Philosophy

I, Overview of philosophy: Metaphysics.

As mentioning secrets of the universe, an ordinary person often get some questions, such as "***By which elements is the universe made of? What exist in the black hole? Whether do the alien life forms survive?"*** The questions sound unfamiliar and unimpressive at all. It seems that the universe is no longer mysterious, except for strange or professional things. What make conscious creatures like human beings such optimistic? To me, that thing is the biggest secret. Why can we live and live in a happy way with no need to care the nature of existence of both human beings and universe? **"*The eternal silence of these infinite spaces terrifies me*"**, Pascal said. Unlike instinctive fear of ghosts, this is the fear of a consciousness has ripe thought. Ghost is a special creature which can hear without ears, see without eyes, and have consciousness without brains. Some people absolutely believe in existence of ghosts, some completely do not believe in that, and others believe in that by half. However, it is undeniable that all of us are scared of the ghosts in terms of the instinct. We are special creatures, not because we built up a world with economy, politics, society, cultures, etc,.. just because there are brave people who can experience and stand up to "truly fear" when directing a look at far-away places like Pascal. Probably, it is just an infinite eternal silent space, or it is a bright and magical place. The existence of that peoples is to remind that we are truly different from the rest of the universe. Just with that, we, the small creatures, only can have truly self-respect with the Nature.

The center of philosophy is metaphysics and the root of metaphysics is existence. This is a subject whose query is clear and the most important, but handling it is an impossible journey. The history pointed out that after many arguments, there have not been any philosophy systems which could achieve an apodictic certainty. I believe that fundamentally all roads which can run through for metaphysics, philosophers had been already tried. It is obvious that ineffectuality of philosophy is not caused by the fact that this field is not appealing enough to attract clairvoyants' brains of the human beings, or these brains are yet to make a great effort to find answers for the above subject. It is probable to affirm that so far and even in the further future metaphysics: ***"The secure path of science still could not be found"***(Critique of pure reason-Immanuel Kant), because the core things only can be solved in terms of faith. Clearly and unexaggeratively, if the subject of existence gets enough accomplishments to influence this world, we do not need any

religions or beliefs, and the way we live is also very different from the present. Let's flick through metaphysics.

According to me, the query about existence centers around three main objects: Nature, Consciousness, and their relationship, and it can be divided into three smaller subjects. The first is a special aspect of the existence: the existence of Nature and the Natural order existence. The Natural order consists of cause and effect and universal, in which human reasons can be aware of. In idealism, that is a query about God. The second is the existence of Consciousness, and a special ability whose existence with the human reasons is self-cognition. What meanings does the existence of reasons have? In idealism, it is a query about Soul. The third is independence of human Consciousness. That is intervention and influence of Nature on human Consciousness and vice versa. It means the query about Freedom. In my opinion, these three subjects are the most important to research on the existence.

The third subject is worth being of serious attention in metaphysics. It is not because it is the most important, just because it is a question which needs to be answered first in order to lead to the two following subjects. Besides, thinking about Soul and God usually refers to dogmas and the empty concept as well whilst the query about Freedom seems closer and feels like easier to reach certainty. The ideology in philosophy is conventionally divided into two schools: Idealism and Materialism:

- Descartes' famous quote, ***"I think therefore I am"***, can be chosen to be speciality of idealists. A common feature of idealists is that they consider our Consciousness of the main organ of the universe. However, in my view, our Consciousness is towards the Nature, towards the outside more than the nature itself, which is shown in the fact that our cognition is full of ideas about outside reality. Our Consciousness also gets a deep impression of the Nature, with instinctive fears and desires. If wondering that, let's think about the outside world, where everyone is living in an extremely happy way without care who Descartes is.

- To materialists, who do not care about the nature of Soul, say that only Nature exists and Consciousness is a part of Nature, featured by Spinoza. However, in my opinion, the human reasons are shown in human cognition diversity when it is possible to think of opposing aspects of a subject. The wonder of human reasons is the self-cognition because once having self-cognition, the human reasons differ from all of the creatures we know. Thinking and self-cognition are the aspects that express Freedom of the human Consciousness to the Nature.

It means that both Idealism and materialism have rationality. Probably, it is unnecessary to distinctly distinguish Consciousness and Nature that which one is the the decision. Between them is Relational dialectics. They are two conflicting concepts, but united in the general concept: Existence. Only in the Nature, the human Consciousness has meaningfulness to exist. The existence of the human Consciousness reflects the existence of Grand Consciousness. A

Consciousness comes from a Relational dialectics with the Nature and brings out meanings to existence of the Nature. Only when both exist in parallel, Nature and Consciousness can become meaningful.

But what the basis confirm the certainty of ideologies in philosophy? To do that, it is necessary to find backwards the nature of Consciousness. Consider human cognition process is the base. The field on this subject is named as Epistemology, and as Kant said that it is ***"The battlefield of these endless controversies"***. This is the battlefield of rationalists and empiricists. The rationalists believe that the human reasons are the origin of cognition. The empiricists believe that objective experience is the origin of cognition. Epistemology consists of four schools:

- The first is rationalism.

- The second is empiricism.

- The third is like Kant's work on criticism of pure reason, namely "Kritik Der Reinen Vernunft" in German. According to this book, Kant hoped to have a fair court of justice in order to criticize the reason. However, right the beginning of Kant's court of justice is a unfairness when admitting the existence of pure reason, in which admitting every cognition comes from the experience, but it does not only come from experience. Kant believes that every cognition is originated from the pure reasons such as space and time existing in the Consciousness and keeping independent from all experiences. That is just reconciliation between rationalism and empiricism. In terms of that, Kant bases on a viewpoint of rationalism to protect empiricism.

- The fourth is viewpoint I would like to present in this document with considering Natural order as soul of basis for priori cognitions. It is also a reconciliation between rationalism and empiricism. In terms of that, I base on a viewpoint of empiricism to protect rationalism.

Why does Kant believe in the pure reason? "***Now why is it that here the secure path of science still could not be found? Is it perhaps impossible? Why then has nature afflicted our reason with the restless striving for such a path, as if it were one of reason's most important occupations?***" (Critique of pure reason-Immanuel Kant). Kant believes that when the Nature induced, it was natural to predestine in order that we believe in the reason. Everything existing have some meanings, not only chaos. I think so! Differently, Kant believes that to trust in the reason, humans must have pure reasons because experience is uncertain. By contrast, I believe that faith in the reason comes from faith in Natural order. That seems of much more certainty because the Nature is the final purpose of the Consciousness. If there is no Natural order, and if everything we perceive about the Nature is just series of chaos, the reason even does not exist, not just simply certainty. After all, Kant and I both do the same thing of building the faith for the reason, reflecting a grand faith that existence is not unmeaning, which sceptics strived to deny.

II, Some thoughts about the book "Critique of pure reason-Immanuel Kant".

First, let's flick through some concepts of epistemology. ***"There is no doubt whatever that all our cognition begins with experience; for how else should the cognitive faculty be awakened into exercise if not through objects that stimulate our senses and in part themselves produce representations, in part bring the activity of our understanding into motion to compare these, to connect or separate them, and thus to work up the raw material of sensible impressions into a cognition of objects that is called experience?"***(Critique of pure reason-Immanuel Kant) Empirical cognition is the cognition whose origin is posteriori. Priori cognition is the cognition with independent experience, and appears before experience. The cognition with absolutely independent experience does not depend on any bygone or current experiences. Kant named it as pure priori cognitions, and it is the basis of the pure reason.

The priori cognitions with certainty is a different name of what we call as knowledge of science. Those priori cognitions that are accumulated in the past are the basis of the faith in the reason. We have full the cognitions in us precedes experience, but in which a part is mistake. In that cognition, the mistake can be doxa(personal-opinion), or can be the mistake of process of previous experience of the Consciousness; in other words, it is the limit of the Consciousness.

1, Bases of a priori cognition.

What features make a priori cognition be knowledge, not imagination? In other words, on which do we base to believe in certainty in our cognition? It is necessity and universality of the cognition whose previous experience confirms. The necessity is just-it-be, impossibly different. The universality does not accept any exception. If a cognition has enough necessity and universality, it is a priori cognition, not an imagination. So, where are necessity and universality of a cognition found? It is not the Consciousness itself because the Consciousness is unable to give a conclusion that a cognition is an imagination or not. It is necessary to emphasize that without experience, the Consciousness is empty. Therefore, that must be found in the experience, just experience.

But, as Kant said: "***Experience teaches us, to be sure, that something is constituted thus and so, but not that it could not be otherwise***".*(Here note that theories in Mathematics and Science are proof of that an ideology can become a priori cognition or a mistake. In other words, creating a predictive theory can become knowledge of science. Nevertheless, there are no needs to know how significant the certainty of knowledge is. Inherently, knowledge in both Mathematics and Science is the priori cognition, which means that it comes from experience. Hence, Mathematic and Scientific knowledge is not the pure cognition, and must be tested in terms of experience).* That is the reason why it is impossible to believe in the reason just based

on experience. The reason is that the nature of cognition(*including priori cognition*) is judgments while the judgments cannot avoid to become doxa. That is exact! Indeed, the cognition is just personal prediction.There are two types including analytic judgment and synthetic judgment:

- The necessity often comes from the analytic judgment, and often is the definition. It can be the definition of objects or the concepts, and analytic judgment often have the certainty if the process of experience is exact. This is represented in the fact that the cognitions of all us have some similarities. For example, we have the same feeling about grey - objects(simple ideas) or all of us agree about a straight line - concepts(complex ideas). This subject is going to be return in the next part.

- The universality often comes from the synthetic judgment, and consists of two aspects:

  + The first is the universality in the simple ideas which is shown no exception in the universe. For instance, all of us probably agree about a grey object anywhere in the universe at present, in the future, or in the past.

  + The second is the universality of complex ideas(the synthesis of simple ideas). It is not only the universality on the scope of space and time like objects but also the universality in the field of application. We need to say more clearly about this feature:

  (Why are there Mathematics, Physics, Chemistry, and Biology instead of an only academic subject towards the most general knowledge? Why does only an only type of Mechanics exist instead of two types including Classical Mechanics and Quantum Mechanics? This is simply the way our current science works. It is not that a hardworking student follows every guide of the Nature, and finds out the most general rules. In other words, we and the Nature altogether create the science up to our demands and abilities. For example, in Mathematics, we build up additions according to our observations and needs of usage. Actually, adding two numbers as an obviously is very diverse. An addition, 1+1=2, illustrates a fact that one stone is added to another stone to form two stones. Another addition, 1+1=1, in the Boolean Algebra, illustrates a fact that one drop of water is added to another drop of water. Or we have an addition that one dog plus one cat is equal to one dog plus one cat as in Vector addition. Besides, a theorem about two parallel lines does not refer to a truthful universality, just exists in Euclidean geometry. Here, we find out a feature that the more necessity concepts have, the less popular they are, and vice versa. For instance, A square refers to the necessity of a rhomb and a rectangle because it is more characteristic. Therefore, Science is built on the principle of emergency, isn't it? I agree with that as we try to make scientific knowledge towards the necessity and the features of the concepts need to be cared, not to be followed in the way we orient in reductionism, to find fundamental elements to build up Science. It is simply the relative necessity of what is universal, and the relative

universality of what is of necessity. It is impossible to have absolute universality and absolute necessity in the priori cognitions.)

In conclusion, it is clear that the Consciousness consists of many traps which lead to the cognition mistake. Therefore, can we trust in the reason when the cognition coming from the experience does not bring out the absolute universality and absolute necessity. I believe it is possible! The experience shows that the faith in existence of the Natural order never makes us disappointed.There is always striking enough evidence to ensure the existence of the necessity and universality of judgments. If there are doubts, time by time that will just make our cognition more insightful, and consolidate our faith in the Natural order. I believe that axiom of the science is the existence of the Natural order. Before starting our finding journey of knowledge, we need and only need to baggage the existence of knowledge in the universe. That baggage will follow us throughout the finding journey of knowledge. The cognition about the Natural order has enough standards to become the first and only axiom to the science. Every priori cognition are built up on this faith. With or without want, intentionally or accidentally, this is the way the cognition in general and the science in specific are working.

2. Influences of the cognition process on the certainty of knowledge.

Every cognition is originated from the experience and only experience. The experience is also the final target of all knowledge towards. The cognition process that sensation becomes the knowledge is complete products of the thought must go through:

- Raw materials are received through sensibility.

- Through intellect, the raw materials are combined to turn into the objects, and the objects are mixed to form the concepts.

- Then, the analytic or synthetic concepts form knowledge.

Thus, all ideas of an object or phenomenon in a direct or indirect way must run through the intuition. With that, we can come to a conclusion that no concepts we know do not run through the sensibility. It means that no existing things we know do not give us a sign that it exists. Instead of words:”give us a sign”, the word interacting is more obvious. There are two types of interaction:

- Direct interaction between us and objects(concepts): The objects(concepts) is brought directly to us through the raw materials from the sensibility.

- Indirect interaction between us and the concepts. The concepts does not come completely from the raw materials, but it is analyzed and synthesized by the thought through other objects(concepts)..

The cognitions of all of us are similar. We have the same convention about the grey, or about an object with four legs and mewoo sounds is a cat. We have the same intellect that the simple ideas are combined to form complex ideas, the complex ideas form the objects; and the objects form the concepts. Having the same judgment ability, the analytic judgment brings out the the nature of concepts, and the synthetic judgment brings out connection to the concepts. The cognition process have the same forms in us and have the same starting points that are the simple ideas from the experience. Therefore, the objects and concepts are generally similar. This is not a miracle. The nature of the cognition process is a phenomenon in the Nature, and the similarity of the cognition process simply represents the Natural order, and it is the result of learning and inheritance. However, there are some reasons for the cognitions that is different from the objective truth:

- Here, note that structures of the cognition process is similar, but every individual's cognition is different because of different accumulation of experiences about the outside world. Intuitive differences lead to differences in intellect, in which the intuitive differences lead to analytic differences and synthetic differences about a concept. That can make each individual's cognition different, and that is the reason for make a cognition turn into a doxa. The doxa manifests in the disagreement of all of us about a subject. A doxa can be right or wrong compared to the objective truth, but the doxa is certainly a trap to the human cognitions.

- Suppose that we remove the doxa, one of the next traps the cognition can encounter is due to the fact that the direct cognition process depends on the senses. We may agree about a phenomenon with the intuition and judgment. However, it's all wrong with the objective truth. The reason for this trap is that the nature of cognition process of a phenomenon depends on sense materials.

Science with aim to find objective laws to eliminate the limitations of awareness. The following sections will provide examples of the influence of cognitive processe on the process of scientific knowledge search.

Galilean relativity

A, Epistemological in physics.

From the view point: Science as another name of empirical philosophy with the central object is the cognition of the objective world. In general, we can completely conclude that object in science are knowledge about nature not consciousness. As we know, physics knowledge of nature is classified into two aspects including cognition of nature of matter and cognition of movement of matter. I divide the movement into two types:

- Firstly, the the matter effect our cognition process. I call that movement of an object as sensitive movement.

- Secondly, outside matters interact with each other. I call it as an objective movement.

I am going to examine two special concepts of the matter and movement: Absolute space and absolute time.

*Absolute space: Only in terms of the objects, objects are brought to the consciousness through the senses. It means different objects are different in their interaction with the senses. We call the common characteristics effective of the raw materials on the sensibility is quantity effect. Quantity effect is the amplitude of the effects owing to different things on the senses. For example, color is the material of the visual material and the frequency of visible light wave is the concept of the quantity effect of the things on the visual. The blue thing has the different quantity effect from other brown things. If the frequency of light wave is zero then the objects has an effect quantity of 0 and we call that as a black color body. Although the thing does not influence our sensibility, it still exists in our cognition. Thus, we think of the black as a color through indirect thought. If replacing the visual with the whole sense, we will have a black body, if it really exists, we can only think indirectly by other things. Meaning, an object may not directly affect our senses, but we can still confirm its existence through its impact on another object. If the things does not absolutely interact with other things, we know that the things does not exist. The non-existent things is called as an absolute space, it is a special matter which exists in the cognition but does not exist in the objective. If all of the characteristics of the absolute space exist, they are the characteristics of the real matter put into the absolute space. A good illustration is the space length of two mountains is distance between two mountains. One meter in space is the length of a ruler made of the real matter of our convention. *(It should be noted that an object may exist really objectively, but may not exist in our cognition. Absolutely possible! Example, it is showing no signs of being aware in the present and the past, but in the*

future provides enough signs to confirm that it exists. Or maybe things exist that we can never confirm that it really exists (such as God). We need not care! Although the goal of science is certainty in objectively, that certainty is forced to seek from awareness and no other path. Meaning that an object exists, it must movement in order to really exist in our cognition. Things is not exist in our cognition, which is absolute space. And a important thing, we usual understand the vacuum as space because it has the characteristics of space. I don't care about that, for me, absolute space is a concept that can be derived from theory. A vacuum or some kind of space if there is an impact on matter, it is not the absolute kind of space I have defined.)

-Locality: The absolute space exists to ensure the material picture to be continuous. When taking a thing out of a place, the rest of this place is the absolute space, so the absolute space must be in everything, around everywhere in the universe.

- Size: What is it besides the material world? It can only be the absolute space, because if it is not the matter, it can only be the absolute space. The material world is infinite, so the absolute space as that.

*Absolute time: The feature of the existence of a thing is the interaction, and the interaction that will influence the other things. (It can be our cognition or the objective things.) The nature of movement is change of matter state from one state to another state. To quantify the change of state according to the most general characteristics, we call it time. We have a good definition for time: Duration is quantification of repetition movements. The duration is based on the characteristics of a special movement in order to apply for other movements. Thus, time is currency of the movement. We have:

- Duration is a physical quantity characterizing the change of state of phenomenon.

- A point of timeline is a state in infinity of the phenomenon.

- Time arrow is cause and effect, and is the sign of the Natural order, where we believe that this state must have a list of state successive. To cause and effect, time is not occurrence of fragmented states unrelated to each other, but it is continuous and inheritable flow of time.

As can be seen easily, every property of the absolute space and the absolute time is the property of matter and movement truly existing in the objective world and form in cognition as special concepts deduced from material and movement. The absolute space or the absolute time only exists in the consciousness, and does not have an effect on things or phenomena of the objective world.

In conclusion: **Every law of Nature must be the same form in the absolute space and the absolute time.**

B, Galilean Relativity.

"The laws of physics are the same in all inertial reference frames." So, the laws will not be same form with the phenomenon in acceleration reference frames, or observers do not cognition correctly the phenomenon in the acceleration reference frames? It is undoubtedly wrong to assume that the laws just have validity in the inertial reference frames because the laws always have the validity there and here at anytime and anywhere in the universe. The laws, governing all phenomena, are the same form without concern that those phenomena are in the acceleration reference frames or not. Thus, if the observers not detecting that the laws governing the phenomenon have the same form. Therefore, the problem here can only be the observers in the different reference frames have different cognitions about a phenomenon. The problem is not in the objective phenomenon, but in the observer. In the previous section, we said that one of the reasons for our cognition is incorrect to objective truth is doxa(personal-opinion). Galilean relativity is an example of that. Case, the material senses of the phenomenon in the observer is correct. The process of observers aware of a phenomenon is also correct. But the observers have different cognition of a phenomenon. This is the field of epistemology. It is probably necessary to build a certainty and accuracy for the Principle of Relativity.

I, The basis.

1, Admission.

- Admission 1: All phenomena in the classical mechanics are governed by a list of laws and without exception.

- Admission 2: Every Physics phenomenon in the classical mechanics will occur as just it does, dependent on the governing of the Natural order and independent of the observer.

2, Definition.

- Phenomenon: Phenomenon is a list of states of successive states of a real outside object cognition.

- Observer: An observer is an object which has the cognition ability of phenomena, and has no limits of humans or meters.

+ Equality observer: The observers with the same aware about the same aspect of a mechanics phenomenon as the cognition is called as equal observers about that aspect.

→ The observers without the same cognition about an aspect of a phenomenon as the cognition is called as inequality observers.

+ Typical observer: In a mechanical phenomena, there is always an observer with a sensibility of mechanical phenomena as objectively as possible, so that observer is called as a typical observer.

- Law: Law is regulation of different phenomena as reflecting the same nature.

- Reference frames: The reference frame is a coordinative system characterizing for the mechanics property of a list of things, in which things with the same reference frame are considered to have the same base velocity. Inertial reference frame is a reference frame in a rest state or moving at a constant speed in a straight line.

3, Theorem.

- Theorem 1: All phenomena and all observers in the same equality reference frame are equal in terms of momentum when compared to other reference frames.

- Theorem 2: In a reference frame, there is always a typical observer characterizing for that reference frame with asymptotically objective ability of phenomena occurring that reference frame.

4, Laws:

The laws of physics are the same with all "equality observer" in all reference frames.

II, Proven.

1, The reference frames have relativity.

As we know, the matter and movement are the two most general matters that physics must address. From what determines cause and effect, we accept Newton's laws 1 and 2 as a principle: ***The state of matter is conservation without interaction. The interaction will cause a change of state and we call it movement.***

The characteristics of the state of matter called momentum. So:

$$\mathbf{F}=d\mathbf{P}/dt$$

In terms of the classical mechanics, we accept $\mathbf{P}=m\mathbf{v}$ and thus $\mathbf{F}=m\mathbf{a}$. There is an important conclusion from this formula what is consequence of the interaction resulting in the movement, and in terms of the classical mechanics, that movement is a motion(*a special movement which the matter is conserved. It means that this movement only causes changes of position and momentum of matters*). This is important conclusion!

How is the reference frame defined? That is a list of things with the same base velocity. In terms of the classical mechanics, with **P**=m**v** we can conclude : **The reference frame is a list of equality things in terms of momentum, or list of things with same base state.** The movement in the classical mechanics is motion. In same state, what observers care about is variation momentum, not values of momentum in the phenomena. The base momentum of observers and phenomenon in the same reference frame is equality. It means that the observers in the same reference frame will observe the objective nature of the phenomenon the most accurately. We accept the objective nature of a phenomenon is the same in all reference frames, so if only examined in the same reference frame, there is no difference in the cognition process of the phenomenon. It means that in all reference frames, the observers in the case of observing the phenomenon in that reference frame will never detect whether it has motion or not. In any reference frames, if we only observe the phenomenon in the reference frame itself, we never find out an exception with differences between the reference frames in order to affirm which system is more special. Therefore, there is no reference frame in which the observers have the objective aware of all phenomenon. It can just be said that this observer is the typical observer with this phenomenon in this reference frame. Just with that phenomenon, all observers in other reference frames are not more asymptotically objective than the observers in that reference frame. To imagine easily, we consider observers as 0 and phenomena as B, cognition is B. In the inertial reference frame including 0+2 and B + 2, the subtraction is constant. In the acceleration reference frame including 0 + x and B + x, cognition are still unchanged. That is because observers and phenomena are equal, both added the same amount of x. Similarly, the observers and the phenomena are equality in momentum.

2, The laws of physics are the same with all equality observer in all reference frames.

Assume an experiment in which a phenomenon is occurring in a reference frame and two observers are observing the phenomenon. In this case, we suppose the first observer is an observers of that reference frame and is considered as a typical observer to the phenomenon.

- Case 1: The second observer is considered fixedly standing compared to the first observer. According to the view in the epistemological part, if two observers with the same aware of a phenomenon anywhere in space, it can be seen that the phenomena are similar, which means that the governing laws are similar. In fact, we have pretended the fact that two observers are in two different positions when observing the phenomenon, which causes inequality to two observers. As said, the object of science is objective knowledge, so it is essential to eliminate the inequality of two observers. By translating the second observer to approach the first observer (x = xo), the second observer becomes equal to the first observers; therefore, at that case the second observer becomes a typical observer with the phenomenon. Because two observers are stationary, two reference frames of two observers with definition belongs

to the same reference frame, so we can say that: **The laws of physics are the same with all observer in same reference frames.**

- Case 2: The second observer moves at a constant speed in a straight line compared to the first observer. The phenomenon, occurring in the reference frame of the first observer, is divided into infinite states. Examined in a state, the second observer is fixed compared to the first observer (*the phenomenon is the infinite states successively occurs owing to cause and effect which was presented before*). Thus, in this state, that case becomes the first case. Because the second observer is considered as a typical observer to the phenomena in the reference frame of the second observer and phenomenon is a sum of infinite states. Thus we can give a conclusion that: **The laws of physics are the same with all observers in all inertial reference frames.** Our duty is definitely to find the objective knowledge, so we ignored the inequality between two observers. Here, the inequality is change of distance of two observers over time. Galilean Transformation is a tool to restrict the inequality (x = xo +**vo**t).

- Case 3: The second observer is effected by a force and accelerated motion. In terms of the same argument as the case 2, but notice that the inequality is that the second observer is effected by a force. However, as said before, the nature of interaction, ultimately, causes the movement, and to the second observer, this movement is the motion. The effect by a force on the observers does not cause an effect on the objective phenomenon in the reference frame number one. To all observers in any reference frame, no matter how the cognition of a phenomenon, the objective phenomenon is still unique, so the governing law is also unique. In this case, the inequality is just a change of the distance of two observers. (x = xo + **vo**t + $\frac{1}{2}$ **ao**t^2).

Therefore, in conclusion: **The laws of physics are the same with all equality observers in all reference frames.**

3, The phenomenon of physics in the reference frames are the same with the observers in this reference frames.

Actually, the ball in train are accelerating with different falling orbit when stationary. Does it mean that the phenomenon of falling the ball is different from the observers in the accelerated reference frames or the stationary reference frames? Does it mean that the accelerated reference frames no have relativity? What happen? There is nothing wrong here! The main problem is due to our concept of the reference frames. We define the reference frames as things with the same velocity, but we think the reference frame is a box and objects in that box. Before re-examining the phenomenon of falling the ball in the trains, we define the reference frames more clearly. A reference frame is things with the same velocity, so if they have the same acceleration, time by time they have the same velocity. Thus, an observer corresponds to a reference frames

characterized by acceleration, velocity, and position(**a**, **v**, x). Now we examine the phenomenon of that a person drops a the ball in a train. The phenomenon is dropping the the ball and the observer is a person who drops the the ball. In the case of a stationary train, the phenomenon and the observer have a constant distance over time (the observer and the phenomenon are both added the same velocity quantity as 0 in the experiment). In the case of a moving train at a constant speed, the distance between the observer and the phenomenon is also constant (both are added with the same velocity as v. In case of acceleration, distance between the observers(who drop the the ball and the phenomenon(the the ball fell) has changed. So, we conclude that in case that the train has acceleration, the observer and the phenomenon do not stay in the same reference frame. Exactly so, in fact, the the ball falling in the accelerated train is in the reference frame (**0**, **v**, 0), and the observer is (**a**, **v**, 0), and they have different reference frames. The reason is that the observer sat on a chair when the train accelerated, we lean back on the chair and also have accelerated movement while our own phenomenon has "no chair ", it is only internal motion.

There are also empirical proofs that if the same reference frame is accelerated, the observers still see the same phenomena. Examine an example of a phenomenon about a freely falling elevator. That the elevator moves with acceleration compared to the Earth is obvious. The moving elevator is accelerated compared to an elevator that gets no effect of any force (floating in space) is also obvious. All of the elevators, observers, and phenomena in that case are effected by G force compared to Earth, so we conclude that they are the same reference frame. However, we also know that the environment there is one with gravity equal to zero; the phenomena in the falling elevators on the Earth are similar with that of a spaceship floating in the universe, or a spaceship falling onto Mars, etc. The key is that if the observers and phenomena have the same reference frame, physical phenomena the same in any reference frame. That also explains why the Earth moves around the Sun with acceleration, but we cannot feel that acceleration because we and the Earth are the same reference frame to the Sun.

An undeniable fact and cause for the present form of Principle of Relativity is the effect from the inertial force. Obviously, we can feel the inertial force in the car accelerated and the inertial force effect on the phenomenon can also be confirmed by observers in the same reference system with the phenomenon. This is the reason for observers to discover that they are actually moving in the non-inertial reference frame without refer to any external objects. So, what is the problem? It should be affirmed that everything has inertia. However, inertial force is virtual forces that appear only on object when there is a direct force. With gravitational force affect immediately on every element of the object, the inertial force is non-existent. In this case, when the object is under gravity, if it does not refer to another objects, it cannot detect the force of gravity because all elements are subject to gravitational effects and therefore all elements of things are equality in terms of momentum(This has been proved above). In the case of direct force, the object is now considered an list of object under affect of external forces, in which some elements are directly affected by external forces, some elements are affected by another element. It means the object

became an object with complex interaction and not is a single object has equality in terms of momentum. In other words, the external force has an effect on the structure of the object and that effect causes the recognizable effect in the object itself without reference to another objects. That means the effect of external forces makes the elements of object without equality in terms of momentum. In essence, this effect is similar to the phenomenon the ball drop in the train. There is a time when this element is affected by force, but the other element does not. It means that there are times when there are elements in a reference frame, other elements in different reference frame. In my opinion, having considered the inertial force, it isa mechanical phenomenon that actually affected the structure of matter in phenomena, it is not cognitive phenomenon. In the case of phenomena as a material point, then it is possible to consider external forces acting on phenomena and observers equivalent to gravity,... and then the Principle of Relatively has active.

4, Galilean Transformation

So, spirit of the Principle of Relativity has been resolved. The current subject is to build the transformation for the acceleration system so that the observers in the different reference frames will have equality.

$x = x' + xo + \mathbf{vo}t + \frac{1}{2}\mathbf{ao}t^2$ (this is a motion formula which causes inequality)

x':phenomena in the accelerated reference frames.
x: phenomena in the stationary reference frames.
xo: position inequality.
vo: velocity inequality.
ao: accelerating inequality.

$y = y'$
$z = z'$

Derivate two terms over time:

$\mathbf{u}=\mathbf{u}'+\mathbf{vo}+\mathbf{ao}t$

Continuously:

$\mathbf{a}=\mathbf{a}'+\mathbf{ao}$

Constant quantities: It is easy to prove that lengths of objects in two reference frames are the same, so volume are the same; therefore, masses are also the same because mass densities are constant quantities.

Interaction: $\mathbf{a}=\mathbf{a}'+\mathbf{ao} <=> \mathbf{F}=\mathbf{F}'+\mathbf{Fo}$(A phenomenon in the accelerated reference frame observered from observer in the stationary reference frame is assumed to add a virtual force. This is equivalence principle)

Thus, this transformation is absolutely suitable for our arguments. Interestingly, it is obvious that the formula of the motion is $x = x' + xo + \mathbf{vo}t + \frac{1}{2}\mathbf{ao}t^2$ if applied for the transformation, leading to a good result we we are satisfied with $x = x' + xo + \mathbf{vo}t$ which it itself suggests to add $\frac{1}{2}\mathbf{ao}t^2$.