned be able to grasp the existence and the order of the changes of the relevant objects and subjects, and the speed of the changes, and the duration of the changes, and so on so forth. Therefore, we need another subjective negation, or another subjective suspending, that is, to put the concept of time aside, and take the concept of time as a recessive thinking moment, and make our thinking transit from the concept of time to the concept of space.

3. Notion of Space

At present, the scholars do not have a convincing definition about the differentia of the concept of space, which has be acknowledged by the most of the scholars of the whole world, who work in the circles of sciences or philosophy. To this fact, Martin Heidegger, the contemporary German philosopher, said that "the interpretation of the Being of space has hitherto been a matter of perplexity", (Note 6) in his seventh edition of the book *Being And Time*, published in 1953. His explanation about the reason of perplexity is that

"not so much because we have been insufficiently acquainted with the content of space itself as a thing, as because the possibilities of Being in general have not been in principle transparent, and an Interpretation of them in terms of ontological concepts has been lacking. If we are to understand the ontological problem of space, it is of decisive importance that the question of Being must be liberated from the narrowness of those concepts of Being which merely chance to be available and which are for the most part rather rough; and problematic of the Being of space (with regard to that phenomenon itself and various phenomenal spatialities) must be turned in such a direction as to clarify the possibilities of Being in general." (Note 7)

His above words really pointed out how to resolve the problem of finding the nature of the concept of the time. However, Heidegger himself did not put forward any new idea about the nature of the concept of the time, which are more accord with the objective facts. I think that the reason for him not put forward any new idea about the nature of the concept of the time is that the defects, which the existent forms of Latin have got, explained above by me. These defects made himself in the condition that he could not think it out or explain it clearly.

I think, the concept of space refers to the dominant thinking moment which express our desire, or tendency, or requirement, or want, to quantify the extension of the existence of any object or objectivity, and their movements and changes, when the concept of space is opposite to the concepts of the measure and scale of space, the concept of time, the concepts of the measure and scale of time, absolute space, relative space, etc., that is, when the concept of space is connected, refined and defined by these concepts. The so-called extension of any object or objectivity refers to the distance which be part from the subjects, the bulk of any object and person, including the bulk of vacuum, and hollow, and void space, etc. The so-called extension refers to the length, width and highness of any object or any person.

The humans know that the objects of human practice on have many kinds from the most ancient time. The environment, which humans have lived in, is composed by these known and unknown objects. The humans have got known that the characteristics of these objects, which exist in the surrounding of the human living, are different, through the observation, thinking, studying, succession, from long time ago. Some of them can be used by humans to meet their necessity for living, some of them can menace or threaten their living. The productive tools and weapons manufactured by humans, and the regulations of social activities made by the human communities, can help humans to resolve various problems in

their production and to resolve various problems of the personal safety and the safe of the whole communities.

The humans got to know, from the ancient time, and from the perspective of geography, that the bulk of each object may not be the same, and each object has to occupy certain area of the vacant space or hollow space. Each human has to occupy the vacant space which is much bigger than a piece of grain does. And the distance, which each object may be apart from the other persons who are doing their practice, is different. Humans need to grasp the bulk of the objects and the distance between them, in order to make good use of them. This is the first reason for humans to put forward the concept of space.

We need here discriminate the terms between the area of vacuum and the vacant space, from the perspective of the geography and physics. The area of vacuum, from the perspective of the geography and physics, refers to the area in which no anything which is bigger than a photon. The vacant space, from the perspective of the geography and physics, refers to the area whose density or thickness is smaller than the area which we are going to dispose or study. For instance, if the object is a piece of coal, then the atmosphere and the ordinary water body are the vacant space, relative to the coal. Of course, all the vacuum area is the vacant space, relative to all the matter, except to the photons and the matters which is smaller than a photon. However, to the most of ordinary humans, the area they have disposed everyday is the vacant space. Only a few people, who work in the fields of cosmic space, and in the fields in which they can work only after they have to make the area vacuum, have to deal with the issue of the vacuum area.

In the contemporary Chinese language, many people, in their daily communication, often make the various characteristics of the various objects, such as the hardness of objects, the color of the objects, the luminosity of the objects, as the content of the concept of the space, because these factors are considered by the people the necessary parts of objects, for they are not contained or complicated by the concept of time. It is proper in their daily thinking and communication so long as it can be convenient to their daily thinking and communication. Besides, this phenomenon can not be hidden by the other people, because it is an expression of the biological instinct of humans, which has been got through the evolution of millions of years.

However, it needs to get rid of these characteristics of the various objects out off the concept of the space, when we make the concept of space be antagonistic, or opposite, to the concepts of the measure and scale of the space or time, absolute space, relative space, etc., that is, when we connect the concept of space with these concepts. It is because that it already set up the premise and regulate content and the degree of the abstraction of the concept of space, for the concepts of the measure and scale of the space, or time, absolute space, relative space, etc., have already defined, and refined, and guided the concept of space beforehand in fact. The distance between different things may be different. The bulk is different in the degree of abstraction from the various characteristics of the vagarious objects. An object can have many characteristics, such as the hardness, the color, the luminosity, etc. But the bulk and distance between different things only have one in a certain duration of time. In many

circumstances, to put the bulk and distance between different things to be of equal rank has got the characteristic of the being beside the point. For instance, it make people feel to be beside the point, if some ones list the taste of apple is sweet or sour, or the apple is harder than a banana, etc., after they have listed that existent forms of fruit, such as apple, peach, pear, banana, etc., when they were asked to list the existent forms of fruit. The listeners would feel that the answers have the trouble in logic, or the answers are different in the degree of abstraction, or the answers are not to the point, and, etc. Therefore, the characteristics of the objects should not be included in the contents of the concept of space, when we make the concept of space be antagonistic, or opposite to, the concepts of the measure and scale of the space, or time, or absolute space, or relative space, etc., to get the essence or genus of space.

The other important reason for people to put forward the concept of space is that people have to quantify the movement of the objects through the concept of space, because all the objects themselves are always changing in bulk and existence, and these changes are often different. In order to make good or better use of the objects themselves or the movements of them, and to bring benefit to mankind, people have to make use the relations between them, that is, to make use the inevitable relationship between them and the laws of movement of them. For instance, the subject can move its habitat ten kilometers to the east in order to live in a better environment. Then they may have to move ten kilometers to the west to get or see the things which were near to their previous habitat. Some people can walk fast, some can not. Almost all the animals in the world have to escape when they see humans. An ordinary adult human being can carry 10 kilograms of goods to walk on foot three kilometers in an hour. A big lorry can carry many tons of goods to 100 kilometers away on a highway in an hour. A baby, who can do nothing, can grow to an adult and can do many kinds of the concrete labors in about 18 years. At the same time, his bulk has grown to a certain area, which is much bigger than he was a baby. People can built a skyscraper in a few years, and can also demolish it in a few minutes by an explosion. If we includes that the earth is moving around the sun at the speed of 30 kilometers a second, then everything in the earth is moving every minute. (Note 8) The humans need to grasp the movement about the distance away from the other subjects and the bulk of the objects in order to keep and raise their absolute living standard.

There leaves the contents of the concept of space, only the idea, or tendency, or desire to quantify the bulk, the ductility, the draw-ability, the stretching force, etc., of the movement and changes of the objects, when we make the concept of space be antagonistic or opposite to the concepts of the measure and scale of the space, or time, or absolute space, or relative space, and, etc., that is, when we refine the contents of the concept of space with these concepts.

Besides, in the two thinking moments of time and space, each person, each thinker, need to take the other person, or persons as a whole, or the other thinker, or the other thinkers as a whole, as the object of his thinking. Then all the persons, or all the thinkers, take the other persons, or thinkers, as the objects of his own thinking. They are antagonistic or opposite to each other mutually.

The human thinking are split and separated by individual thinking and united by collected thinking. The division of thinking is the key moment which break the antagonism between individual thinkings and realize the collective thinkings. The collective thinkings are realized by the individual thinkings. Each individual human being have different object of thinking, because their practice are different. For instance, the thinking of the individual who is driving a bus maybe different from the individual who is planting apple trees in the same time, that is, in their working time. However, all their thinkings represent the collective thinking of the human community. Therefore, the social division and cooperation are the key moment and realizing form for the breaking of the individual thinking and uniting the human thinking as one.

The social division is the social existent form of collective practice, from the perspective of reductionism, or metaphysics, as what has been explained in detail in the previous sections and chapters of this book. In turn, the collective practice of humans is the content of social division. And the individual practice is the realizing form of the collective practice. It is the social division makes the unity of individual practice and collective practice and makes each individual practice have the duality, or dual function, that is, each individual practice is not only the individual practice, but also the natural realizing form of the collective practice. In this relationship of duality, the collective practice is the social content of the individual practice, and the individual practice is the natural realizing form of the collective practice.

In the circumstances that the concept of space is antagonistic or opposite to the concept of time, the genus, or the essence, or the abstract end, the two concepts of space and time are only two concepts, or two dominant thinking moments. It is because that the two concepts of space and time are the concepts which have got very high degree of abstraction, only a few concepts may have got higher degree of abstraction than the two concepts. The formal logic pays much attention to “Definitio fit per genus proximum et differentiam specificam,” (Note 9) that is, the nearest genus and nearest differentia.

We have to have to go to another negation of thinking, or another subjective suspending, or transcending, or passing on our thinking to the sub-concepts of space, that is, the measure and scale of the space, from the concept of space, in order to make the concept of space be significant to the human practice, and can help the human practice.

4. Measure and Scale of Space

The key, or the kernel, or the core moment, that is, the most important content of the measure of space is to put forward a unit, which has agreed, or has got the consensus by a community as a whole, in the measurement of the bulk and distance. The key, or the kernel, or the core moment, that is, the most important content of the scale of space is to put forward a common place, or the common point, as the starting point of the scale of space, which has got agreement commonly, or has got the consensus by the community as a whole.

As what has been stated as above, all the matters in the world, including each human individual and

each community, no matter it is big or small, has to occupy a certain area of space, that is, a certain area in the sense of physics, or in the sense of vacant space, for its existence. I also stated that each person occupies different bulk of space, some large because he is tall or fat, some small because he is low or thin. The places, in the sense of geography and physics, for each person to occupies is also different. Even the longitude and latitude for two persons to occupy are the same, that is, when a person stands on the top of the head of another person, the places, in the sense of geography and physics, for each person to occupies is also different, because the vertical distances they are apart from the sun are different. A community must grasp the bulk and distances of each member and the objects around the living environment of the community, in order make good, or better, use of them. Only through the moment of space, the humans can meet their need in their existence and development, that is, to meet the need for their food, drink, draining, spiritual life, and, etc. For instance, the relevant people must get to know the distance between their kitchen and the source of the water for their community. It is because that the nearer the subject away from the source of water for their community, the shorter time the subjects use in getting of the water, which is necessary for their living, that is, the shorter duration the subjects use in the course of their livings, and the longer duration the subjects use in the other things or activities, and provide the intercessory condition in time, that is, in the course of their livings, for them to raise the absolute standard of themselves and their offspring and relatives.

The measure of space is a public affair. It is a matter which need everybody knows, because human practice is always a collective practice. Therefore, the first issue, each community has to resolve, is to set up, or establish, a standard of length in the process of the measure of space, that is, to find a body to be the standard of length. The human history shows that the humans began their history at a very low level of productivity, and had very poor scientific knowledge at that time. Therefore, humans have experienced a very complex course of the development in making the standard of length. For length, for instance, in ancient China, people used their fingers, hands, feet, and, etc., as the standard of length in macroscopic. (Note 10) Now Chinese people can measure the nanometre in microcosmic, and astronomical unit (the distance between the earth and the sun, about 150 000 000 kilometers), light year, etc., in macroscopic.

The trade between the big Occident powers and their colonies had developed greatly in the whole world, since the western world found the American Continent in the end of the15th century. The Occident countries reached the agreement that the basic unit for the scale of length is metre, at the end of 18th , in order to develop the trade of commodities and services better between countries in the world. One metre is equal to 1/40 000 000 000 of the equator. The objective standard script of the metre is kept in the National Record of France now. However, the method of how to decide the standard metre has changed several times because the development of science and technology since then. The 17th General Conference of Weights and Measures, which was held in the year of 1983, decided that the metre is the length of the path travelled by light in vacuum during a time interval of 1/299 792 458 of a second.

I said, in the previous chapters of this book, that each generation has to go through the process of changing the matter into the content. This process often is that the younger generation acknowledge and succeed all the knowledge which is good and helpful for the existence and development of whole community. I think, one of the major reasons, or the major recessive thinking moment, for people to decide that the metre is the basic unit for length, is that the length is the nearest length for many children, whose age is about to go to school, to spread out their arms, and it is easy for them to understand and get to know. That one metre is equal to 1/40 000 000 000 of the equator should be yielded to the fact that the measure of space is a public affair, it should be understood and grasped by each person, who has got a certain degree of understanding, including the children whose age is already for school. Otherwise, why the national meeting of France at that time did not decide that the standard of the metre is equal to 1/10 000 000 000 of the equator, nor 1/100 000 000 000 of the equator. If so, it was easier to calculate than 1/40 000 000 000 of the equator. It is one of the most important thing to let each school-age child to succeed the knowledge about the length. It is best way for children of school-age to learn in the way for them to be easy to see and understand.

Actually it is the most common phenomenon for humans to make use their organs as the scale to measure objects. For instance, Xiaojun Zhao, a young scholar in China, writes in his doctoral thesis, that all the standard of the measures of the length in the decimal system in ancient China were regulated, or set up, on the foundation of the organs of the human organs, through his study of the data about the archaeology near the city of Xian. “It needs a relatively united standard to build a house, people may make use of the body of the leaders of the clan, or make use of the natural matter, or make use of the matters which were made by the people.” (Note 11) In English, French, and German, the pronunciation and writing of the measure unit of foot are the same as the pronunciation and writing of the body organ of foot. This fact indicates that it is a common phenomenon for all the early communities of humans.

The reason for humans to make use of human organs as the standard of the length is an objective result of subjective disposition on objective things. It is the most easiest method for people to make use to humans, because each person has them on his living body. It is the most understandable method. It is just like what the folk say that it is the natural instincts for people to make use of their organs as the standard of the length. I even remember that I myself and my classmates plaid the game of marbles when I was in grade of 4 in primary school at the age of 11 years old. Each time I plaid the game, I would ask that we had to make use my hands and steps as the standard of the length, never trouble the rulers. The other classmates had to agree with my requirement or claim, because I was the best player in my class. If I had not joined the game, the game would had lost much interest. We can see today’s fact from this small game. The communities would have the rights to decide the standard of the length in the world when they are the most powerful ones in political and economical fields, and when the standards of theirs are the most convenient and the most efficient.

The human history shows that people put forward early or later the other scale units of length, such as

kilometre, decimetre, centimetre, millimetre, micron, nanometre, light year, etc., in order to be convenient for the people who work in the different fields.

The new China has taken the standard of length of the western world as one of the legal standards of the length of the western world since the establishment of the People's Republic of China in 1949.

As for the starting point of the scale of the space, that is, the issue of the starting point of the measure of the space for each community, there are many answers because that the aim of each practice for each community is quite different. Some communities would choose the gate of the meeting building of the tribe; some would choose the buildings of the ground mark of the cities; some would choose the starting point of a high way; some would choose the major observer of the observatory of Greenwich in London, and, etc. There are millions of the starting point of the measure of the space for the mankind, because that there are millions of different practices everyday, and there are millions of the communities which are different in sorts and hierarchical structure in the world at present.

5. Dimension of Space

There are three dimensions for the scale of space. They are length, width and height. Any object, no matter how complex in shape it is, can be reduced by the three dimensions, through the process of calculation. Some people already asked why the space only has three dimensions, but why not four dimensions, or why not ten dimensions, etc., long time ago. Some people who work in the discipline of theoretical physics put forward formally the viewpoint there could be ten dimensions of space. (Note 12) I think that three dimensions are enough for most of the ordinary humans to scale the space in their daily life. It would bring ordinary people in confusion in their thinking, if humans establish more dimensions in their daily life. It would make different individuals, or the people in different communities, be not able to complete the course of absolution in the fields of the scale of space, or be not able to organize the efficient cooperation or division in their practice. I also think, that it is a reasonable viewpoint or claim for the people, who work in the theoretical physics, that space has ten dimensions, so long as this viewpoint can be convenient and simplify their interrelated study and language expression among themselves. However, to ordinary people, it is better to keep the three dimensions of space, because it is easier for them to understand to just keep the three dimensions of length, width and height when they imagine any thing in space. Sometimes, some ordinary people even feel that three dimensions are too many to grasp. It need reduce the dimension of height to be convenient to understand and grasp the relative objects. For instance, the aim to draw map or to make the video-frequency display, which has two dimensions, is to make the dimension of height to be a recessive thinking moment, to be convenient for the relevant people to understand or grasp the objects. Besides, even the people whose profession is to study the theoretical physics and usually might understand the space has ten dimensions when they work in their professional field, they must reduce the space into three or two dimensions in order to explain to, or communicate with, the government officials or the public at last, because the government officials or the public can only understand the

objects of three or two dimensions. Only the government officials or the public understand their work, could the government officials dare to go on allocating the public money to them to support their work continuously, and the ordinary people might agree that the government officials to allocate the public money to them. And some people, whose ability is very low in abstract thinking, can not understand for their living, even when the professional people explain their work in three dimensions.

The historical facts show that different persons have got different abilities to understand the very abstract facts or objects. The abilities to understand the abstract facts or objects of the same person are quite different at different ages. His ability to think the abstract things is usually quite strong when he is strong. His ability to think the abstract things is usually week when he is very young or very old.

Many people stand the viewpoint that it should put the factor of time into the dimension of space, and make the dimension of the space become the four dimensions. And this viewpoint is quite popular. However, the viewpoint only stresses that people should pay much or enough attention to the phenomenon or factor of movement of all the objects. But this viewpoint can not help us to resolve the issues of what is the essence, or what is the abstract end, or what is the nature, or what is the differentia of the concept of space, when we study, or try to find the essence, or the abstract end, or the nature, or the differentia of space. It can only make the thing more complex, but not simpler, because it make the two concepts, that is, the concept of space and the concept of time confused, but not different or separated. Therefore, it is better for us to ignore the viewpoint that the space has four dimensions when we want to get to know the essence, or the abstract end, or the nature, or the differentia of the concept of space.

6. Relative Space and Absolute Space

The relative space refers to the phenomenon that people use different units of scale from the same place or the different places to measure or scale different objects or the same object.

I think the first content of the absolute of space refers to the phenomenon that the observers use the same unit of scale to measure or scale the distance between the different places, or the distance between the same kind of objects which are in different places, or the bulk of the same objects, and to mark the same geographical place with the same coordinate system of measurement. The present absolute space refers to the phenomenon that the observers use the metre system to measure or scale the distance between different places, and the bulk of the same objects, and to mark the same geographical place with the same coordinate system of measurement.

The second content of the absolute space is to decide the starting point of the measure of the space. In the geographical terms, the absolute space refers to the phenomenon that people measure, calculate, and mark the same bulk or the distance between the same kind of objects and different persons, or the different objects which are in the different places and therefore in different distance from different persons. At present, most of the countries in the world choose the major observer of the observatory of Greenwich in London as the starting point of their measurement and marks in the large scale

measurement.

The content of abstraction of space is first to set up or establish a common unit for the community for the scale of space. The community has gone the process of the abstraction of space, so long as the community has set up or establish the common unit for the measure of the scale of space.

However, this process of the abstraction of space is the abstraction which contains or implicates the opposite side or the process of the relativization. Firstly this unit will be negated in the practical process of the measure. Secondly this unit could be replaced by the better or the newer or more scientific unit, for the measure and scale of space. For instance, a special committee of French scientists suggested that bisic unit for the measure of space should be metre, which is 1/40 000 000 of the equator in 1790. However, the meter is defined as the length of the path travelled by light in vacuum in 1/299 792 485 second in an international meeting in the year of 1983. And, the path of the light travelled in vacuum in a second is always changing, or becoming longer, from the most ancient time till now, and it will go on changing in the future. It will bring serious contradiction with the reality of the path of the light travelled in vacuum in a second in a long term of time, because the speed of the rotation of the earth is always changing and becoming slower and slower each year. At present the scientific world resolve the issue by adding leap second. However, the accidents of adding the leap second quite often have brought serious discount and resentment of the poor countries of the whole world. And it will not good for the measure of space or time both for the rich and developed countries in the would from the perspective of a long time duration. Therefore, the definition of metre will definitely change, and will become longer, from 1/299 792 485 second at present to 1/299 792 486 second, and etc., in the future. At present the scale of time is based on the foundation that a date is divided into 24 hours when we think that the one round of rotation of the earth is one day.

And the final criterion, or the standard, for humans to acknowledge how many days a year is that the result of astronomical observation. It is because that only the result of astronomical observation can be the final criterion, or the final standard, which can be acknowledged by all the communities of the world finally.

What has been stated above that different individuals, or different nations, or different communities, have used different units of length to measure and scale the distance between the observers and the same object, and to mark the location of the same object, and to measure and scale the bulk of the objects, from the ancient time to now. However, different individuals, different nations, different communities, have simplified the unit of length, according to the degree and the frequency of the intercourse of economy, and politics, and culture, etc., between the different countries and nations, to a united unit of measure and scale. Or more exactly, they usually choose one unit, from many units which had been used by many different communities or different countries, as the united unit, in order to be convenient to the intercourse and communication between different individuals, or different countries, or different nations in their economic, or political, or cultural, or military intercourse, etc. This course is the course that makes the relative to be the absolute in the issue of the measure and scale

of length.

Of course, the ways to unite the units in the measurement and scale of length are different among the different individuals, or the different countries, or the different nations, according their historical conditions. Some used the violent and forced methods, some used the peaceful and consulting methods. For instance, the Qin dynasty in the Chinese history took the violent and forced methods to unite the units of the measure and scale of length, and forced the residents of the six ex-kingdoms of Wei, Zhao, Han, Chu, Yan, Qi, to use the units of measure and scale of length of the Kingdom of Qin, after the Kingdom of Qin had annexed the former six countries, about twenty-three hundreds years ago. The different countries or nations usually take the peaceful and consulting method, that is, to convene the international meetings, to unite the units of length, width, height, etc., after the end of 18th centuries. The result is that almost all the countries or communities, including the People's Republic of China, have taken the metre as their bisic and legal unit of the length, width, height, and etc.

From the perspective of history, the relative space and the absolute space always change to its opposite. For instance, the metre, which is today's basic unit of the length in the world, comes from the basic unit of the length which is decided by the French National Assembly in 1790.

However, almost everybody is using the metre ruler which is approximate to the standard of the international metre. Almost no one knows how much real difference between the ruler he is using and the international standard ruler which is kept in the French National Record in Paris in their everyday life. Neither they know how much real difference between the ruler he is using and the length of the path travelled by light in a vacuum in 1/299 792 485 second, which is the international standard of metre,in their everyday life today. Most of the users of the rulers need not know it at all in most of the cases in their daily life, so long as the manufacturers of the rulers acknowledge that the international standard metre is their standard of their manufacture, and they will try their best to manufacture the rulers which take the international standard metre as their standard for the manufacturing. Therefore, almost each ruler, which is used in people's daily life, has difference with the international standard ruler. This is a course which make the absolute become the relative. It is another negation. In the practice of daily range finding, what the people can do is only observing relatively correct and taking the international standard metre as their absolute standard in their minds. Let alone in the practice of daily range finding, there appears quite often the phenomenon that the result of a range finding by a person or a team can not repeat in the result of a range finding by another person or team in the same length of space. And even the same person can not repeat in the result of the range finding with the same set of range finder in the same length of space the other day, because of his bad health, etc. Therefore the results in daily range finding are always relative, and there always are some difference, no matter it is big or small, from the international standard metre.

Actually the pure absoluteness is only existing in people's mind, though what exists in people's mind is an objective existence, so long as it has been expressed by the languages. The absoluteness, which exist in people's minds, is an objective existence, but is after all different from the absoluteness which exists

in the other forms of practice. The objective existence, which is expressed by languages, and which is form of materialization of subjective disposing, is the result of human minds, and is the result of subjective disposing. The absoluteness, which exists in the other forms of people's practice, is the absoluteness which contain or implicate the relativity. On the contrary, the absoluteness which exists in the language activities may be only the absoluteness which does not contain or implicate the relativity, and may be the absoluteness which only exists in humans' minds, and may be the absoluteness which only exists in the process of the subjective disposing. It is just like that we can fabricate that there was a point without area, a line without width, a surface without bulk, and can carry the relevant calculations in geometry, which is one form of subjective disposing. It is an absoluteness which humans can not find its material form in the objective world. But the absoluteness in humans' minds is the absoluteness which is absolute necessary in the people collective practice. People could not organize the efficient division or cooperation without the absoluteness in human minds.

Anyhow, the relativization in the people's daily practice in the range finding is the relativization which contains or implicates the absoluteness, and the relativization in the people's daily practice is the unity of relativity and absoluteness, and the relativization which has gone through the process of negation of negation, and the relativization which has got higher degree of the relativization, and the relativization which has got the international metre as its basic unit, and therefore can be understood by the communities which have taken international metre as their basic unit in their range finding, and the relativization which can be compared with all the practice of communities which have taken international metre as their basic unit in the range finding, and the relativization which can be transited to the absoluteness at any moment, and the relativization which can go on developing, and the relativization which can continuously go through the process of negation of negation, and the relativization which can continuously raise its precision in the range finding. At present the relevant scientists have to use some instruments or tools of high level in their activities of real-time measurement of the objects, such as the precise distances between the surveyors and the airships, air-crafts, rockets, and, etc., and to tell the data to the other scientists, and to make the data absolute, in order to coordinate and harmonize the surveys and calculations of the scientists. This relativization contains or implicates absoluteness, or it is the absoluteness which contains or implicates the relativity. Therefore this scale is the more precise scale, and is the relativity and absoluteness of higher level.

The increase in precision in the range finding of each community is shown by the instruments and tools in the range finding. For instance, the standard and legal instruments and tools in the range finding are made of brown in the Qin Dynasty in the Chinese history about two thousand and three hundred years ago. Nowadays, the standard and legal instruments and tools in the range finding are the instruments, which scale and mark the time, and which measure the transition of the atom of kryptonum-86, like many other countries in the world. The improvement of the instruments and tools in the range finding shows the up-grading of the level in the range finding both from the perspectives of absoluteness.

In fact each concrete or real activity of the range finding is the united activities of finding the absolute

space and relative space. The reason for me to say that is that the activities of finding the absolute space is that the persons, who carry out the range finding, acknowledge that there is a united unit in their community, and they take the united unit as their ideal unit in their minds, when they carry out the range finding and calculating. The reason for me to say that it is the activities of finding the relative space is that the result of their range finding is always relative, because the instruments or tools are always different, big or small, from their ideal unit in their minds. Besides, all the range finding is carried out by humans at the bottom. All the activities carried out by humans are different, because that all the persons, who carry out the activities, are different, either in age, or in bodily strength, or in personal capacity in reaction, etc. Even the same person has got different capacities in different age or health condition. It is just like driving a car. It is the same car. Some people can drive well. They can drive the car fast and use less petrol. Some people can not drive well. They can not dwell the car fast or use less petrol. Even the same person can not drive well when he has very little driving experience or is in bad health. And he can drive better when he has got more driving experience or when he is in good health, etc. Anyhow each person is different, big or small, from the other persons, in intelligence, or bodily strength, or speed of reaction of the bodily organ, or knowledge composition, or the structure of knowledge, etc. Therefore all the existential practice has the duality. Or all the existential and real practices are the activities which have got the characteristics of dual functions, that is, which are absolute activities and relative activities as well. The reason for it to be called absolute activities is that each existential practice can be judged by the united standard in the relevant field. The reason for it to be called relative activities is that the result of each existential and real practice is different, because it is carried by different persons, who have got different intelligence, or bodily strength, or speed of reaction of the bodily organ, or the knowledge composition, or the structure of knowledge, etc. It is the case in the field of range finding.

Some of the scientists, who work in the theoretical physics, only acknowledge the existence of relative space, and deny the existence of absolute space. The thinking way has clear and distinct defect or shortcomings. From the perspective of dialectics, the thinking way is the thinking method which deny the antithesis or the antagonism. This thinking way is the way which only acknowledges that there is only the right side, but deny the existence of left side, and only acknowledges that humans can mark the right side, but deny the existence of left side. This is a thinking way of historical nihilism. It is a thinking way of only recognizing the objects, but ignoring the existence of humans or subjects. It is a thinking way of ignoring that humans are the yardsticks and scales of all the other matters or things. It is a thinking way of only recognizes the limit or definiteness, but ignores the existence of infinitude. It is a thinking way which would not lead people to go on to determine and grasp the objects. It is a thinking way which would not lead people to go on to make the objects as the matter which would be studied further. It is also a thinking way which would lead people to forget what is the final aim of why humans had to measure the distance between two objects, or the bulk of the objects.

Now we have to discuss a little bit another content of absolute space, that is, the determination of the

geographical place of an object, in other words, the issue of the original starting point of the measure or scale of the objects. The key factor of this issue is that the communities have to determine the original starting point of the measure or scale of the objects by the political methods or the other methods.

I have stated in the above chapters that any practice has the duality, that is, it is an individual practice, but is also an existent form of the collective practice. It is the same in the issue of range finding. Each existential or real range finding is an individual range finding, but also a collective range finding. In each existential range finding, each activity of range finding is completed by the individual person. And the individual range findings are the material bearers of collective range findings. Without individual range finding, without collective range finding. Therefore each range finding is completed around the individual material bearer of the range finding.

However, the issue of the original starting point of the measure or scale of the public range finding needs to be revolved, for the results of the range finding often need be known or understood by the other people, especially by those people who would like to get to know how far the accidents or events happened between them or the places where the accidents or events happened.

The original starting point of the measure or scale of the public range finding should be the gate of the tribal meeting hall in primitive society according to the inference of some scholars. (Note 13) The original starting point of the measure or scale of the public range finding should be the places where the cities carried on their measures of time, when the cities appeared in human society. The original starting point of the measure or scale of the public range finding should be the original starting point of the measure of time of the state, or the central astronomical observatory, or the place where determine the almanac, when the united public administration, that is, the state, appeared in human history. Nowadays, the world has got its united original starting point of the measure and scale of the public range finding, that is, the major observer of the observatory of Greenwich in London in the large scale observing, alongside the original starting point of the measure or scale of the public range finding of each individual country or state. Now the original starting point of the measure or scale of the public range finding of whole China is at the Village of Shijisi, Jingyang County, Xianyang District, Shaanxi Province. The concrete place is at 34°32′27.00″ north latitude, 108°55′25.00″ east longitude. The whole China got its united, standard, and accord in the reality of China, in its measure or scale or calculation of the public range finding in the large scale observing, since the year of 1978, when the original starting point of China was determined and the relevant model was built. It has played a very important role in the economical construction, military construction and social development of the whole China. And it is also a symbol of the national dignity.

Of course, the original starting point for each action is determined or decided by the organizer of the action in the real social life. There are millions of the original starting point in the world everyday, because there are millions of different practices in the world everyday, and there are different kinds and hierarchy of communities in the world. But the original starting point for each action can be known by the other people of all over the world, so long as the organizer of the action in the real social life thinks

that it is necessary through the relative calculations or computation if they determine that the major observer of the observatory of Greenwich in London is their starting point of their observation. At the same time people can express the place that any event happen by using the united original starting point of the measure or scale of the public range finding of the world, that is, the major observer of the observatory of Greenwich in London as the starting point of their measurement and marks in the large scale observing, e.g., an earthquake happened at 42°50′27.00″ north latitude, 128°55′25.00″ east longitude, and, etc., and make the people, who concern the earthquake, of all over the world, know the precise place where the earthquake happened, and how far the place is from where they are, and, etc.

7. Key Moments to Measure Time and Time Scale

The process of the time measure is the process to divide how many months each year, and how many days each year, and to divide a day into 24 hours equally, and to divide each hour into 60 minutes equally, and each minute into 60 seconds, and each second into millisecond, and, etc., according to the revolution and the rotation of the earth.

As it is stated above, the final aim for humans to put forward the concept of time is to carry on the division and cooperation efficiently. Therefore the final aim for humans to put forward the concept of time is to meet the need of the collective practice or collective activities of humans themselves and make the concept of time has the nature of publicity, because it is necessary for each member of the relevant community to know.

Each community began to use the knowledge in astronomy and geography to measure and scale time from the beginning of the community. In other words, each community began to measure and scale time by regulating daytime, night, noon, spring, summer, autumn, winter, west, east, north, etc., to scale and mark time, from the very beginning of its history. It is because that the knowledge in astronomy and geography, daytime, night, noon, spring, summer, autumn, winter, west, east, north, south, etc., can be the knowledge which every member of the community has to get to know, or the event that every member of the community can feel. These events can not be changed by any member of the community himself. Each member of the community can get to know them. And they can help people in dividing and cooperating efficiently in their daily life.

For instance, the government of the early Xia Dynasty, which existed in Chinese history more than three thousand ago, sent some officials to the northern, and the southern, and the eastern, and the western parts of its territory, to observe the astronomical phenomena in order to make calenders. This event was recorded in *Shangshu Yaodian*, which is one of the earliest history book of China. Another example is that at the beginning of *Genesis*, *Old Testament* that the God created the light and separated the light from the darkness, and call the day and night respectively, marking the first day; on the second day, the God separated the water, space and heaven, and call the space “sky”; on the third day, the God made the vegetation; on the fourth day, the God created the stars, the seasons, the days and years, and naming the daytime and night, etc.; on the fifth day, the God created the fish, birds and other life, etc.;

on the sixth day, the God created the human beings and let the human beings to reign all the other animals; on the seventh day, the God rested. Today each parent would tell his children what is daytime, what is night, what is noon, what is water, space and heaven, what are spring, summer, autumn, winter, west, east, north, and south, what are grain and vegetable, what are animals, who are their parents, grandparents, brothers, sisters, etc., when they are very young, or even at the age of infant, identically and without the slightest difference.

To mankind, the most important and the most difficult thing is to resolve the issues of how many days a year has and how to mark or scale the time of a day. The human beings mainly made use of the knowledge of the astronomy and phenology to resolve the issue of how many days a year has in the early days of each civilization. The Chinese people had resolved the issue of how many days a year had about twenty five hundreds years ago, and made the calendar, which acknowledge that there were 365 and one fourth a day a year, and which was very close to the result of the true observation of the astronomy today. This calendar was quite good for people to calculate the days and the changes of seasons. The Chinese scholars went on revising the calendar later. It got about one hundred different calendars in ancient China. One by one is better than the previous. (Note 14) The other ancient civilizations had got the result in the issue of how many days a year had very early, even earlier than the ancient Chinese people, which was very close to the result of the true observation of the astronomy today. (Note 15)

However, the issue of marking or scaling how many days a year, and the issue of the development and improvement of science and technology were affected greatly by the political activities of human societies in ancient time. For instance, one of the major aims for the governments of each dynasty to establish the professional officials and organizations to observe and forecast the astronomical phenomena, such as solar eclipse, lunar eclipse, sunspot, etc., was to strengthen their rules over the ordinary people in the ancient China. At the issue of claiming or declaring how many days a year had, the aims of the governments, apart from providing public services for agriculture, military, handcraft and the other industries, etc., still more for collecting rents and taxes. The famous event happened that the Pope declared to abrogate the Julian calendar and began to use the Gregorian calendar in the year of 1582. The major contents of the Gregorian calendar is that removed ten days lump-sum of the year of 1582, and took the October 5, 1582 as the October 15, 1582, and only the year, which can be divided by 400 with no remainder, can be the leap year, that is, there are only 97 leap years in four hundred years. This is the calendar which is used by most of the countries of the world, including China, today.

Actually the circle of astronomy of the Occident countries had found very early that there was difference between the Julian calendar and the result of the true observation of the astronomy. The true days of one year was a little bit more than 365 and one fourth a day. The result of the true observation of the astronomy had 10 days lump-sum more than the Julian calendar from the year of 46 B. C., in which the Julian calendar began to be used to the year of 1582, in which the Gregorian calendar began to be used. However, before the year of 1582, no ruler in the west would like to reduced a leap day to

be in keeping with the result of the true observation of the astronomy. It would shake the authority of the popes if any ruler in the west would like to reduced a leap day in his dominant. And no ruler in the west would like, or dare, to shake the authority of the popes in making the calendars.

However, the western world has found the continent of America, and the economical income and tax from the industries, such as handcraft, the national trade, the international trade, education, medical service, sport tournament, entertainment, etc., had increased greatly in the regions which in the direct rule of the pope. And the income in these industries had got important part in many rich family which had high position in the society. It needed more precise calender in these industries and services. It provided the historical condition for the ruling class, represented by the pope, to decide the change and improvement of the calendar. It is just like the event happened in the end of the Qin Dynasty that Gao Zhao, a powerful minister in the Qin Dynasty in the Chinese history, pointing to a deer, but calling it a horse—deliberately misrepresent. Gao Zhao was not a fool. He could distinguish a deer from a horse certainly. The reason for the previous popes before Pope Gregorian to present not to know, or to ignore it, was that two evils chose the lesser one. They did not want the change and improvement of the calendar to shake the authority of them. Therefore, the development of productivity can not only provide the historical condition for the development of politics, but also provide the historical condition for the development of the measuring and issuing the official calendar and for the development of the other fields of science and technology.

In the issue of the scale and mark of the time everyday, humans pay much attention to the man-made instruments and tools, beside paying attention to the knowledge of astronomy, in order to resolve the problem of marking and scaling of time which is shorter than a day. It is because that the rotation of the earth has some dip relatively to the sun, and the revolution of the earth around the sun is eclipse, and the distance between the earth and the sun is changing everyday, time of daytime and night is changing everyday at almost every place in the earth. Daytime is long in the summer and short in the winter in most of the places in the earth exempt from the area of the equator. It can not resolve the problem to divide a day into 24 hours by relying the knowledge of astronomy. The knowledge of astronomy, that is, by the phenomenon that the sun rises in the east and sets in the west, can only help people in determining the daytime, the night, the morning, the afternoon, evening, etc. Therefore the humans had made use of copper clepsydra, or water clepsydra to average the 24 hours a day, or the shorter time, such as half an hour, etc., from the ancient time of China and the other countries. In modern times, humans began to use clocks and watches to measure and mark the 24 hours a day. Today in some specialized institutes, people began to use the electric clock and atomic clock to measure and mark the 24 hours a day. The man-made instruments and tools are getting better and better, preciser and preciser, exacter and exacter, in order to meet the need of practice which is developing continuously in relevant fields.

What should be pointed here is that humans always pay much attention to choose the tools and instruments which are always moving or in the state of changing to measure and mark the time,

because that no matter the subjects themselves or the objects themselves are always in the state of changing. Each human is always grows up or grows old. Each subject is always changing and moving relative to the other objects. For instance, in the ancient times, people often made use of the places of the sun in the sky, the copper clepsydra or the water clepsydra in which the water were always dropping, and people had to add water into it continuously, to measure and mark the time. In modern times, people often use the clock indicators, the number of which always changing, or the number on the screens of the mobile phone or the television, to mark and get to know the time.

In ancient times, people often beat the bells, or the drums, or the clapper, etc., to announce the results of the measure of the time to the people who were not professional measuring persons of the time. In some rich areas, people even built up the bell-towers and drum-towers, and arrange some professional watchmen to beat the bells, the drums and the clapper, etc., to resolve the issue of providing the time service. In modern times, people often use the clock indicators to mark and get to know the time. In present time, people often use the radio broadcast and television broadcasting to resolve the problem of time service. For instance, the moving indicator of the clock on the screen of the News Report of the Chinese Central Television at 19th o'clock each evening announces that it is 19th o'clock, Peking time, on behalf of the Central Government of China to the whole world.

It is easier to resolve the issue of the time keeping for everybody and the issue of recording the time at which an event happens. For instance, it is easier to resolve the issue of arranging some person to work at the place from one o'clock to eight o'clock, and arranging another person to replace him at the same place from eight o'clock to 15 o'clock, etc., for changing shifts. And it is easier to resolve the issue of counting and calculating the age of a person, or a matter, or recording the time at which an event happens, e.g. the Earthquake of Wenchuan County of China happened at about 9 o'clock, May 12, 2008.

On the issue of marking and scaling the time, each community had got different units to resolve the issue, because different communities have got different histories and degrees of the development in science and technology. For instance, the western countries had divided a day into 24 hours, and an hour into 60 minutes, when they found the continent of America. In modern times, each minutes was divided into 60 seconds. And in contemporary era, many new units are regulated, such as millisecond, microsecond, nanosecond, picosecond, femtosecond, attosecond, etc.

People can set up or establish the correct concept of causality and causal forecasting, after they have set up or established the correct concept of causality, and have the concepts of time, the measurement and marking and scaling of time, and have the concepts of succession and sustaining, etc. The correct concept of causality is one of the foundations for humans to find the laws of the developments of nature and human society.

8. Relative Time and Absolute Time

The content of relative time refers to the process that different individuals at different places with

different standard or units, to measure, or mark, or calculate, or the human activities, or the existence and changing of the matters, or materials, or events, and That is to say, the content of relative time refers to different individuals with the different coordinate system and different units to measure, or to mark or calculate time. In other words, the content of relative time refers to the phenomenon that the different individuals or groups measure, mark, calculate the time, and provide the time service, and keep the time, during the same duration of practice, and all duration of the existence and changing of the other matters or materials or events, and, etc.

The content of absolute time refers to the phenomenon that the different individuals, at different places, with different tools of time measuring, and with the same or united standard and units of time measuring, to measure and mark the time, and calculate the process or duration of the other practice, and all duration of the existence and changing of the other matters or materials or events, and, etc. At present, the united standard and units of time measuring is not only that a day has been divided into 24 hours, an hour has been divided into 60 minutes, a minute has been divided into 60 seconds, a second has been divided into 1000 milliseconds, etc., but also include the fact that most of the countries have taken the long bar of copper which is set on the ground to the north wall of the major observer of the observatory of Greenwich in London as the starting point of the time measure in most of the countries of the whole world when they measure and mark the time. In other words, the absolute time refers to the fact that different individuals and different groups of humans take the same coordinate system and the same units to measure, mark, calculate the time, and keep the time, during the same duration of time, and all duration of the existence and changing of the other matters or materials or events, etc. At present the mark and scale of the absolute time of the most of the countries in the world are changed and transformed from the mark and scale of a relative time, that is, from the long bar of copper which is set on the ground to the north wall of the major observer of the observatory of Greenwich in London, which was the starting point of British time. This bar has been transformed into the starting point of time by most of the countries in the whole world now. And the concept of absolute time links also to the fact that whole world also set up the system of longitude and latitude, and acknowledge that the bar is the starting point to divide the whole earth into the Eastern Hemisphere and the Western Hemisphere, and each hemisphere is divided into 180°, and the equator is the starting point to divide the whole earth into Northern Hemisphere and the Southern Hemisphere, and each hemisphere is divided into 90°.

The aim for us to keep the concepts of absolute time and relative time at present is to guarantee and ensure that it can make human activities realize the synchroneity and simultaneity and the relevant time keeping. The so-called synchroneity and simultaneity refers to that the members of a community can carry on the sequence and order in their practice. The so-called time keeping refers to that every member of the community can follow the arrangement of their leaders to be on duty and try his best to do work well in the duration in their collective or group practice.

The different communities have used different methods to realize the synchroneity, simultaneity and the time keeping at different levels of development of their science and technology. For instance, all the

nations have to take some military activities continuously to make their nations survive and develop from the very ancient time till now. They have to carry on collective or group fighting, in order to defeat the enemies. They have created many methods to realize the simultaneity and the time keeping, that is, to unite the time of the attack and withdrawal, such as shouting battle cries, banging the drums, beating the gongs, using the flag signals, semaphore, smoke, fire, clocks, notice of telephones, lights, etc.

However, all the military activities need the assistance in many fields, mainly the assistance in the fields of providing the weapons, ammunition, food, water for the officers and soldiers. And providing the weapons, ammunition, food, water for the officers and soldiers is the matter which involve many aspects and respects of the production and daily life of the community. Therefore, it need the simultaneity and the time keeping in many aspects, respects or fields of the production and daily life of the community respectively. And the simultaneity and the time keeping is the matter which a community has to deal with everyday.

But it is not a easy thing for a community to realize the simultaneity and the time keeping. It is because that the demands and requirements for the simultaneity and the time keeping in the respects or fields of the military activities, production and daily life of the community are different. For example, it is counted by the unit of minute, even less, to the forces which carrying on the task of direct fighting in the respect of the simultaneity and the time keeping. It is quite different in the respects of providing the weapons, ammunition, food, water for the officers and soldiers in the respect of the simultaneity and the time keeping. It might be counted by the units of hour, half day, even a whole day in the respect of the simultaneity and the time keeping. It is because that the officers and soldiers can not die without any food or water within an hour, half day, even a whole day. In the respect of producing the weapons and ammunition, it might be counted by the units of second, millisecond, microsecond, nanosecond, picosecond, femtosecond, attosecond, etc., e.g. the research and production of the laser weapons and the large-scale production of smokeless bullets, etc. Meanwhile the production of the other war goods and materials might not be required so fast or precise, and even counted by month or year. For instance, it might be counted by months or year in the production of leather shoes.

Besides, the most of the activities of the time measure, time keeping and time counting have been carried out by concrete individual persons with different tools and instruments at different places in the real history since the most ancient time. And the result of each measurement might be different from the other measurements at the same place and at same time, because that different measurements might be carried out by different individuals, who have got different technological levels in the operation of the relative tools and instruments, or who have got different states of health, or who have got different sense of responsibility. Therefore almost all the results of the time measure and time counting might be different from the ideal united standard of the time measure and the time counting, though there were already united standard of the time measure and the time counting, from the most ancient time until now. The reason for each real and concrete time measure and time counting in human history have got

the duality, this is, they have got the relativity and the absoluteness, or they have got the absolute truth and as well as relative truth, that is, there are always some difference so long as the practice is carried out by humans, and all the real and concrete time measure and time counting in human history are carried out theoretically by an ideal united standard, and the results of the real and concrete time measure and time counting can be understood by all the relevant persons of the community.

Just like the issue of absolute space, the real absolute time only exists in human minds. Of course, what exists in human minds can become an objective existence, which can be sensed by the other people, so long as what exists in human minds can be expressed by languages. However, this existence of the absoluteness is different from the other forms of existence of the absoluteness. Absoluteness in the other forms of existence contains or implicates the relativity. But the absoluteness expressed by the languages might be an absoluteness, which did not contain or implicate the relativity, and which might be an ideal absoluteness, and which is in the state of being subjective disposition. It is the most obvious in the marking of the time of everyday. It is because that the marking of the time of everyday is changing everyday, for that the included angle or intersection angle between the rotation of the earth and the revolution of the earth around the sun is changing everyday, and the distance between the earth and the centre of the sun is changing everyday, therefore the length of the day time and the night is always changing at almost all the positions of the earth. Besides, longitude and latitude of all the places of the earth is different. Therefore the order or sequence of the sun on the top of each person is different. While the collective or group activities of humans need synchroneity and an united time marking or time scaling, and need the absoluteness of the united time marking or time scaling. It is because that people can make their collective practice efficient, only after they have realized the synchroneity and had an united time marking or time scaling to a certain degree. Therefore people have to think out the thinking moment, or concept, of absolute time to realize the absoluteness of the time marking or time scaling, in order to help people to realize the synchroneity and time keeping in their practice. For instance, the Central Committee of the Chinese Communist Party, including Chairman Mao Zedong, decided to launch the Dongzheng Campaign by the major part of the First Front Army of the Chinese Workers' and Peasants' Red Army in the beginning of 1936. It needed to cross the Yellow River to the east and went to the region of Shanxi Province. The highest leading group of the major part of the First Front Army of the Chinese Workers' and Peasants' Red Army regulated that the crossing need to have a united plan, a united command, and a united crossing time, in order to reduce the injuries and deaths by realizing the concealment and suddenness, because there were many officers, soldiers and bouts would join the crossing. But the watches and the pocket watches and the clocks of the officers, who joint the crossing, had different qualities, some could keep good time, some could not keep good time. And there was no the historical condition that the officers can check the timing through the broadcast. Therefore, Chairman Mao Zedong, the highest leader commanding the crossing, ordered that the standard time scale was the time scale which was shown on the pocket watch of Nie Rongzhen, the political commissar of the First Army of the Chinese Workers' and Peasants' Red Army,

and that to use the telephones to check the time and to unite the time, and launched the campaign at the 20th hours of February 20, 1936, and "no officers or soldiers could begin the crossing early or late". (Note 16) The aim for Chairman Mao Zedong to launched the order was to prevent the blaming one another for the time of launching the crossing and arguing back and forth afterwards.

What should be repeated the problem of the transforming one another about the scaling of the absolute time and the relative time. The historical facts show that all the scaling of the absolute time is transformed from the scaling of the relative time. For instance, the crossing time above is the process that transforming the relative time, which was shown on the pocket watch of Nie Rongzhen, into the scaling of the absolute time for the officers and soldiers who took part in the crossing. In reality, all the scaling of the absolute time, that is, the time service, or the time issued by the governments or the higher leaders, has been transformed from the results of the tools or instruments, which are in control by the governments or the higher leaders, since the beginning of the time services. Only the scopes or limits of the time services are different. For instance, the scopes or limits of the time services were only the places, where people could hear the sounds of the bells, drums, or watchman's clappers, etc. For instance the time service could be enjoyed only by the places, where the sounds of the bells, drums, or watchman's clappers, etc., could reached in the City of Xian, where there were the bell towers, the drum towers and the watchmen, in the dynasties of Ming (A. D.1368-1644) and Qing (A. D.1644-1911) in the Chinese history. Today the televisions and broadcasts are carrying out the time service in China. The televisions and broadcasts are much more advanced than the bell towers, the drum towers and the clappers, because that they can carry the signals of the time to the much farther places. Therefore the absolute scale and marking of the time, which is announced by the Chinese Government, can influence much more places than in the ancient times.

At present the time which the sun is on the top of the people of Peking is different from the other places of China. The sun is not at the top of the people of the other places at the 12 o'clock in the other places of China, whose longitude is different from that of Peking, either to the east, or to the west of Peking. The government of the City of Urumqi, which is apart very far from Peking, even regulates that the daily schedule should be two hours later than that of Peking. It is because that the sun at the top of the people of Urumqi is about two hours later than that of Peking. The reason for the government of the City of Urumqi to regulate in this way is that it can make better use of the sun light, and save the energy, and reduce the pollution, and meet much more the living customs of the people, which have been shaped in the evolution of humans in the millions of years in the past. It is the usual and general method for many big countries, which have got a vast of territory, such as the United States of America, Russia, Canada, etc., to take. At present, the whole world has been divided into 24 time zone, and each country can choose its time zone, according to its geographical place. However, these activities do not influence the absoluteness of time. The absoluteness of time, or the absolute scale or marking of time, is regulated by the human society itself. It is regulated for each member of the community to have a standard in their minds to understand the measure of time, the time service, the time keeping, and the

time counting, to help the humans in their practice and objective division.

The transformation from the absolute scale or marking to the relative scale or marking refers to the fact that there is always a difference between real activities of the persons of the time measuring, the time keeping and their ideal time scale or time marking, in their real practices, after the communities have got the united time scale and time mark.

In the matter of fact, all real activities of the time measuring and the time keeping are the united activities of the absolute time and the relative time. For instance, the starting point of the launching a real rocket in present China is the moment of pressing the launching button of the rocket. The relevant persons would announce to their leaders, even all the people who watched the launching, that the launching is successfully carried out at a certain minute, a certain hour, a certain day, a certain month, a certain year, Peking time, in order to make their leaders, even all the people who watched the launching, to understand the concretely real time on which the rocket was launched. This is the process that the relative time pass on and transform to the absolute time, and pass on and transform the pressing time of the button of the rocket to the Peking time.

Therefore the absoluteness, which the Chinese people could realize at present, is the absoluteness which contain and implicates relativity and difference. It is the united absoluteness which contains and implicates relativity and difference. It is the absoluteness which have gone the process of the negation of negation, and therefore a sort of the absoluteness of higher level. It is the absoluteness which has taken the metre as the basic unit of the measurement and counting in space. It is the absoluteness which has taken the long bar of copper, which is set on the ground to the north wall of the major observer of the observatory of Greenwich in London, as the starting point of time counting of the world. Therefore it is the absoluteness which can be understood by most of the communities in the world, and can connects most of human activities of the world, and is the absoluteness which is visible and felt to all the members of the same time community. It is the absoluteness which can return or transform back to the relativity at any time, and can be improved continuously.

The absoluteness of time which can be improved continuously refers to the absoluteness of time which humans can improve, through using better tools and instruments and the developments in the process of their time measure, time service, time keeping, time counting, and which can make more individuals in the world to realize the synchroneity more precisely.

At present some of the professional scholars, who work in the discipline of theoretical physics, think that there is only relative time, and there is no absolute time. I think, the above thinking way has got some defects or shortcomings. The defect of the above thinking way is just like what they have got on the issues of absolute space and relative space. The thinking way deny the antithesis or the antagonism. This thinking way is the way which only acknowledge that there is only the rightness, but deny the existence of left side, and only acknowledge that humans can mark the rightness, but deny that humans can mark the left side. This is a thinking way of historical nihilism. It is the thinking way of only recognizing the objects, but ignoring the existence of humans or subjects. It is a thinking way of

ignoring that humans are the yardsticks and scales of all the other matters or events. It is a thinking way of only recognizing the limit or definiteness, but ignoring the existence of the infinite concept. It is a thinking way which would not lead people to go on to grasp the objects in the real history. It is a thinking way which would not lead people to go on to make the objects as the matter which would be studied further. It is also a thinking way which would lead people to forget what is the final aim of why humans have to measure and scale time, or to provide the time service, or to keep the time, or to count the time. This thinking way would not lead people to be able to grasp the time. This thinking way would not lead people to be able to quantify the existence or duration of any object or any subject. This thinking way is the thinking way which takes the objects as the subjective disposition. This thinking way is the thinking way which takes objectivity as the subjectivity. This thinking way is the thinking way which denies that the essence of time is a moment of subjective disposition. Therefore it is a thinking way or method which has big defects.

The activities of time keeping is also a progress of the transformation from the absolute time to relative time. It is because that all the activities, undertaken by human beings as stated above, are always different. And even the mistaking would happen. For instance, the Joint staff of the Central Military Commission of the Chinese Liberation Army may order a certain brigade to launch 10 rockets at a certain time. However, in the real launching, some rockets would be launched at an earlier or later time, because the reason that different officers or soldiers always have got different speed of reflecting. It is just like in a swimming competition. Some players would reflect earlier than other players after the sound of the starting pistol. At present almost all the countries, which have got the nuclear weapons, have regulated that the real launching or manoeuvre of the nuclear weapons must have three, or at least two, persons to press the button of launching at the same time, and the launching tables must be apart from each other for enough distance. The reason for these countries to make such regulations is to avoid the mistaking launching or the mistaking launching of evil intentions.

The thirteenth international measuring meeting, which was held in the year of 1967, regulated that the cesium-beam atomic clock is the standard tool of measuring time, and that the second is the basic counting unit of time. It is already fifty years more have passed. However, I think, it is better to make the 12 o'clock at noon as the starting point of the counting of time from the perspective of the group and collective practice of humans. It is because that the event of the sun on the top of the humans can be the sole event which everybody in the earth can undergo precisely. Therefore only the event of the sun on the top of the humans can be the sole mark and scale which everybody in the earth can get to know and understand conveniently. Even the events of morning, afternoon, and evening do not have the characteristics of accuracy, but have the characteristics of asymptotic, which can not express the simultaneity of a moment in time. To say nothing that the fact that the rotation of the earth and the revolution of the earth around the sun, which make the starting point of the morning, the afternoon and the evening of everyday is different at every place of the earth. From the perspective of the real group and collective practice, it should take the fact that the sun on the top of the leaders of every community

as the starting point of time counting. Therefore, the humans would take the day as the basic counting unit, and take hour, minute, second, millisecond, etc., as the supplement units of the time counting, in order to count and calculate the short time of events, which happen everyday in humans' daily life. However, the humans would have to make the duration of second become longer, because of the fact that the rotation of the earth is becoming slower and slower continuously. Humans would take the events of astronomy as the final mark, because that only the events of astronomy can become the events which every body on the earth can get to know and understand conveniently. The events, which happen in the complex and precise electronic instruments, could not be known, or understood, or counted by everybody on the earth conveniently, and can not become finally the most trustworthy mark or scale of time, which can be acknowledged by everybody on the earth. It is because that most of human beings in the world are innate materialists. Hearing can be vague, but seeing is definite. The most of the people on the earth would understand and recognize an event or fact only after they had felt directly through their sense organs of eyes, ears, noses, tongues, bodies, etc.

The consensus of a community on time mark and scale is decided or represented by the highest political leader, or by the professional persons, who works in the field of time measure, or who have been pointed through successive levels by the highest political leader of the community.

9. Dimension of Time

I think that time can only has one dimension, namely from past to now, and from now to the future. This is the concept of the linear time.

Kant also has the viewpoint that time has only one dimension. (Note 17)

I think, on the issue of time measuring and time making and scaling, the concept of the linear time is enough for the ordinary persons to think and practice. If we made time many dimensions, the thinking of many humans would produce confusion and chaos, which in turn would lead to failure in the process of absoluteness of time in human mind, and which in turn would make the human societies to be unable to organize efficient division or cooperation, or more efficient division or cooperation, in their activities. It is because that no matter the resistance or changes of the subjects or the objects are irreversible. For instance, Chairman Mao Zedong died in the year of 1976 and the Qin dynasty in Chinese history was destroyed in the year of 206 B. C., and, etc. These events are irreversible. If a man died, then he is died. He can not be alive again. A dynasty is destroyed, then the government disappeared at the same time. Though some dynasties can be re-established, the emperors and high ranking officials have been replaced, and the social policies might be also changed, little or big. For instance, the Dynasty of Western Han in Chinese history was usurped by Mang Wang and established the Dynasty of Xinin the year of 8 A. D. The Dynasty of Xin was destroyed by XiuLiu, one of the offspring of the first emperor of the Dynasty of Western Han in the year of 25 A. D., then the emperors' surname returned to Liu, and the social policies changed a little compared with the end of the Dynasty of Western Han. However, this is one situation and that was another, and times had changed.

The existence and changes of all kinds of matters in the fields of natural science are also irreversible. For instance, a glass cup drop to the ground and break into pieces. No pieces of the glass cup could jump up and become another glass cup. Wenchuan County in China undertook an big earthquake in the year of 2008. It made great loss of lives and huge destruction of property. Then the loss and destruction are irreversible.

Of course, some people think that some natural phenomena are reversible. For instance, some people mistook the wrong medicine when they were ill, and which made them undertake some new illness, such as medical allergy. Then the illness was cured quickly and totally. This kind of illness is called reversible illness in medical science. But the cure of the medical allergy does not mean that the patient was not reduced the level of his living standard for a few days or more, because of the medical allergy. In the field of physics, some articles or some buildings, which were destroyed before, can be remade or rebuilt again. However, the remaking or rebuilding does not mean that humans can get rid of the historical facts that those articles or buildings were destroyed once. It has to spend some manpower and materials to remake or rebuilt them. Therefore the reversibility in medical science and physics are not the reversibility in philosophy. They are should not be confused. And the questions of what is time, or what is the essence of time, what is the differentia of time are questions of philosophy or the objects of philosophical studies. Time has only one dimension from the perspective of philosophy.

Many well-known scientists, e.g., Albert Einstein and Issac Newton, and many scientists who are not so well-known, also studied the issue of time from the perspective of philosophy. Some scientist have been studying the issue of time from the perspective of how to measure and mark time. To say nothing that the natural science is part of philosophy, which is called natural philosophy, since the most ancient time. Only till the year of 1830, some scholars in Britain suggested that natural scientists should be separated from philosophers. And at present all the big western powers or states still call all the postgraduates, who have completed studies for the highest degree of theirs after their degree of master of philosophy, as Philosophical Doctors, or Doctor of Philosophy. It is because that all the students, no mater they study natural science, or social sciences, or medical sciences, or arts, can not be apart from the philosophical thinking. Each of them has to limit or refine their sphere of thinking and expressing. And limiting or refining the sphere of thinking and expressing belongs to the discipline of philosophy.

Many natural phenomena can appear repeatedly. For instance, the sun rises from the east and sets at the west. There are spring, summer, autumn, winter each year. Therefore, many scientists think that it should appear repeatedly whenever something which shows the laws of science. And there are the phenomena in the sphere of economy and politics also appeared repeatedly. For instance, the feudal dynasties replace repeatedly. Therefore some scholars put forward the viewpoint that time is circular. Aristotle seemed to had hold the viewpoint that time is circular. He said in his book *Physics* that

“No matter the change of quality, or increasing or growing, cannot be even or orderly. Only the moving can be even or orderly. The time has been thought to be the moving of the heaven. The moving of the other movement is measured by the moving of the heaven, therefore time is also measured by the

moving of the heaven. Therefore people put forward a customary saying; some people assert categorically that the affairs of humans and the other things, which move and change, and which have life and death, are circular. The reason for them to have such nature is that all these things and matters are judged by time, and all of them have end and beginning, it seems just like that they are taking place in the order of a certain cycle; and time itself is taken as a certain cycle. The reason for people to have such viewpoint is that time is the ruler of the moving, and time itself is measured by the moving. Therefore to say the cycle of the things and matters is to say that time has a certain cycle; and the reason for time to have cycle is that it is measured by the circle and round moving; it is because that no other thing is considered to be the measured except the circle and round moving, and entirety is the measurement of multiply." (Note 18)

But repetition does not equate or mean reversibility. It is because that all the repeats happen in the situation of subjectivity and objectivity that has already changed. The ages of the relevant people have grown to some extent, and the objects also have some changes. For instance, the sun is expanding continuously, and the distance between the sun and the earth is reducing also continuously, though the distance which is reduced is not worth mentioning, according to the observations of the contemporary astronomers. The sun is spurting vast of matter and bring the sunlight and warmth to the whole solar system. The speed of the rotation of the earth is reducing every day, though the reduction is trifle. It can be counted only by microsecond, or even by nanosecond, every day. That is to say, the condition for people to take activities is changing gradually. The change might be trifle to one generation of the people, however it is always changing. One of the ancient Greek scholar said that man can not go into the same river because the water, which is becoming new continuously, is always flowing forward. Therefore to humans the processes of changes and developments are irreversible, and time, which quantify the processes of changes and developments, is irreversible. I think one of the basic aim for the ancient Greek scholar to say above words is to express their opinion that time is one dimension. They had to use the phenomenon, which could be perceived directly through the senses, to explain their opinion that time is one dimension, because they had not summarized the proposition that time is one dimension.

Certainly anything can be reversible in the process of human subjective disposition. It is because that the process of human subjective disposition is a process that humans recalling, connecting, assuming, supposing, judging, reasoning, fabricating, making up, etc., in humans' minds. In the process of the subjective disposition, it happens quite often that a sheer fabrication out of nothing at any time, to say nothing that people recall, or imagine, or forecast, or calculate something in the future, when they see some phenomena contemporaneously.

What should be stressed here is that time is not only one dimension, but also straight line. It because that the concept of time itself is only a dominant thinking moment in human thinking or in human minds. In recent years, some scholars put forward the viewpoint that time is curved and tortuous, because that the light goes in the cosmos tortuously, for the light is influenced by the gravity of the big

heavenly bodies or galaxy, and time is counted by the speed of light. However human thinking is different from the objects of human thinking after all. The viewpoint that time is curved and tortuous confuse the objects and subjective disposition. Actually humans have to think out some concepts, which can not be found the substantial example in the real world, in order to get to know and grasp the substantial phenomena in the real world. For instance, we must think out, or fabricate, or assume, or suppose that there were a point without any area, a line without any width, a surface without any bulk, which can not find the substantial example in the reality of the world, and carry the relative calculations in geometry, when we would like to get to know precisely the complex shape or bulk of an object, as stated in the above sections or chapters.

And we have to think out some concepts about the number and the standards for calculating and estimating, which the objects can not shown themselves. We could not imagine the state of the substantial existence of any matter, such as that the light goes in curve and tortuously in the cosmos, if we did not think out the concept that the light is one straight dimension. Just like what Martin Heidegger said in his book *Being And Time* that "The 'grounding' of 'factual science' was possible only because the researchers understood that in principle there are no "bare facts". (Note 19) These words are the biggest contribution of Heidegger to the development of human philosophy. These words actually mean that all the existence and changes of all the objects can be grasped only after the subjective disposition of the human beings. And the subjective disposition of the human beings includes the fabrication and taking a one-sided approach to the objects, and, etc., as stated in the sections and chapters above.

The word "transcendental" in Kant's *Critique Of Pure Reason* and the word "speculation" in Hegel' works actually mainly refer to the fact that human beings only created some concepts, which can not be found the substantial example in the real world, to get to know and grasp the substantial phenomena in the real world. However, neither Kant nor Hegel themselves got to know this clearly, nor did they have formed the concepts which are axiomatized. We have to acknowledge that Heidegger did go further a step than his academic predecessor on this issue.

What should be repeated here is that the absolute time stresses the characteristics of the grouping, publication, meanness and the ideal of the marking and the scaling of time, and the relative time stresses the characteristics of the individuality and the practice and reality of the marking and the scaling of time. Each real marking and scaling of time in the history has the duality, or two functions, that is, it is the marking and scaling of absolute time, and also the marking and scaling of relative time. The reason for it to be called the marking and scaling of absolute time is that each observation of the observers serves the division and cooperation of one certain community, and serves the realization of the simultaneity and synchroneity of one certain community. The reason for it to be called the marking and scaling of relative time is that each observation of the observers, and all the activities of the time keeping, are always kept a distance from the ideal measuring and time keeping of the community. In other words, each concrete measuring and marking of time, which exists in the real history, has the

duality, that is, it is the measuring and marking of absolute time and it is also the measuring and marking of relative time at the same time. It is because that any thing, which is carried out by different persons, or which is carried out by the same person, but at different duration of his life, is always different. At the same time, the measure and time keeping is carried out for the ideal simultaneity and synchroneity of the community, in order to meet the need of the existence and development of the community.

10. The Most Basic Starting Point and the Most Primary Starting Point of the Concepts of Time Scaling

The most basic starting point of time scaling is the time scaling which the observers are using immediately, for the most basic starting point of time scaling is always changing and moving, because that the objects, which are the targets of time measuring, and the observers, are always in the state of changing and moving.

For instance, the observers of time can stop their measure of time at any time. They are always growing older and older, and they might lose their ability of measuring and marking of time because of their age or other reasons.

The objects, which are the targets of time measuring, are always in the state of changing and moving. For instance, the revolution of the earth round the sun, which is the most authoritative to the people of the world in the issue of time measure and time scale, that is, the thing, which can seen directly by the people all over the world, and which can change the smallest on the issue of time measure, is also changing. The present scientists, who study the earth, have got out the opinion that the revolution of the earth round the sun was about 400 days per year about more than 300 000 000 years ago. That is to say, the period of the present revolution of the earth round the sun is nine tenth of the period of the revolution of the earth round the sun about more than 300 000 000 years ago. (Note 20) And the rotation of the earth is still changing slowly, because its speed is slowing gradually. The event, that the world added a leap second in the year of 2017, reflects that the people of the world recognized the fact that the rotation of the earth is still changing slowly.

The first aim for humans to measure and mark time is that the humans would like to go on existing and developing themselves, and humans would like to do their cooperation and division of activities well and better. Humans have to grasp and do well the measuring, marking, and calculating of the present time. Therefore the most basic starting point of time scaling is the time scaling which the observers are using immediately. It is because that only to grasp the time measuring, time scaling and time counting, which the relative observers are using present, can humans successfully grasp and understand the time measuring, time scaling and time counting in the past and in the future. Therefore the most basic starting point of time scaling has the historicity. It can change along with the change of the living environment of the individuals and the groups of human beings. However each generation might have to ignore the historicity, for the change of their living environment is too triple to each generation. And

humans can organize efficient division and cooperation when they ignore the triple change.

Martin Heidegger, the contemporary German philosopher, stresses the foundation and meaning of the German word *Desein* in his book *Being And Time*, that is, the function and meaning of the English word *is*, which are the present indefinite simple present form of the English word *be.* (Note 21) I think, one of the major reasons for him to stress it is that he might want to stress that the most basic starting point of time measuring, time marking and time calculating is the time scaling which the observers are using immediately. However, Heidegger did not think it over, or explain it clearly. It because that it has to change the concretely existent forms of each verb in order to add the factor of tense or time, when people use the verbs of all existent forms of Latin language, including German and English. And during the process of subjective disposition, people can fabricate the time, which means that any event can happen at any time. This situation make the scholars, whose mother tongues are the existent forms of Latin, quite easily go into the state of argue in a circle, or into the state of tautology, or even into the state of thinking confusion in their minds, when they would like to explain clearly the questions of what is time and what is the most basic starting point of time measuring, time marking and time calculating, and, etc. The issue of what is being, which has been expounded in the above chapters is actually one of the concrete examples in the existent forms of Latin languages. This situation is one of the major reasons for the two questions, that is, what is being and what is time, become the two biggest or most difficult questions to resolve at present in the existent forms of Latin. This situation is also one of the major reasons for the two questions have not been resolved properly since the ancient time of Greek more than two thousands years ago.

As a matter of fact, Heidegger himself had the feeling, even the relatively mature opinion, as he said in his book *Being And Time* "The task of carrying out in an appropriate way the ontological analysis of end and totality breaks down not only because the theme is so far-reaching, but because there is a difficulty in principle: to master this task successfully, we must presuppose that precisely what we are seeking in this investigation—the meaning of Being in general--is something which we have already and with which we are quite familiar." (Note 22) That is to say, the existent forms of Latin themselves have got the defect of the argue in a circle or tautology, when people would like to explain clearly the questions of what is time, or what is the nature, or the genus, or essence of time, or what is the most basic starting point of time measuring, or time marking, or time calculating, or the genus, or essence of Being, etc., in the existent forms of Latin themselves, and cannot resolve the questions from their root.

Chinese language does not have the two defects or shortcomings, because that Chinese language is a self-contained language. In Chinese, the time of an action is expressed by an independent word, or a word group, or a phrase, or the context of the action. It does not need to change the morphology of the word, which expresses the action. Therefore it is not so difficult to resolve the questions of what is time and what is Being for a Chinese scholar. However, the two questions are only resolved logically today, because that the two big civilizations do not know each other very much before, especially in the field of philosophical methodology, which has got the highest level of abstraction in human thinking.

The other big question is the question of most primary starting point of the scaling or marking of space and time and the question of the final point of the scaling or marking of space or time. Kant explained this issue relatively in detail in the part about the antimony in his book *Critique Of Pure Reason*. The reason for Kant to discuss the questions here is that he thought that humans were very difficult to resolve these problems. (Note 23)

I think, the concept of space only refers to the dominant thinking moment, which express our desire, or tendency, or requirement, or want, to quantify the existence of any object or objectivity and their movements and changes, when the concept of space is opposite to the concepts of the measure and scale of space, the concept of time, the concepts of the measure and scale of time, absolute space, relative space, etc., that is, when the concept of space is connected, refined and defined by these concepts, as expounded in above sections. And I think, the basic aim for humans to have put forward the concept of time is to quantify the processes of subjective and objective existence, being, duration and changes in order to make the cooperation and division of human activities efficient, that is, to increase the collective power or group power of humans in production, war, and so on and so forth, as expounded in above sections and chapters. Therefore, both the concept of space and the concept of time are two thinking moments. And the most primary starting point of the scaling or marking of space and time, that is, earliest point of humans about the starting point of the scaling or marking of space and time, is the time when the earliest humans began to have the above desire, or tendency, or requirement, or want, and, etc. And the final point of the scaling or marking of space and time is the vanishing day when the humans will wither away or vanish in the future, or the day when the environment of the earth will not suitable for humans to go on living on the earth in the future. The concepts of space and time are only going alongside with the existence of the humans. The concepts of space and time will wither away or vanish when humans will wither away or vanish because of the effect of the natural laws many millions years or more later. When the time comes in the far future, the rotation of the earth will go on rotating, and the revolution of the earth round the sun will go on revolving round the sun, the cosmos will go on expending as usual. Only the earth will lack a species, that is, the mankind, and the other existent forms of matter will also change, at least it will lack the things which are manufactured by the mankind, such as televisions, washing machines, cars, etc. The concepts of space and time represent the process of the subjective disposition of the human beings from a perspective. In other words, the most primary starting point of the concepts of space and time was the starting point of the subjective disposition of the human beings. And the final point of the existence of the concepts of space and time will be the final ending point of the existence of the humans.

The first reason for Kant not to be able to resolve the essence, or from the abstract end, of the concepts of space and time, or the first reason for Kant not to be able to have a correct cognition of the concepts of space and time, is that Kant himself did not recognize that the concepts of space and time are only two of the thinking moments of human beings. The second reason for Kant not to be able to resolve the nature of the concepts of space and time is that his epoch did not provide the scientific condition to

resolve the problems. The level of the development of sciences at Kant's time was much lower than that of today.

11. The Usage of Loan of the Concept of Time in Languages

In most of the cases in people's daily usage of the concept of time is the sub-concepts of time, which the concepts of time contain or implicate. For instance, people often ask their friends or colleagues if they have time to have a cup of tea to talk some things, and etc. This question actually asks if their friends or colleagues can spend some duration of their lives to have a cup of tea to talk some things, and etc. These kinds of events are loans from the language and linguistic perspective and from the perspective of the essence of the concept of time. It is the same in the cases of the other sub-concepts of space and time, such as in the cases of 1, all the days of the past, present and future; 2, the passing of all the days, months and years, taken as a whole; 3, portion or measure of time; 4, point of time stated in hours and minutes of the day; 5, time measured units; 6, point or period of time associated with or available or suitable for, a certain even purpose, etc; 7, occasion; 8, used to indicate multiplication; 9, period of time, more or less definite, associated with certain events, circumstances, persons, etc; 10, the conditions of life, the circumstances, etc., of a period characterized by certain quantities; 11, Greenwich/ local/ summer/ standard time; 12, style of rhythm depending upon the number of beats in the successive bars of a piece of music; 13, choose the time or moment for; arrange the time for; 14, measure the time taken by or for; 15, regulate, etc., as I mentioned in the above sections.

It is the human animal instinct for people to use the sub-concepts of time in their daily live. Humans have got this animal instinct through millions of years of evolution. No one can change the reality.

That is means that the question of what is time only related with the essence of the concept of time. Therefore, to ordinary people, they don't care about the question of what is time, and only some of the philosophical workers care about it. This is the reason why the question of what is time was raised clearly nearly two thousand years ago, and has not got a convincing answer, while people can still use the concept of time. It is just the same with the question of what is Being and the question of what is space.

12. Defects of the Outstanding Scholars in Their Theories of Time

The scholars of the world, who work in the discipline of the philosophy and science, have not got a unanimous opinion on the questions of what is time, or what are the essence or differentia of time. Many scholars, especially some outstanding scholar in the history of the development of science, also put forward their opinions on the issues of the relative time and the absolute time, because that the issue of how to measure and mark the relative time and the absolute time precisely belongs to the discipline of the astronomical physics and other disciplines which connected with the discipline of physics. Therefore it is quite natural for many natural scientists to concern the nature, or the essence, or differentia, of time, or the concept of time. However, all of their theories about time have got defects or

shortcomings. Here I might need point out the defects or shortcomings of some quite famous scientists and philosophers, who have got very big influence in the world, in their theories about the concept of time.

First is Issac Newton (1642-1727), the outstanding British scientist and philosopher.

Newton made many great contributions to the development of science, e.g., he put forward the theory of gravity, and etc. However, his theories about time got defects or shortcomings. Firstly he did not define the concept of time. That is to say, he did not explain what are the essence, or genus, or differentia of the concept of time. He acknowledged openly in *Mathematical Principles of Natural Philosophy*, which is the most important book he wrote in his life, that he did not define the words of time, space, place, and motion, from the perspective of genus and differentia, because that they are too familiar to everyone.

"Although time, space, place, and motion are very familiar to everyone, it must be noted that these quantities are popularly received solely with reference to objects of sense perception. And this is the source of certain preconceptions; to eliminate them it is useful to distinguish these quantities into absolute and relative, true and apparent, mathematical and common" (Note 24)

At the same time, his definitions of absolute time and relative time have also shortcomings. He said in the above book that

"Absolute, true, and mathematical time, in and of itself and of its own nature, without reference to anything external, flows uniformly and by another name is called duration. Relative, apparent, and common time is any sensible and external measure (precise or imprecise) of duration by means of motion; such a measure--for example, an hour, a day, a month, a year—is commonly used instead of true time." (Note 25)

"In astronomy, absolute time is distinguished from the relative time by the equation of common time. For natural days, which are commonly considered equal for the purpose of measuring time, are actually unequal. Astronomers correct this inequality in order to measure celestial motions on the basis of a true time. It is possible that there is no uniform motion by which time may have an exact measure. All motions can be accelerated and retarded, but the flow of absolute time cannot be changed. The duration or perseverance of the existence of things is the same, whether their motions are rapid or slow or null; accordingly, duration is rightly distinguished from its sensible measures and is gathered from them by means of an astronomical equation. Moreover, the need for using this equation in determining when phenomena occur is proved by experience with a pendulum clock and also by eclipses of the satellites of Jupiter." (Note 26)

What he said as the absolute time actually refers to the facts that the process of human subjective disposition of all kinds of the moving in their minds, especially the process of each rotation of the earth into equal, or even or homogeneous 24 hours, and the process of one hour into equal, or even or homogeneous 60 minutes, and the revolution of the earth round the sun into 365 days and a little more, which can be grasped by humans through the usage of some tools and instruments, and the one

dimension of time, and so on. It because that only the human subjective disposition can refuse to yield to any objective change outside human minds. And any objective reality in the cosmos influences each other and bring the causal relations without any consideration of any individual's or community's will. Therefore, the absolute time Newton mentioned here refers actually to the measuring and marking and scaling of time.

I think that the correct content of the concept of absolute time is, as what I wrote in the above sections, that the different individuals, at different places, with different instruments or tools of time measuring, and with the same or united standard and units of time measuring, and with the same starting point of time measuring, to measure, mark and keep the time, and calculate the process or duration of the other practice, and all duration of the existence and changing of the other matters or materials or events. The concept of absolute time can help people of a time community to keep the synchroneity to some extent in their practice in order to promote the effects of their practice. Therefore Newton's viewpoint about absolute time does not accord with the historical facts.

In the issue of relative time, Newton took the measuring and marking of time as the relative time. I think that the correct content of the concept of relative time is, as what I wrote in the above sections, that the content of relative time refers to the process that different individuals at different places with different standard or units, and with the different starting point of time measuring, to measure, or mark, or calculate, the human activities, and the existence and changing of the matters or materials or events of the cosmos. Therefore Newton's viewpoint about relative time does not accord with the historical facts, either.

And only acknowledge and keep the concept of relative time can not make the people of the same time community realize the synchroneity to some extent in their practice or time keeping. Only keep the concept of absolute time at the same time can help the people of a time community to keep the synchroneity to some extent in their practice. Therefore, the attitude of Albert Einstein towards absolute time is wrong too, or has defects or shortcomings, because he only acknowledged the existence of relative time, but refused to acknowledge the existence of absolute time. His viewpoint on absolute time does not accord with the historical facts, either.

Certainly, the people of a time community would always find a method to transform the relative time into absolute time finally in the real history, in order to make the people of a time community to realize the synchroneity and time keeping to some extent in their practice. Newton actually mentioned his viewpoint on the issue of the transformation from the relative time into the absolute time in the above citation. However, he ran away from the philosophical issue of the transformation from the relative time into the absolute time, and began to talk about the physical issue about the concrete measure and mark of time, because he did not have a correct recognition about why people have to put forward the concept of time, or have no recognition about it, he only say that time is "very familiar to everyone", as cited above.

The further reason for Newton to have got defects on the issue of time, as stated in the above sections,

is that the word *time* is a polysemous word as in all the existent forms of Latin, and all the usage of the verbs in Latin is connected with the usage of tense, that is, linked with the issue of the connection between the time which the people express and the time which the events happen. Because people can subjectively suppose or fabricate the time which an historical event happen, and can also subjectively suppose or fabricate the time which the observers express, the people who express the time can use many tenses to express the same event. And more is that people can use the active voice and the passive voice. In this situation, it is quite easy for the people who express and the people who listen to fall into the states of argue in a circle, or tautology, or even a logical confusion. That is to say, Newton's defects on the issue of time is that it is very difficult for the thinking way and language expression of Latin to think or explain clearly the question of what is time. Heidegger's viewpoint on this issue is that "Because Being cannot be grasped except by taking time into consideration, the answer to the question of Being cannot lie in any proposition that is blind and isolated." (Note 27) Correspondingly the thinking way and expressing way of all the existent forms of Latin language are hardly to distinguish the factors of subject, object, subjectivity or objectivity clearly when the scholars try to understand and resolve the issues of time, relative time, absolute time, etc. In this situation, the scholars, including Newton, are hardly to explain clearly the relations between the concepts of time, relative time, absolute time, etc. This might be the one of the reasons that the Chinese language, as an self-contained language, might be beneficial and favourable the development of the philosophy, and even the theories of the traditional Chinese medicine is linked directly with the theories of philosophy, talking about the antithesis and antagonist between *yin* and *yang*, that is, between the positive forces and the negative forces. While the ancient Greek, and the ancient and present existent forms of Latin might be beneficial and favourable to the development of the mathematics, and some scholars of the ancient Greek and of the ancient and present existent forms of Latin would like to make the languages, and even all the human thinkings become the mathematics, and created the theory that the number is the origin or source of the whole world and the theory of the mathematical logic.

Newton's theory about space have also defects and shortcomings.

Newton himself acknowledged that he did not define the concept of space, and said in his *Mathematical Priciples of Natural Philosophy* that

"Thus far it has seemed best to explain the senses in which less familiar words are to be taken in this treatise... Absolute space, of its own nature without reference to anything external, always remains homogeneous and immovable. Relative space is any movable measure or dimension of this absolute space; such a measure or dimension is determined by our senses from the situation of the space with respect to bodies and is popularly used for immovable space, as in the case of space under the earth or in the air or in the heavens, where the dimension is determined from the situation of the space with respect to the earth. Absolute and relative space are the same in species and in magnitude, but they do not always remain the same numerically. For example, if the earth moves, the space of our air, which in a relative sense and with respect to the earth always remains the same, will now be one part of the

absolute space into which the air passes, now another part of it, and thus will be changing continually in an absolute sense." (Note 28)

In the paragraphs above, Newton takes the same coordinate system or frame of axes as the absolute space, and takes the move of the matter as the relative space. Then he not only ignored why people put forward the three concepts of space, absolute space or relative space, but also ignored the real facts that why people make the concept of relative space transform into the concept of absolute space, which happen in the minds of the people of each community everyday. In other words, Newton took the things which should be expressed as the expressing. It is just like that a chef presented a few dishes, which he has cooked, as the menu, that is, the bill of all the dishes that the restaurant can present. This is the result that Newton did not define the concept of space.

The second famous scholar is Immanuel Kant (1724-1804), the great scientist and philosopher of modern Germany.

Kant discussed specifically the genus and differentia of the concepts of time and space with more than one hundred of pages in his book *Critique Of Pure Reason*. He also mentioned the functions of the two concepts in human thinking in the other parts of the book. He made the two concepts of space and time as one of the most important examples to establish and prove his concepts of pure reason and the system of his theories. However, his theories about space and time have got defects and shortcomings. Most of all he did not distinguish clearly the concepts of space, the measure and mark of space, absolute space, relative space, time, the measure and mark of time, absolute time, relative time, and etc. Thus he can not make clear that if the concepts of space and time is subjective or objective after all. Why they are subjective? Or why they are objective? Or why they are not only subjective, but also objective? Or in what a circumstances or condition they are subjective? Or in what a circumstances or condition they are objective?

He defined the concept of space as "Space is a necessary *a priori* representation...Space is not a discursive or, as we say, general concept of relations of things in general, but a pure intuition...it follows that an *a priori*, and not an empirical, intuition underlies all the concepts of space." (Note 29)

According to the present regulations of formal logic, representation refers to the human direct reflections to the outside world, such as recall, association, or imagination, etc. Thus Kant derived all the source of the concepts about space to the subjective disposition of human beings, but never derived the source for people to create the concept of space to the need of the collective or group practice of human beings. In above words of Kant, *a priori* refers to the inevitable reflects. However, this does not accord with the real history of humans. In the real history of humans, it is quite common and usual for people to have different reflects or description to the same historical thing. For example, the name of the concept of space, the English people call it space, but the Chinese people call it *kongjian*.

Kant defined the concept of time as

"Time is not an empirical concept that has been derived from any experience. For neither coexistence nor succession would never come within our perception, if the representation of time were not

presupposed as underlying them *a priori*. Only on the presupposition of time can we represent to ourselves a number of things as existing at one and the same time (simultaneously) or at different times (successively)...Time is a necessary representation that underlies all intuitions. We cannot, in respect of appearances in general, remove time itself, though we can quite well think times as void of appearances. Time is, therefore, given *a priori*. In it alone is actuality of appearances possible at all. Appearances may, one and all, but time (as the universal condition of their possibility) cannot itself be removed." (Note 30)

Thus Kant derived all the source of the concepts about time to the subjective disposition of human beings, but not derived the source for people to create the concept of time to the need of the collective or group practice of human beings. In addition he put forward the view point that "There is only one time in which all different times must be located, not as coexistent but as in succession to one another." (Note 31) However, this does not accord with the real history of human group or collective practice. The real history of the human group or collective practice is that different communities not only established and set up different times, that is, established and set up relative time and the different marks of relative time for their practices, but also established and set up different absolute times, that is, the united marks of time for their practices. For example, Chairman Mao Zedong made the time mark of Nie Rongzhen's pocket watch as the united standard of the time mark to launch the Dongzheng Campaign, and made the time mark of Nie Rongzhen's pocket watch as the absolute time mark of all the officers or soldiers, who joined the Dongzheng Campaign, as I mentioned above. Actually the number of absolute time and the marks or scales of time are as many as the time communities, which have get different time marks or scales. And the number of absolute time and relative time and the marks or scales of absolute time and relative time are as many as the events which have got the attention of different communities in the real history of human beings. For instance, the sounds of the washbasin, beat by the leaders of the production teams, or the shouts of the representatives of the production teams, were the absolute marks for the members of team to begin their work in the fields, from the year of 1958 to the year of 1979, when China practised the group or collective production and the social system of the people's commune in the rural areas. I myself was arranged by my mother to the old home of my family in a small village in Shanxi province, China, from the year of 1966 to the year of 1968, when I was 12-14 years old, to take care of my grandmother, whose two legs were disabled, in the situation that the whole China was practising the Cultural Revolution and no school or college or university was under the state of normal education at that time. During this period of time, I joined the group labour of two production teams to earn 4 to 6 work points a working day, which was a unit indicating the quantity and quality of labor performed, and the amount of payment earned, in the rural people's communes, to help my parents to support the economical life of my family. The beginning time for the group team to work were the sounds of the washbasin beat by the representatives of the production teams, no one would like to trouble the clock or watches. There appeared millions of absolute time and the marks of absolute time in the rural areas of China, because

there were millions of production team at that time in China. The farming was so backward that the members of the production teams had to live at the mercy of the elements, that is, it depended on the Heaven for the harvest of the farming. And it had almost to depend on the weather to see which day the members of the production team could go to plough on the cultivated land of the production team. The days of raining and snowing might not be necessary to plough the farming land. The time of beginning to plough depended on the sun raising, and the ending time depended on the sun setting. No one would depend on the Peking time or Greenwich time. And the members of the production team usually no way to get to know the Peking time or Greenwich time, because they, including me myself, were too poor to buy a clock or watch. Only those, whose families had got the ceremonies for marriage or the ceremonies of funerals, paid much attention to the time of the sunrise, the noon and the time of sunset, because the customs of my old home were that the brides had to arrived the homes of bridegrooms before noon. The ceremonies of funerals had to be held in the afternoon, and the dead had to be buried before the dark. But in that era, each village of China, and even many families, had got a calendar, to see which day is good or not to hold a wedding or to go out to do business, and etc., because the economical income of many rich families has allowed them to buy a calender since the invention of the printing on the woodcut in the Sui Dynasty (A. D. 581-618) in the history of China.

Actually till now there might be the same number of the concept of time as the number of the individuals in the world in the history. And the number of the mark or scale of time might be much more than the contemporary individuals of the world. It is because that it can make a specific mark or scale of time, e. g. to knock the door for three times, or to cough for two times, etc., so long if two or more people have agreed to do one thing together and have got the consensus on the mark or scale of time. And each person might do many things or practise in his life, which no one, even himself could not tell correctly. Certainly, the influenced scopes of the synchroneity of the different ways of the mark or scale of time are different. For instance, the Greenwich time is the way by which many people in the world would realize the synchroneity. While a cough, which could be only heard by a few people, could only makes a few persons to realize the synchroneity.

Kant neither told clearly if the concepts of space or time was subjective or objective, or they were not only subjective, but also objective, or on what the conditions that they were connected with the objective world. (Note 32)

I think that the nature of the two concepts of space and time are only two thinking moments, as stated in the above sections. However, the two thinking moments get to connections with the outside world, that is, the objective world, through the four thinking moments of the space measure, the space mark, the time measure and the time mark. If we removed the existence of the four thinking moments, then the nature of the concepts of space and time, which connected with the concepts of space and time themselves, would have lost the significance of their existence. It because that the final aim for humans to quantify the succession, sequence, continuance, continuation, extension, tensity, ductility, of the process of existing and changing of subjects and objects is that they would like to raise their absolute

living standard through the ways of grasping, or holding, or seizing some objective marks of the process of existing and changing of subjects and objects, which people can see and feel substantially. Otherwise, the concepts of space and time could not have become two concepts which have community and have got their language forms. Therefore, the concepts of space and time are subjective, but also reflect the objects at the same time. The concepts of space and time keep the direct connection with the objective world and human practice through the four thinking moments of space measure, space mark, time measure and time mark, and serve the human practice. At present, many things which link the correct quantification of the succession, sequence, continuance, continuation, extension, tensity, ductility, of the process of existing and changing of subjects and objects belong to natural science and engineering, and they are disposed by many natural scientists and engineers.

In short, Kant put forward many inspiring viewpoints and propositions and made great contribution to the issues of space and time. For instance, he almost clearly held the viewpoint that issue of time is purely subjective and brought the issues of space and time into the sphere of the cockpit of philosophical studies again. Only this contribution made the philosophical studies of the world go ahead a lot. Martin Heidegger commented once that "The first and only person who has gone any stretch of the way towards investigating the dimension of Temporality or even let himself be drawn hither by coercion of the phenomena themselves is Kant." (Note 33) Therefore the works of Kant have got very important position in the development of the cognition on the two concepts of space and time. However, many viewpoints and propositions put forward by Kant are not in accord with the historical facts, or not convincing enough. It is not too much if the relative scholars write quite a few volumes of books to comment on the viewpoints and propositions put forward by Kant. It can deepen our understanding and cognition on the issue of the two concepts of space and time, if we could comment and criticize deeply on all the viewpoints and propositions put forward by Kant on the issues.

Next is G. W. F. Hegel (1870-1831), the great philosopher of Germany.

He had some comments and definitions on space and time. He said in *Logic*, which is called the *Big Logic* by Chinese scholars when they study the foreign philosophy, that

"space and time are extension and many. Both of them go beyond themselves and are pouring. But they never transform to their opposites, never transform into one or quality; when they go beyond themselves, they are always the reproduction of the united themselves...space is the Being out of themselves, and space is also continuous of the other Being, and another Being, without any interruption. Time is the absoluteness which has gone out off itself, or one, or time point, or the appearance of the present, or the direct disappearance of the present, or the ever repeated disappearance of this kind of the past; therefore this appearance of non-Being itself is also the pure equality and identity of itself." (Note 34)

Being is the sense and knowledge about the objective world in all Hegel's works about logic. Being is not in the scope of the subjective disposition in his works. However, I think, the two concepts of space and time is connected with both the objective sense and knowledge and the subjective disposition.

Hegel made the extension, many and pouring as the genus of concepts of space and time. This thinking way imitates the thinking way of Heracleitus of ancient Greece. Heracleitus put forward the viewpoint that everything is flowing and changing. Hegel made the extension, many and pouring as the genus of concepts of space and time. This has the suspicion that he made the two concepts, space and time, only belong to or connected with the objectivity.

Hegel made the differentia of the concept of space as "Being absolutely beyond itself" as cited above. Obviously this is not a good definition of the concept of space with genus and differentia, when Hegel himself and the other scholars had not made clear what was Being, or the subjective dialectics had not been axiomatized. This kind of definitions would make people go further to the things which are more difficult to understand, but not go to the things which are easier for people to understand. It is easy to make people confused, but not to make people understand clearly. Therefore Hegel's definitions about space and time are not good. And this also shows that Hegel did not have a correct knowing about the genus or differentia of the two concepts of space and time.

Hegel also had some comments and definitions on absolute space and absolute time. He said, in *Hegel's Logic, Being Part One of the Encyclopeadia of the Philosophical Sciences (1830)*, that "Absolute space and absolute time, for example, is another way of saying abstract space and abstract time." (Note 35) However Hegel's definitions about absolute space and absolute time are not good either, because he did not tell clearly or correctly the upper concepts of absolute space and absolute time, that is, the concept of space or the concept of time. To say nothing that Hegel did not explain clearly the genus or differentia of the concept of abstract or the concept of concrete. And Hegel's explanations and definitions of absolute space and absolute time could not make us go ahead.

Actually the concept of abstract and the concept of concrete are two opposite concepts. They can limit or refine each other. The concept of abstract refers to the phenomenon which apart from the subject a little bit farther, that is, apart from the objective phenomenon which can be sensed directly by people a little bit farther. On the contrary, the concept of concrete refers to the nearer end, that is, refers to objective phenomenon which can be sensed directly by people a little bit nearer. However, both of the concept of abstract and the concept of concrete have the relativity. In the circumstances that there is no context, the same thing or the same phenomenon can be both the abstract end and concrete end. For instance, when the concept of apple is in the position opposite to the concept of Redfuji Apple, the concept of apple is in the position of abstract end. But when the concept of apple is in the position opposite to the concept of fruit, then the concept of apple is in the position of concrete end.

Then is Albert Einstein (1879-1955).

Just like Issac Newton, Albert Einstein made great contributions to the development of the human science, e.g., he put forward the formula of the mass-energy equation, $E=mc^2$. However, his theories about time have defects and shortcomings.

Firstly, he did not go ahead a step than the previous scholars on the issues of what is space or what is time. He said, in his book *Ideas and Opinions,* that

"With our pre-scientific concepts we are very much in the position of our archaeologist in regard to the ontological problem. We have, so to speak, forgotten what features in the world of experience caused us to frame those concepts, and we have great difficulty in calling to mind the world of experience without the spectacles of the old-estableshed conceptual interpretation. There is the further difficulty that our language is compelled to work with words which are inseparably connected with those primitive concepts. There are the obstacles which confront us when we try to describe the essential nature of the pre-scientific concept of space...One remark about concepts in general, before we turn to the problem of space: concepts have reference to sensible experience, but they are never, in a logical sense, deducible from them. For this reason I have never been able to understand the quest of *a priori* in the Kantian sense. In any ontological question, our concern can only be seek out those characteristics in the complex of sense experiences to which the concepts refer...Now as regards the concept of space: this seems to presuppose the concept of solid body. The nature of the conmplexes and sen-impressions which are probably responsible for that concept has often been described. The correspondence between certain visual and tactile impression, the fact that they can be continuously followed through time, and that the impressions can be repeated at any moment (touch, sight), are some of those characteristics. Once the concept of solid body is formed in connection with experiences just mentioned—which concept by no means presupposes that of space or spacial relation—the desire to get an intellectual grasp of the relation of such solid bodies is bound to give rise to concepts which correspond to their spacial relations. Two solid bodies may touch one another or be distant from one another. In the latter case, a third body can be inserted between them without altering them in any way; in the former, not. These spacial relations are obviously real in the same sense as the bodies themselves. If two bodies are equivalent with respect to filling out one such interval, they will also prove equivalent for other intervals. The interval is thus shown to be independent of selection of any special body to fill it; the same is universally true of spacial relations. It is evident that this independence, which is a principal condition of the usefulness of framing purely geometrical concepts, is not necessary *a priori*. In my opinion, this concept of the interval, detached as it is from the selection of any special body to occupy it, is the starting point of the whole concept of space. (Note 36)

Einstein mentioned concept and word, that is, the language expression, in the above words. This shows that Einstein thought more and deeper than previous scholars on the issue of the essence of space from the perspective of subjectivity and philosophy.

We can see that Einstein's study on philosophy was very deep and broad from his above words that "the quest of *a priori* in the Kantian sense". We can see also that Einstein would like to explain his theories of the special and general relativity about space and time, from both physics and philosophy. And he agreed with the viewpoint that space and time have the characteristics of "inseparability". (Note 37) However, his viewpoints about the essence and differentia do not go further than that of the previous scholars because he himself did not go further than that of the previous scholars on the issues of the essence and differentia of the concepts of ontology, concept and the language expression, neither

did he put any new ideas about subjective disposition.

We can see that Einstein undertook the existence and moving state of matter in space, and human activities of measuring and marking, which are totally objective as the concepts of space and time, then he put forward the viewpoint of "space is—exactly as Riemann guessed—no longer absolute; its structure depends on physical influence. (Physical) geometry is no longer as isolated self-contained science like the geometry of Euclid", (Note 38) and in turn he proved his famous theories of relativity.

As stated above, this thinking way is the thinking ways of many present natural scientists. This thinking way is too narrow. This thinking way is similar to that a chef presented a few dishes, which he has cooked, as the menu, that is, the bill of all the dishes that the restaurant can present. This thinking way is that a man only acknowledged that there was only left side and refused to acknowledge that there was rightness. This thinking way is that a man only saw the objective existence and moving of the matter, but refused to see or ignored the subjective disposition, which can be objectified by languages. And this thinking way is the thinking way which made people no way to grasp the objects, and no way to organize the efficient cooperation or division. This thinking way is the thinking way which made people could not think back why people had created or formed the concepts of space or time. This thinking way is the thinking way that a man only acknowledged the relativity when he had not distinguished the absoluteness from the relativity, or when he could not explain clearly what is time. It is just like that a man had judged another man as a bad man when he could not explain what is good or what is bad.

The photographs of the area of the sun during the duration of the total solar eclipse, taken in the year of 1919 by the observing teams, lead by Arthur Stanley Eddington (1882-1944) at the western part of Africa, and Crommelin (1865-1939) at the southern part of America respectively, can only prove that the light can be curved by gravitational force of the sun. The fact that light can be curved by gravitational force of the sun can not make the speed of light become slow, or bring the humans to change the fact that humans can grasp the space from the perspective of quantity through the three dimensions of length, width and highness, or change the fact that humans can grasp the time from the perspective of quantity through the thinking way of one dimension, or change the fact that humans can grasp the moving through the thinking way of the three dimensions of the space and the one dimension of the time, that is, the thinking way of the "four dimensions", called by Einstein himself, of the space.

More recently some scientists announced that they have found the proof of the existence of the gravitational wave. And this fact proves further that Einstein's theory of relativity is right. However this new discovery, if there was, can only prove that the gravitational wave can only influence, or influence greatly, the existent forms of many kinds of matter in the cosmos. But it can not prove that gravitational wave is time, or relative time. This thinking way is the thinking way which takes the objective phenomenon as the subjective disposition, too.

As what I explained above, no matter the concepts of space, or time, or relative space, or relative time, all these concepts are the results of the subjective dispositions of human beings and their language

expressions. What they are expressing are some objective phenomena. But they themselves are not the objective phenomena. This is just like the menu of a restaurant. The menu can express the cooked food and drinks of a restaurant. The menu is not the cooked food and drinks themselves. Just menu cannot make the customers get rid off their hunger or thirsty, or demonstrate if the cooked food of the restaurant is delicious or not. But each restaurant, which is a little bit good or big, must make a beautiful menu in order to be convenient for the customers to make orders, and to save the time of the customers and make the restaurant to make money more. Therefore the viewpoints that the gravitational wave was time, or relative time itself, or the gravitational wave was the proof that the existence of relative space-time, or time was curved, etc., are wrong. This kind of viewpoints take the objective facts as the results of subjective disposition. We can only say that the discovery of the gravitational wave proved that the moving of matter which are existing in the cosmos are not straight, but curved and tortuous. We can not say that space and time are curved and tortuous. We have to say that time is one dimension and straight. It is because our subjective dispositions must think out some things and regulations which we cannot find the corresponding things which in the objective world by our direct senses at all. If we did not assume or suppose that time is one dimension and straight, then humans could not understand, or dispose or describe that any existence or its moving in the world was curved or tortuous. It is just like that we must think out, fabricate, assume or suppose that there were a point without any area, a line without any width, a surface without any bulk, which can not be found the substantial example in the real world, or that there was straight lines, which can not be found the substantial example in the real world neither, and then we can carry out the relative calculations in geometry, as stated in the above sections or chapters for quite a few times, when we would like to get to know precisely the complex shape or bulk of an object in our minds. Even the languages and letters are the results and expressing forms of humans' subjective dispositions. The facts that the different nations of the world use different languages and letters, and the facts that one man can master two or more languages, prove that languages and letters are not something which are the result of humans' natural instinct, but they are created by different nations according to their histories of development through the moment of the subjective dispositions.

In recent years, some people often say that they discovered the matter whose speed of moving was quicker than that of light, and predict and prophesy that the theory of relativity put forward by Einstein would collapse for it, and etc. But this viewpoint is also wrong. The defects and shortcomings of this kind of viewpoints are the same as that of Einstein's viewpoints on space and time. They took the subjective disposition of human beings as the objective phenomenon. Actually the speed of the light is only the speed of the light. And the theory of the relativity is only the theory of the relativity. We could take the new matter as the matter which could measure and scale time, if they really discovered a sort of matter whose speed of moving was quicker than that of light. It could only influence the work of the measure and scale of time and the work of the measure and scale of the speed of the moving of the other things and matters. It might make people have to take the moving of this matter as another matter

which could measure and scale and mark time. It could not influence our understanding about the essence, or genus, or differentia of time, or concept of time. We cannot say that the thinking way of Einstein was wrong because of it. The fact which can prove that the thinking way of Einstein was wrong is that Einstein's theory of relativity confused different thinking moments of human beings. He took the objective facts as the subjective dispositions themselves. In my opinions, this fact, which had long existed in the world of Latin languages, is the reason why many scholars, with Ludwig Wittgenstein (1889-1951), an Austrian philosopher, as one of their representatives, began to study the relation between languages and philosophy, since the beginning of 20th century, and many scholars began to study the relations between the phenomena of the cosmos and their subjective dispositions, with Edmound Husserl (1859-1938), a German philosopher as one of their representatives, since the end of 19th century. In my opinion, one aim of the latter school is to distinguish clearly the objects and the subjective dispositions of human beings. However, they have not got their goal till now because the defects and shortcomings of the Latin languages, mainly that the Latin languages have confused some different thinking moments into one, that is, the phenomenon of tense confuses different thinking moments into one, as stated clearly above.

Certainly, Einstein's theory of relativity has inspired and opened up some new thinking ways of human beings, and promote the development of science greatly, since the birth of it. It is because that people have not got a unanimous opinion on the issue of the genus, or essence, or differentia of the concepts of space or time. Each scientist of all the disciplines still treats the issues of the genus, or essence, or differentia of the concepts of space or time, according to his own understanding or opinion. And since the birth of Einstein's theory of relativity, many scientists have paid much more attention to and stressed much more the changing of the targets of their research themselves, when they thought of the existing state of the targets of their research, and paid much more attention to the positions and conditions in which humans were when humans observed and investigated the existence and changing of the matters in the cosmos. Therefore, Einstein's theory of relativity of space and time has promoted the development of science greatly. However, I think, we'd better not to ignore the defects and shortcomings of Einstein's theory of relativity of space and time. It may promote the development of science better and quicker, if we had better understanding and definitions of the concepts of space and time, which are more in accord with the reality of the history. At least we would not be troubled by the news that someone had discovered some new matter whose speed of moving was quick than light, and so on so forth. We could make the movement of the new matter as the measuring standard of time, if we really found the new matter whose speed of moving was quicker than light.

Next is Martin Heidegger (1889-1976).

Heidegger is the most famous philosopher of metaphysics after Hegel. His most famous book is *Being and Time*. We can see that Heidegger was very good in ancient Greek language and ancient Latin language from this book. He carded systematically and recounted the history of understanding about the concepts of space and time since the ancient Greek, for he had had a very deep and good

understanding of the western dialectics from the ancient Greek. However, he only stressed again in this book that we should first understand and explain better both the concept of Being and the concept of time, especially the concept of Being, (Note 39) but he himself acknowledged that he himself did not answer the question of what is Being properly, neither did he answer the question of what is time properly, which are the two biggest questions and the most difficult questions to answer in the discipline of western metaphysics at present. (Note 40) He himself acknowledged that he himself did not give convincing definitions of the concepts of Being or time with genus and differentia. And even he himself agreed comparatively clearly the viewpoint that '"Being" is indefinable." (Note 41)

However, Heidegger provided a very good foundation for the following scholars to understand, interpret and answer the questions of what is Being and what is time properly, because he had systematically put in order, re-arranged, analyse deeply many concepts, such as space, phenomenon, subjectivizing, logos, existential justification, humans, spiritual Thing, practical behaviour, care, concern, etc., which are connected to answer the two questions above properly. Especially he himself also comparatively deeply analyzed the concept of Being and the concept of time from both the perspectives of ontology and essentiality. Actually Heidegger almost answered the two questions properly and perfectly, if he had gone a little bit further, even at the thickness of a piece of paper. The reason for him not to be able to answer the two questions properly and perfectly is just like what a paragraph of words of Pascal in *Pensées et Opuscules* (Records of Speculation), which he himself cited in a note of *Being and Time,* "Humans have to fall into the absurd state when they are trying determine Being: no matter through the direct explanation or a hit, people have to begin with a phrase "This is" to determine Being. Therefore it has to use the word *Being* to determine the word which is to be determined when people would like to determine Being." (Note 42) That is to open a process of circulate definition or a process of tautology. The paragraph above demonstrates clearly that it is the thinking way and expressing way of all existent forms of Latin which hindered the scholars to answer the two questions of what is the genus of Being and what is the differentia of Being for more than twenty five hundred years ago. Heidegger could not be the exception. And Heidegger, Newton, Pascal knew it clearly, as stated above. However, they themselves had fallen into the pit deeply, none of them could jump out of the pit. That is to say, the only way for them and the other scholars to resolve the above questions is to get rid of the tense, that is, to change the grammars of the existent forms of Latin greatly.

The last scholar is Stephen Hawking (1942-2018), the famous contemporary scientist of Britain. He published *The Illustrated a Brief History of Time*, a book of science which begin to be popular in China in the year of 1988. The tongue of the cover of the Chinese version of the book says that the book had been translated into more than 40 languages and published more than 10 000 000 copies before the publication of the Chinese version. I estimate that at least 20 000 000 copies have been published till now, because only Chinese version has been printed at least a few millions copies. However, the title of the book is not in accord with the content of the book. Just like what Prof. Wu, Guosheng, a professor

of Tsinghua University (Qinghua University), China, at present, commented

"Obviously Hawking does not narrate the history of the concept or notion of time, but he is talking the history of cosmos. And the theoretical physicists always think that cosmos is space and time. The proper title of the book should be *The Brief History of the Cosmos*, or *The Brief History of the Space and the Time*, but not *The Brief History of Time*. I always feel that many theoretical physicists do not have enough consciousness of introspection or self-questioning on the issue of time when they talk about the philosophical issue of the essence or genus of time." (Note 43)

The comment by Prof. Wu, Guosheng above is very precise and accurate. Hawking did not define the concept of time with genus or differentia in his book *The Brief History of Time*. But he explained, in the above book, the history of the development of the cosmos about 15 billion years since the big explosion of the cosmos. (Note 44) In my opinion, the viewpoint which holds that the cosmos has a beginning is always a viewpoint which might confuse the existence and movement of the objective objects with the subjective disposition, that is, a viewpoint which might take the substantial existence and moving of objects as the subjective dispositions. It is also a viewpoint or the thinking way which might take one moment of thinking, or the subjective dispositions, as the substantial existence and moving of objects the other way round. Actually human quantification of the substantial existence and moving of objects could not have any influence on the substantial existence and moving of objects, if we humans did not carry out any group or collective practice. The concept or notion of time is connected closely with the group or collective practice of humans. The substantial and real objects would go on existing and moving according to the laws of their existence and movement. Even if the humans no longer existed at all in the future, the substantial and real objects would go on existing and moving according to the laws of their existence and movement. For instance, the earth would go on rotating round the sun till the sun swallowed the earth, and the moon would go on rotating round the earth till the moon leaves the control of the gravity of the earth in the far future. These events would have no any connection with the human concept or notion of time. Only there is the existence of the humans, there is the existence of the concept or notion of time. The concept or notion of time would disappear, if the humans disappeared in the future. This is a law of nature.

However, many scientists and folks also hold the viewpoint about time which Hawking held as stated above, because that the development of the metaphysics or methodology of philosophy has far lagged behind the development of natural science. Therefore the people who work in field of philosophy should work much harder to make the scientists and folks have a correct viewpoint about time, and make them waste less time on the issues or comments, which has got very little speculative nature, such as time never moved, only the world and humans were moving, or the space and time were substantially liquid matter which was beyond the fluid, or the matter is the liquid which had little frictional force, or viscosity, or sticky nature, and etc.

Here I'd like to talk a few words about the concept of physical time. The so-called physical time refers actually to the results of the measuring and scaling and marking, or the process of the measuring and

scaling and marking of the order and the sustaining and duration of the existence and changing of certain objects, e.g., there are 24 hours a day, a person lived 97 years old, and etc. However, the concept of physical time does not illustrate the genus, or essence, or differentia, or nature of the concept of time, because the concept of physical time is the sub-concept of the concept of time, or the sub-word of the word of time. The nature, or the genus, or the essence, or the differentia of the concept of time is that the human subjective desires, or trends, or tendency, or a thinking moment of human beings to quantify the order and sustaining and duration of the existence and changing of any objects and subjects.

I would like to repeat the words, which have been repeated for many times by other scholars, that we should acknowledge the authorities, and respect the authorities, but never have blind faith in the authorities. No matter how great a scientist is, or how great a philosopher is, there are always defects and shortcomings in their works, or their explanations about the substantial world or facts, or the substantial or the real facts are not in accord with their theories the other way round, because everybody has his limitation in his physical body and spiritual ability.

Notes

Note 1. S. Aurili Augustini, Confessionum, trans. by Shiliang Zhou, Beijing: the Commercial Press, 1963, p. 242. [in Chinese]

Note 2. Xia, Tianbao, How to count the steps of time, Xinhuadigest, 2012, Vol. 24, p. 125, Beijing. [in Chinese]

Note 3. “Definitio fit per genus proximum et differentiam specificam.” Martin Heidegger, Being And Time, trans. by John Macquarrie & Edward Robinson, Oxford: Blackwell Publishings Ltd, 1962, p. 23.

Note 4. Oxford Advanced Learner’s Dictionary with Chinese Translation, Beijing: Oxford University Press and The Commercial Press, 1988, pp. 1213-1214. [in Chinese]

Note 5. Contemporary Chinese Dictionary, edited by Dictionary Editors Group of the Institute of Languages of Chinese Academy of Social Sciences, Beijing: The Commercial Press, 1978, p. 1032. [in Chinese]

Note 6. Martin Heidegger, Being And Time, trans. by John Macquarrie & Edward Robinson, Oxford: Blackwell Publishings Ltd, 1962, p. 147.

Note 7. ibid, pp. 147-148.

Note 8. See also Ming Yu, chief-editor, An Introduction to the Earth. Peking: the Publishing House of Sciences, 2010, p. 171. [in Chinese]

Note 9. Martin Heidegger, Being And Time, trans. by John Macquarrie & Edward Robinson, Oxford: Blackwell Publishings Ltd, 1962, p. 23.

Note 10. See also Hongsheng Wang, The History of Science and Technology of the World, Peking: The Press of Renmin University of China, 1996, p. 86. [in Chinese]

Note 11. Xiaojun Zhao, Research on the System of the Length, Capacity and Weight of Ancient China,

CNKI, doctoral thesis, p. 24.

Note 12. See also Jie Wang, The Shape of Time, Peking: The Xinxing Publishing House, 2001, p.266. [in Chinese]

Note 13. See also Xiaojun Zhao, Research on the System of the Length, Capacity and Weight of Ancient China, CNKI, doctoral thesis, p. 13. [in Chinese]

Note 14. See also Guosheng Wu, The History of Science, second edition, Peking: Peking University Press, 2002, p. 100 and p. 135 [in Chinese]; Zhong Li, The Philosophy and Natural Science of Ancient China, Shanghai: The People's Publishing House of Shanghai, 2002, p. 284.[in Chinese]

Note 15. See also Guosheng Wu, The History of Science, second edition, Peking: Peking University Press, 2002, p. 38, p. 42.[in Chinese]

Note 16. Nie Rongzhen, The Memoirs of Nie Rongzhen, the first volume, Peking: The Soldiers Publishing House, 1983, p.308. [in Chinese]

Note 17. See also Immanuel Kant's Critique Of Pure Reason, Trans. by Norman Kemp Smith, London: Macmillan and Co., Limited, 1929, pp.75-76, A 31, B 47.

Note 18. Litian Miao, chief-editor, the Collected Works of Aristotle, vol. 2., Peking: the Press of Renming University of China, 1991, p. 130, 223b25-30. [in Chinese]

Note 19. Martin Heidegger, Being And Time, trans. by John Macquarrie & Edward Robinson, Oxford: Blackwell Publishings Ltd, 1962, p. 414.

Note 20. See also Yu, Ming, Chief-editor, An Introduction to the Earth. Peking: the Publishing House of Sciences, 2010, p. 143. [in Chinese]

Note 21. See also Martin Heidegger, Being And Time, trans. by John Macquarrie & Edward Robinson, Oxford: Blackwell Publishings Ltd, 1962,42.

Note 22. Ibid., p. 285.

Note 23. Compare Immanuel Kant's Critique Of Pure Reason, Trans. by Norman Kemp Smith, London: Macmillan and Co., Limited, 1929, pp. 396-402, A 426, B 454, A 434, B 461.

Note 24. Issac Newton, The Principia: Mathematical Priciples of Natural Philosophy, trans. by Bernard Cohen and Anne Whitman, Berkeley: University of California Press, 1999, the Scholium to Defination Eight, p. 408.

Note 25. Ibid., p. 408.

Note 26. ibid., p. 410.

Note 27. Martin Heidegger, Being And Time, translated by John Macquarrie & Edward Robinson, Oxford: Blackwell Publishings Ltd, 1962,p. 40.

Note 28. Issac Newton, The Principia: Mathematical Priciples of Natural Philosophy, trans. by Bernard Cohen and Anne Whitman, Berkeley: University of California Press, 1999, the Scholium to Defination Eight, pp. 408-409.

Note 29. Immanuel Kant's Critique Of Pure Reason, Trans. by Norman Kemp Smith, London: Macmillan and Co., Limited, 1929, pp. 68-69, A 24-A 25, B 38-B 39.

Note 30. ibid, pp. 74-75, A 30-A 31, B 46.

Note 31. ibid, p. 217, A 188-A 189, B 232.

Note 32. ibid, pp. 67-91, A 22-A 49, B 37-B 73.

Note 33. Martin Heidegger, Being And Time, translated by John Macquarrie & Edward Robinson, Oxford: Blackwell Publishings Ltd, 1962,p. 45.

Note 34. G. W. F. Hegel, Logic, translated by Yizhi Yang, Peking: The Commercial Press, 1976, vol. 1, pp. 197-198, (III. p. 215) [in Chinese]

Note 35. Hegel's Logic, Being Part One of the Encyclopeadia of the Philosophical Sciences (1830), Translated by William Wallace, Third edition, New York: Oxford University Press, 1975, p. 167, §115.

Note 36. Einstein, Albert, Ideas and Opinions, translated and revised by Sonja Bargman, New York: Crown Publishers, Inc., 1954, pp. 277-278.

Note 37. ibid, p. 281.

Note 38. ibid, p. 285.

Note 39 See also Martin Heidegger, Being And Time, translated by John Macquarrie & Edward Robinson, Oxford: Blackwell Publishings Ltd, 1962,p. 436.

Note 40. See alsoibid, pp. 1, 3-5, 19, 437.

Note 41. ibid, p. 23.

Note 42. See also ibid, p. 489.

Note 43. Wu, Guosheng, The Notion of Time, Peking: Peking University Press, first version, 2006, the preface, p. 1. [in Chinese]

Note 44. Compare Stephen Hawking, The Illustrated a Brief History of Time, trans. by Xu, Xianming & Wu Zhongchao, Changsha: Hunan Science And Technology Press, 2000, p. 148. [in Chinese]