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Continuum and Possible Logic

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****CONTENTS****

I, Basic Items
I-1, Analogue World and the Continuum
=Continuum=
=Analogue Set=
=Missing Link=
=Open Set and Closed Set=
=Continuum and Wave=

I-2, Possible logic
=Possible Logic=
=Examples of Possible Logic=
=Possible Logic and Contradiction=

I-3, Exterior of Science
=Non-Science=
=Belief in Science=
=Hypothesis=
=Social Science=

I-4, Proof on Possible Logic
=Limit of Possible Logic=
=Value and Significance of Possible Logic=
=Proof of Possible Logic=
=Possible Logic as a Mirror=

I-5, Mathematical Physics of Possible Logic
=Space of Possible Logic=
=Applications of the Space of Possible Logic=

=Dancing Wu Li Masters=

I-6, Possibly Deterministic Law
=Basics of the Law=
=Derivations from the Law=

II, Detailed Items
II-1, Continuum Related
=Language=
=Relations between Digital and Analogue=

II-2, Possible Logic Related
=Proverbs and Sayings=
=Series of Possible Logic=
=Possible Logic and Probability Theory=
=Paradox=

II-3, Exterior of Science Related
=Practical Profits of Possible Logic=
=Divination=

II-4, Logic and Culture Related
=Logics and the Background Civilizations=
=Monotheism and Science=
=Oriental Civilization=
=Excessive Strictness=
=Reason of Science Success=
=Toynbee=
=Toynbee Now=

II-5, Mathematical Physics of Possible Logic Related
=Analogue Space =
=Communication and Possible Logic=
=Death of Contradiction=

II-6, Possibly Deterministic Law Related

=Examples of the Law=
=Communism=
=Modern Japan=

II-7, Possible Logics in Daily Life
=de Facto=
=Economy=
=Knowhow=

II-8, Literature and Art
=Mythology=
=Literature and Art=
=Laughter=

****MAINBODY****

I, Basic Items

I-1, Analogue World and the Continuum

=Continuum=

In this report I would like to discuss quite a bit about logics and set theory, that are the very bases of not only mathematics but also all the sciences. In modern mathematics set theory is a “point set theory”, where all the entities consist of points and reducible to points. Yes, all. Numbers, lines, cubes, earth, universe, flowers and human beings, all the entities are made of points in this theory. This theory, rather a philosophy is simple and easily handled. So it has a large potential to construct magnificent and diverse theories. Especially in the 20th century, science was flourished to a great extent, which results in a great advancement of human daily life. And people tend to assume that this advancement was brought about because the science is neutral and impartial. However I would like to say that this is not the case, nor is the point set theory. Or rather, the current point set theory is just one of the possible set theories.

First of all, the point set theory implicitly assumes that everything can be

reduced to points or atoms which can never be divided anymore. In the point set theory, set is defined uniquely by its elements, and the "ultimate element" is an atom. Second point set theory also assumes that everything is just a simple collection of such atoms with no interaction. In looking around of you, do you really agree that all the things consist of such "grains of sand"?

Now please pay attention to continuum. Current science considers that continuum is a simple collection of infinite numbers of points. But please look at muscles, humans, mountain ranges, pictures and novels, or even lives and nations. It seems to me that continuum is in reality rather a massive and organic entity with certain width and expanses. In current science, life is considered to be merely a simple addition of infinite pieces of present. From such point-set-theoretic view continuum is never a basic item. Continuum is just a reducible application. Such a view has great advance that you do not need to meditate about the continuum anymore. However, by doing so we are in fact overlooking the essence of continuum. We are neglecting the effort of investigating directly the essence of continuum.

Point-set-theoretic view causes neither contradiction nor inconvenience. In general Western people tend to become happy as far as there is no contradiction. But I think that essence of continuum is beyond contradiction. It is often said that the life of every person is a great drama. This means that the life is much more continuous, dense, organic and active. In a word life is "analogue continuum" itself. Here the term "analogue" is a polar opposite of digital, and has a nuance of abundant and overflowing. In fact analogue is the essence of continuum.

For the Oriental people like me, continuum often looks really mystic, massive, brilliant, breathing and outstanding. Continuum is so profound that it contains even contradictions inside. Points are far from continuum even if they gather in infinite numbers. This awareness is much more religious than merely scientific. This awareness urged me to construct a theory intrinsic to the continuum by meditating the continuum directly and deeply.

=Analogue Set=

First of all I should make clear how we can recognize continuum directly. Such a problem does not exist in the point set theory, since point is basic enough to discuss. My answer is to recognize the continuum directly by using all your senses. This answer may sound queer to scientists and Western people who are trained to look at things and events "from simple to complex" as the axiom-postulate system summarized by David Hilbert. However this direct and sensuous approach is unavoidable as far as you treat the continuum directly. In a word, continuum has an inner structure. To understand the continuum, meditate it and use wisdom, imagination, insight and intuition properly. Please note that the continuum can bear even contradictive structure inside.

There are several characters to be kept in mind in studying analogue set. Firstly, for such analogue set there is nothing like atom. You can divide continuum into subsets as many times as you want with no limit. In defining analogue subset, the concept of element is not as important as in the case of the digital set, because sets are viewed directly in the analogue set. And in general substructure of a subset can be viewed closely with more detailed information than that of the original set. For example when you divide a mountain range into each mountain, you will find more detailed features about each mountain. Then join these mountains together into the original mountain range, you will know much more about the mountain rage than before the dividing and joining. That is, there is a considerable increase of information by the operations. Such increase of information indicates that there is an information theory intrinsic to the continuum.

Secondly interactions of elements or subsets are taken into consideration in the analogue set. This character indicates that you can get more information than that of simple addition of each subset by rejoining. Sometimes new information by interaction can be much more than that in each subset. In this case the nature of the original set turns out to be completely different. The continuum will acquire new meta-level characters.

I propose now three examples. First please look at certain nation. Nation is a continuum and consists of people belonging to the nation. Each person of

the nation has his character but the character of the nation is no simple addition of these personal characters. They as a whole bring about characters superior in level like ethnicities. Second example, in the macro-economy market and exchange rate are the main indexes, and are not simple addition of micro-economical characters like marginal rate of substitution. Third example, thermodynamics is a result of atomic interaction, but temperature and pressure are the major physical quantities, being very different from those of atoms.

In the science, research tends to be more analytic than synthetic. But in the analogue set owing to the characters pointed above, synthesis operation becomes as important as analysis operation. But synthesis operation seems to require individual intuition and wisdom with little possibility of unified laws. So currently synthesis is often considered as knowhow rather than science. But in the real manufacturing field, knowhow and its transfer is very important, and deeper study of continuum may resolve the structure of knowhow where knack plays an important role.

I discussed above about the division of continuum into subsets, but it does not mean that continuum can be cut clearly into two at some special digital point. The structure of continuum is rather a gradation with no clear cut: inside of continuum changes gradually. This is a direct conclusion from the fact that the continuum is essentially different from points. So, cut of continuum by any point is always artificial. For example, it is never unique where to put a boundary line between the neighboring Mountain A and Mountain B. A driver trying to turn left turn the steering wheel sometimes earlier and other time later, independent of the traffic condition.

If you try to cut continuum by point you will feel some unnaturalness. For example, punishment of a man one day after the age of adult is very different from that of one day before the age of adult, even though only two days pass. In the Olympic game, 4^{th} place is very different from 3^{rd} place or upper, where you can get a medal. There also occurs a reversal of order. It is very often that person with less ability takes a higher position than the one with more ability. In fact such reversal of order is very common when you cut continuum by a point. Such unnaturalness takes place because you try to cut

continuum against its nature of gradation.

=Missing Link=

People tend to consider science as almighty: it can solve any matter. But I think this "belief in science" too naïve. Just as there was a limit of earth before Magellan, there are also limits in science. You would drop down to inferno if you went beyond the boundary of ocean. What are there if you go beyond science? What are the examples unsolved by science? Paradoxes like the paradox of Cretans and Russell's paradox would be the typical examples, because it is demonstrated that contradiction will occur. Proverbs, witty sayings and guesses in the mind may also be these examples. Knack, subjectivity and knowhow are also the examples unsolved by science yet are valuable.

Other examples are as follows. First example is a structure of the cosmos between big bang and its crystallization. Second example is a structure and system of brain and sub-consciousness including the mechanism of dream. Third example is an Oriental medicine where balance of the body flood works an important role and is watched by overall observations, not by analysis or anatomy. Fourth example is so called quasi-scientific items like minus-ions and blood-type human classification study.

If you are a scientist and try to study these fields, you will be sentenced heretic and will be excommunicated. But now it is worth to remark that all these counterexamples to science form a critical boundary to science together with the mystery of the continuum: they are all missing links of science. In a word these examples listed above are as mysterious and attractive targets of research as science, although they are not science. This is another reason why I try to watch continuum.

=Open Set and Closed Set=

In the current point set theory, behavior of the boundary points plays an essential role. If the boundary points belong to the set, the set is called "closed set". It is known that finite numbers of open sets can always cover a

closed set (Heine-Borel Theorem). Meanwhile, if boundary points do not belong to the set, the set is called “open set”. It is known that a system of open sets can define topology. In a word, character of the set is determined completely by boundaries in the point set theory: interior of the set neither governs nor plays any role. These characters diverge from common sense. I know mathematicians have no interest in common sense, but I am afraid by bypassing the common sense science may leave some important aspects untouched and unnoticed.

As a polar opposite to the point set theory, position of the boundary is ambiguous and plays little role in the analogue continuum theory. This character is indicated above in the example of the neighboring mountains. In the analogue continuum theory, we put focus on its center or summit. In the example of the mountains, positions and shapes around the summit are much more important than those of skirt or fringe. Of course it is neither unique nor clear where to put the summit. But in a sense of “possible logic” defined in the following section, there is usually a common understanding. Of course the common understanding has certain fluctuations. But fluctuation is also a typical character of possible logic and wave. In the possible logic we watch the continuum directly and analogously. This viewpoint is new and obviously less understood. It also means that wave is less understood than particle.

=Continuum and Wave=

I expressed the continuum as “mystic, massive, brilliant, breathing and outstanding”. I also expressed the continuum as “so deep that it contains even contradictions inside”. These characters of continuum can be typically seen in the wave. Wave itself is common to us. Just remember a surface wave of a pond. It propagates as a sinusoidal wave to its surrounding area. Since continuum is more general than the pond we need generalization on the definition of wave. Now, I would like to redefine the term “wave” more generally as “an ability to propagate itself to outside in a flexible manner”.

In this definition, the wave propagation is not limited to sinusoidal waves. The shape is not important. Generalized wave propagates its essence. It is

important to point out that the general wave propagates in a manner that it considers flexibly and with sympathy the condition of exterior media where it propagates, by modifying itself to accommodate the exterior media. It is noteworthy that this flexibility is also well seen in the Oriental cultures.

I-2, Possible logic

=Possible Logic=

For the conventional point set theory, its intrinsic logic is a classical deterministic logic. In the classical logic consequence is always bivalent, either true or false. There is no middle or both. Also in the classical logic, contradiction is a direct logical failure. This logic is simple and strict, clear and far from ambiguity, as if it is the logic from point to point. So, the logic intrinsic to the point set theory is the classical logic. This logic is fruitful because of its simplicity, as is the case of the point set theory.

Then, what is the logic intrinsic to the analogue set? The analogue logic is from continuum to continuum. As pointed out above, continuum has certain extent of width and expanse, and it has interior structure and gradations. These features suggest that in the analogue logic premise is never unique and even varied depending on which part of the continuum the premise based on. Since premise is varied, the consequence will be more varied. The premise or consequence of the analogue logic is never only true or false. The analogue logic can even be contradictive, just as the continuum is, as noted in the previous section. Let us call such logic intrinsic to continuum as “possible logic”.

In the possible logic there is no absolute: every event is just possible and never deterministic. The logic becomes more plausible when you add it some appropriate information, but the logic can never be perfect true. It just becomes more possible by the information. And the information is usually subjective wisdoms. Only possible logic can bridge between the premise and sequence of continuum.

Relative matters or subjective items can never be treated in the

conventional classical logic, because it is only bivalent and has no hand with subjective element. But the possible logic can treat these relative and subjective items because continuum, the basis of the logic, can bear relative or subjective items. Using possible logic, you can deal with relative and subjective matters like “far or near”, “strong or weak”, or “like or dislike”. Even more, the possible logic can compare non-comparable items like “whether you spend money or go to sleep” or “whether you open a restaurant or keep working as a realtor”.

=Examples of Possible Logic=

I just introduced a possible logic in the previous section. Now, let us realize the logic by the use of examples. Sound examples of the possible logic can be found in proverbs. For example, senior citizens living in rural area used to predict weather by crowds near the top of the mountain. There is no foundation for his prediction but the prediction hits fairly well, of course not always. Hit-well-but-not-always is a typical character and form of the possible logic.

As a second example, it is often said that if you need a bathroom outside try to find a big park. Yes, in a big park there is often situated a bathroom, but not always. Not-always indicates that this is not a classical deterministic logic. In fact the probability of finding a bathroom in a big park will be much less than 50%, too low to declare that there is a correlation, but people rely much on this saying. This is a good example of how people use daily very often the possible logic. Of course some people say “I could not find any bathroom in a big park” or “I could find a bathroom in a small park”. Please keep it in mind that such inessential refutations always accompany with the possible logic. You do not mind it, just be bold enough to baffle such accusations.

=Possible Logic and Contradiction=

Continuously, I explain using examples. First example is as follows. One day comedian A said “when crossing street under the red signal, there is no fear if all of you do altogether”. This is a possible logic with full of wisdom

and fun. We admired him. But soon after that comedian B said “when crossing street under the red signal, all will die altogether”. This is also true or rather a matter of course. This is again a possible logic with a taste of black humor. Now please pay attention to these two possible logics. They start with the same premise and result in very different consequences. These consequences are almost contradicting each other. This is in fact a good example that possible logic is deep enough to carry contradictions inside. We laughed at the second black humor that parodied the first. So this is also a good example that possible logic has a deep relationship with laughter. Please pay attention that laughter is quite a subjective matter as wisdom and insight.

As a second example, there is a saying “rolling stone gathers no moss”. This is a proverb, so is a possible logic. This proverb has two different meanings. One is, if you change your occupation so frequently you can never acquire any skill and become useless. The other is, if you are always moving actively you can keep your freshness and will bear no stain. These two meanings are in polar opposite. They form a contradiction starting from the same premise of the logic. This saying is again a good example that possible logic can bear contradiction.

As a third example, there is an old proverb “a friend in need is a friend indeed”. Recently its parodied version came up “a friend in need is no friend of mine”. These two proverbs are quite similar, that is, they stay on the same continuum of premise. However, the consequences are in polar opposite, and they are again a good example that contradiction is very common in the possible logic.

Western people and scientists may dismay at the statement that logic can bear contradictions. For them contradiction is nothing but failure and very end of discussion or dispute. In fact, for them the goal of dispute is to derive contradictions from the opponent: contradiction is so fatal. I guess that such usage of contradiction by Western people is much influenced by Christianity. Christianity is a typical monotheism and in monotheism God is holy, omnipotent and highest. So, in developing theology, the theologians of monotheism took most care of avoiding contradictions. This is because such

great God can never be capricious and should not say carelessly even a single contradicting verdict. And such an attitude gradually influenced the daily life of believers and finally that of scientists: contradiction is also strictly banned in science.

On the contrary, Oriental culture is based on polytheism and animism. There are millions of Gods and they sometimes contradict each other. In Buddhism the ultimate goal of self discipline is to get spiritual awakening (satori). For this goal it is important to get rid of conceptual thinking and reasoning. And for this purpose disciples actively use contradictions. In the Western philosophy, reasoning is very important and is exclusive to contradictions. However, in the Oriental culture reasoning is even nuisance. Reasoning is hindrance to look at the world as it is.

So in this context, construction of set and logic intrinsic to the continuum is in fact a construction of new "quasi-science" intrinsic to the Oriental culture. Current science may look almighty, but is still crippled and not yet full-fledged, because it based only on Western culture. In addition to the point above, wave and vibration are very important in the animism and Oriental culture. For example in yoga, the sound a-u-m is considered very important as a primordial vibration of the universe. In this sense, study of continuum is also a study of waves. In fact, wave is a representative continuum to be looked at directly, but is not looked at directly yet.

I-3, Exterior of Science

=Non-Science=

As explained in the previous section, possible logic and analogue set permit contradictions, and they do not guarantee reproducibility. This means that the possible logic and analogue set are NOT science, at least in its current sense. However they contain certain amount of truth to a certain extent. In this sense, I would say that they will occupy position around the science. I pointed out at the top of this report that exterior of science would be "inferno" as imagined by people before Magellan. And now I can say that it is not inferno but the world of possible logic when you step out of the

science, just as Magellan found new continents. Possible logic occupies position outside the science, but each position of possible logic varies according to its degree of possibility: the higher the possibility is, the closer to the science the logic occupies the position.

I ask you a question. Is it meaningless if it is not science? Please remember that the possible logic contains real wisdom and insight. Human is the head of primates because of wisdom. And why can the possible logic that contains full of wisdom be no importance? In this sense I would say that real possible logics are almost as important as science. Here the term "real" indicates that it really bears wisdom, the possibility not being buried in the back ground noise. I am now very careful because irresponsible reasoning, deviating suspicion, fraud, cultic belief or even lie can be called as possible logic if you only pay attention to its formalism. The concrete contents and degree of wisdom are very important. In a word, the possible logic has high risk with high return. In this sense science is the polar opposite having low risk with low return.

Why is science sometimes less in return? It is because science sometimes demonstrates matter of course or tautology. Deduction is the typical procedure. No new information is added in this procedure: it only changes the appearance of logic. It is almost a petty magic by apparent tricks. Another example is the theorem of Pythagoras. In the demonstration you use only trivial transformation of either formulae or triangles, adding no new information. So this famous theorem is again a matter of course having different appearance. Scientists warn to doubt your common sense, but in fact he should doubt his result if he gets an unexpected one.

The essence of science is in its absoluteness, so as to say "three any's", that is, reproducibility at anytime by anyone and with any method. This sounds pretty much the same as the holiness of the Lord in Christianity, so called "three omni's", that is, omnipotent, omniscience and omnipresence. Scientific results are promised a priori, since otherwise it can never be demonstrated, not satisfying the above said Trinity (three any's or three omni's). If scientifically demonstrated even if not promised beforehand, it is contradiction.

Because of this strict restraint of science, that science always requires full of consistency and foundation, little freedom is permitted in scientific textbooks whoever writes the book. Only little freedom, how dull and boring it is! On the contrary, possible logic permits wide freedom of wisdom. You can be really creative and fantastic in the world of possible logic, because it permits infinite degrees of freedom. If you are really a creative person, I persuade you to join the universe of possible logic. You can develop your talent as much as you want, and it is really a pleasure. “Pleasure” is in fact one of the important keywords of possible logic.

=Belief in Science=

As pointed above, science can be viewed as one of the procedures. And since it is neither absolute nor special, it is really up to you whether you adopt it or not. Or rather, it is up to you whether you believe it or not. In this sense, science is also a belief or a kind of religion. In treating science as a religion, there will be two kinds of ways of not believing science. In the narrow sense people believes in nothing of science. In the wide sense people believes in not only science but also something other. The possible logic supports the latter way of belief. To the former I want to warn that science works even though you do not believe in it. The gravity works even though you do not believe in it.

I know an anecdote on the belief in science. One day in some city a municipal swimming pool became vacant by a rumor that there was a risk of infection because prostitutes were swimming in it. The municipal authority denied the rumor by saying that they used disinfectant and constantly checked the quality of water. The treatment of authority was scientific. But only little citizens came back. Citizens did not doubt the authority. They only doubted so called scientific treatment. Of course they believe science in daily usual matters, but as soon as their lives were at risk, they relied much more on their intuition than science. People discard belief in science so easily. This anecdote well spotlights the deep nature of people and hidden importance of the possible logic.

=Hypothesis=

Even in science hypothesis before demonstration is also a kind of possible logic. This means that even to become an excellent scientist you should be an excellent possible logician, because otherwise you can find no hypothesis to start with. In a word even in scientific discovery, the possible logic plays a hidden but important role. I pointed above that science is sometimes a matter of course. Then why do we need such creative tools as possible logic to find facts of a matter of course. This is presumably because human being is still on the way to the evolution, and inspiration is required even to find a matter of course. And by the same reason, talent is required to become scientist.

Getting into the real world like manufacturing field or daily lives apart from academic society, the possible logic is much more useful and really used than science. The daily life is a continuation of decisions based on experience and intuition, not experiment, and it is often said in the factory or battlefield that “you may have reason but the reality is different”. This is a strong support that there is a considerable room where matters different from science really work. In a word, it is a world of knowhow. In the industrial world it takes a lot of time and labor to transfer knowhow, again presumably because knowhow is not science and therefore there is little reproducibility. In other words, it will be a great contribution to the industry if systematic knowledge is obtained on knowhow by studying meticulously on the possible logic.

=Social Science=

We have discussed so far mainly on natural science, but the possible logic will become more important and will be used more in social science. This is because there is less chance to carry out experiments in social science. For example, it is said “there is no ifs in history”. However the reproducibility is required nevertheless in social science. The typical scene is the juridical judgment. Here the requirement of fairness and strictness is unlimited. But since it is impossible to gather all the proofs for trial, the judge should supplement the proofs by discretion. Here the discretion is typically the

possible logic. Here again the possible logic works as a shadow in the very critical moment.

In the social science, very few physical evidence and written matters decide arguments, since there are no other items for reproducibility. However it is very random and accidental whether you can find material foundations or not. For example it is not easy and deeply depends upon the chance to find a criminal knife from a wide ocean. As for medical records, those beyond the legal keeping term are basically at the disposal of a doctor. However if they happened to remain beyond the limit, the records can be used as legal proofs. So, existence of proofs really depends on the caprice of persons in charge. Especially in philology, since survival of classical documents is only by chance, philologists are almost walking in disarray the road scratched by the waves of history. Social scientists must fight desperately on such arena, and the possible logic must be really helpful to them.

I-4, Proof on Possible Logic
=Limit of Possible Logic=

As pointed out in the previous chapter, possible logic spreads just outside the territory of science. The higher the possibility is the closer to the science it stays. Then what will happen if we take the limit of possible logic to the classical logic? Most of the contradictions will disappear. But they disappear in skewed manners. When contradiction disappears it does as if twisted strings become straight and smooth. So there is a change in the topology of "logical space". That is, there occurs a discontinuity of the phenomena when the limit is taken. The limit is taken by crossing banks from paradise (paramita) to the mundane world beyond the abyss. In this sense looking the logical space from the side of classical logic is just looking only the innocuous superficial one where contradicting points are forcibly smoothed into the background. In this sense the world of classical logic is just a skim and is less interesting and exciting than that of the possible logic.

Yes, contradiction will be resolved as a principle, but not all of them. Some

of them will remain unresolved and they are the paradoxes. Paradoxes are untouchable in science just as miraculous events in the systematic theology of Christianity. However I would like to emphasize that paradox is the source of real continuum.

By the way, what is the difference between induction and possible logic? Both are the same in the aspect that witty results can be derived based on finite examples. But the former belongs to classical logic. The difference is that even a single exception or counter example can overturn the result in the induction, while not the case in the possible logic. Of course the degree of possibility becomes lower little by little by exceptions and counter examples, but the possible logic is not baffled all at once. In this sense the possible logic is more robust to the exception, and therefore is realistic. There is one more difference in the possible logic. The possible logic is sometimes still meaningful even though it is false. It can be meaningful as far as it is pleasant, interesting or containing a lot of wisdom and insight. It sometimes happens even in science that more interesting hypothesis is regretfully rejected by inconsistency with experiment. False possible logic is still meaningful especially in the world of literature, art and belief, being a kind of rhetoric.

=Value and Significance of Possible Logic=

Typical examples of possible logic and contradictions can be seen in the inquiries used in Zen Buddhism meditations (kouan). They use contradiction to discard reasoning that disturbs spiritual awakening. Famous Zen leader Hakuin asked disciples to listen to the sound of clap from a single hand. This order is false as logic, but is well used for spiritual awakening. Spiritual awakening is crucially important for Buddhism disciples. In a word, it is important because it is false. On the contrary logic like “a dog barks” is always true but no fun. Which logic is more interesting and helpful, “false but pleasant” or “true and no fun”? In the Christianity and science “exact”, “diligent” and “effective” are the important keywords, while in the Oriental culture and possible logic “pleasant” “interesting” and “witty” are. As pointed above there is a degree of possibility in the possible logic, and the degree is also judged by these keywords.

=Proof of Possible Logic=

In the conventional classical logic and current mathematics, proofs are always completely sequential and perfectly founded. But as pointed above, exceptions and counter examples are common and are necessities in the possible logic. So, we should never require mode of proofs appeared in the classical logic and mathematics to the possible logic: we should not require such rigorous mode of proofs. Witty and eloquent explanation will be the mode of proofs good enough to the possible logic. Methods and procedures habitually used can be the proof good enough for possible logic. For example, the factor analysis does not have strict mathematical foundation but is used commonly in psychology and medicine, and is treated now as a scientific method. Witty ideas and bold mind are required in the possible logic more than meticulousness.

Of course exactness is crucially important especially in this era of advanced specialty segmentation. Even a single mistake in a bus timetable can cause tremendous turmoil. But is exactness absolutely important with no exception? I dare say that pleasure, interest and wit is also as important as exactness for mankind. What is the ultimate purpose of our life? Is it to be more productive and efficient as persuaded by Christianity and communism? Is he lazy if he pursues pleasure, joy and fun? Should we be more paranoiac to be as diligent and to be a hard worker as possible? Are we robots of the regime? I do not think so. Pleasant life is much more important than productive life, at least from the Oriental viewpoint. I am never too allergic to enjoy. And the modest middle (chuuyou, golden middle, harmonious middle) is also essential for mankind. And pleasantness and modest middle are also the keywords of the possible logic.

Another good example for possible logic is a Fermi estimate. This is also called “order estimate”. This procedure does expect neither exact answer nor well found answer. These answers are only stupidly honest. The procedure prefers more elaborated rough estimate. Typical example is to estimate the numbers of piano tuners in Chicago. Here the exact number getting from the city hall has no meaning. You should invent somehow the procedure of guess

series and derive an approximate number, and the quality of wisdom and insight used in the procedure is much more important than the proximity of the answer. The procedure is said not to produce ten products out of one, but to produce one out of nothing. Thus this procedure is a good tool to measure the tactfulness rather than the amount of knowledge, and is widely used currently in entrance examination, for example. In this sense the procedure of Fermi estimate is typical possible logic: it requires wisdom and insight and the answer is not always exact.

=Possible Logic as a Mirror=

Possible logic itself is exciting and daily used as pointed above, but it is also useful as a mirror to look at the conventional concepts from different point of view. In the previous section, I showed some characters of the classical logic by taking the limit of the possible logic. In this section I will show two more examples.

The first example is wave. Talking of a wave, people tend to remember a sinusoidal wave as a typical analogue wave. But the sinusoidal wave is not the right answer. Sinusoidal wave should rather be called as “digital wave”, because it is perfectly defined by only three digitals; wave length, amplitude and phase. Real analogue wave is more general having an ability to propagate its structure to the outside, and is flexible enough to the exterior propagated media by modifying itself to accommodate it. In this sense the real analogue wave is not “well-posed” like a sinusoidal curve. Rather, it propagates by changing gradually the shape in accordance with the media. Please remember the examples of the mountain range or the chain of islands. If we deeply review the definition of wave, it may have some influence on quantum mechanics, where wave plays an important role.

The second example is a fuzzy set. In this set, belonging of each element to some set is not limited bivalent. “Membership function” was introduced and the belonging is expressed by fractions. In this non-bivalence, fuzzy set should have had played a decisive role of introducing the Oriental ambiguity to the Western decisive set theory. However in this fuzzy set theory, the degree of fuzziness is no fuzzy any more, and decisive by membership

functions. In a word, fuzziness is only superficial in the fuzzy set theory. Membership functions should also be fuzzy if it is a real thorough fuzzy set, and the degree of fuzziness is again fuzzy and so on. By this defect of superficiality, the theory regretfully missed a chance to introduce Oriental culture into science. It is often said that ancient Hindu people was great to find zero. But I think that the finding of shnya (kuu, emptiness) is much greater. Here zero means that there exists a status of vacancy, while in shnya even the status of nothing does not exist and so on.

I-5, Mathematical Physics of Possible Logic

=Space of Possible Logic=

For the conventional classical logic its intrinsic number is the usual familiar number system, like integer, decimal and irrational numbers. It is a totally ordered set and aligns on the number line. The operations are addition, subtraction, multiplication and division. Here we should pay attention that this number system is different from the general point set theory. Rather, the numbers are a very restricted sub-model of the point set theory, and we can apply the operations thanks to the specialization. Moreover by this specialization, we can introduce multi-linear spaces and the concept of dimension. For the original point set theory, there are only operations of union and meet. And the specialization into linear numbers was chosen only because they were commonly used in daily life, for example to measure the area or the amount of money. In a word, choice of linear number was only by custom, and not because it was excellent. Historically the number system existed prior to the point set theory.

As the lessons from digital system, to discuss more productive about the analogue sets, continuum and a wave, we better specialize it to some more convenient one. However, I must honestly confess that the trial is not yet successful. So in this report, I am going to describe some of the characteristics intrinsic to the analogous set itself.

First of all, there is no concept like dimension in the analogue set. If there is dimension the space is nothing but multi-linear spaces of the digital set.

Even if you try to force the space intrinsic to the analogue set into some finite dimensional space, it will resist and get away from it immediately. In fact, by remembering the active, breathing and contradicting characters of the continuum, you can see that the space is not well behaved like Western exoteric religion. Rather, the space of continuum behaves with mystery like Oriental esoteric religion. It will grow more and more like a monster.

Second, it is neither smooth nor poor in feature. Rather it has a lot of large and small holes and twists. It has neither front nor back, and it has neither inside nor outside. It looks as if a boiling black clouds just before the rain. The possible logic is the one acting on such a "shapeless" space. It is often warned by yoga masters that you should not be anything special or describable, and the space is exactly something like that.

The space of possible logic contains a lot of contradictions by reflecting its twisted characters as indicated above. To dispel contradictions from this space is as absurd as putting steam irons to the twisted spaces to flatten it. I would even say that it is yet absurd to remove contradictions even from the conventional mathematics and science. It is because the conventional space can be viewed as a limit of the twisted analogue space. We should accept substantial contradictions as they are.

There can be another space model to the possible logic. To build another one we start with a space intrinsic to the classical logic. In the classical logic, all the members are distinct. Intrinsic relation is inclusion. And intrinsic operations are union and meet. So the governing algebra will be Boolean algebra. It will be a big Boolean algebra containing all the distinct sets. We better call it as "Boolean manifold". It looks like a woven knit sweater, being completely different from multi-linear space. Then the space intrinsic to the possible logic will be a fuzzy extension of this Boolean manifold. The space will look even more like a woven knit with the loose and melted surfaces.

As pointed in the previous chapter, the possible logic looks coming from the Oriental culture, like I Ching (Ekikyo, Yin-Yang and Sixty Four Destination Signs), and Feng-Sui (Fuusui, Four Phases and Five Elements, Ten Celestial Stems and Twelve Earthly Branches). Here Yin-Yang is the simplest but

suggestive example of the algebra of possible logic. The limit of Yang (positive) is not the plus infinity as in the digital numbers of classical logic. Instead of infinity, the polar opposite “germ of Yin (negative)” appears. In the same manner, the limit of Yin is a germ of Yang. This is essentially an alternate algebra. Now, alternation is essentially a wave, again close to the possible logic and the continuum. The sixty four destination sign is a six-fold Yin-Yang, and therefore more complicated than Yin-Yang. But the sixty four destination sign is also Boolean algebra, and circulations on it are also a model of wave.

Finally I would like to point out that number system of the possible logic to be found is never unique: there can be plural models of number system. In the same way, number system intrinsic to the classical logic is not limited to the conventional number system. There can be some other, although not yet found. Here again, the possible logic works as a mirror to the conventional classical logic.

=Applications of the Space of Possible Logic=

As pointed out at the beginning of this report, there may exist a “common mode limit” at the boundary of science, that is, continuum, wave, paradox, proverbs, structure of cosmos, mechanism of brains, oriental medicine, blood type, and steady historical progress against microscopic probabilistic nature of quantum theory. In the present section, I would like to shed light on some of them.

First example is a cosmology, especially on its very initial phase. The initial phase before crystallization of the universe is called “primordial geometry”. Almost nothing is known about it, since there was a phase change, and it basically refuses simple extrapolation. While sound theory and experimental proofs are mandatory to be a science, cosmology before the crystallization looks refusing science: situation looks more comprehensible by the possible logic. If so, the conventional approach may have certain limitation to study this phase.

People tend to imagine that the big bang took place at the certain moment

in a “box” situated in a prefixed coordinates. But this is not true. The big bang took place out of nothing. After big bang the universe was chilled by adiabatic expansion. Then time and three dimensional spaces were crystallized quick but gradually. Cosmos just after big bang was too messy, having no order to define coordinates or time. In a word, our universe before the crystallization was timeless and dimensionless. And such dimensionless universe would be better understood by the space of possible logic.

From this point of view, it is easily conceivable that every universe should not crystallize into three dimensional spaces and one dimensional time. Our universe just happened so by the manner of quark distribution just before crystallization. And other universe can be for example four space dimension and two time dimension. Or other universe can even solidify as Boolean manifold and dimensionless. And I guess that most of such universes would be dead ones. Moreover, there exists no way to know the existence of other universe either alive or dead, because we do not share coordinates in common.

Some physical facts look indicating that the space should be always three dimensional. For example, combination of Gauss’s law and Stokes’ Theorem in electromagnetism may have meaning only when the space is three dimensional. But this fact never insists that any universe should be three dimensional. Rather, in our universe physics is so constructed as to fit the three dimensional: in other universes there will be some other physics that fits their own.

If there can be diverse kinds of universes including non-dimensional ones, I hope that the unified theory of cosmology and elementary particle theory will make progress to the extent that it can explain physics of these different universes as well.

Second example is structure of the brain. This problem relates a diverse of fields like dream, subjectivity, belief, service, knowhow, literature and art, and so on. All these problems can never be properly treated by science. Science is described by line number and these problems are by no means solved by conventional arithmetic. Current arithmetic can be applicable only

on the physical matters. As for mental matters of human, the daily used possible logic will work. Possible logic would be the proper tool to describe and analyze mental universe. For these realistic problems, realistic research on the possible logic is meaningful, needless to say on the theoretical study of the logic.

=Dancing Wu Li Masters=

Some 30 years ago enigmatic parallelism between the state-of-the-art elementary particle theory and the most conservative oriental philosophy was seriously discussed. It started with a book entitled as “Dancing Wu Li Masters”. The leading figure was Dr. Fritjof Capra, who wrote “Tao of Physics” and “the Turning Point”. They insisted that there is a parallelism between the probabilistic principle of quantum physics and bondage-free principle of Oriental religion. They even held international conferences gathering specialists from the both sides, but no decisive conclusion was obtained.

I agree that this proposal is quite exciting bearing surprise. However, it is not likely, at least to me, that there is really a direct parallelism between them. Rather, I assume that there is another unfound logic, and the logic will bridge them. I would say that the unfound logic is the possible logic, because it has good compatibility with both continuum wave and Oriental culture. If this assumption is appropriate, the logic may derive even more on the parallelism, and may provide some new insights to the elementary particle theory.

For example, I Ching and Feng-Sui may offer some hints to solve physical problems. Here again, remarks should be taken that the term “wave” appeared in the previous section is an ability to propagate itself to outside media in a flexible manner. The essence of Oriental thought exists in the impermanence: all the things and phenomena constantly change. Probably this permanently changing character may also applicable to the behavior of elementary particle.

One of the remarkable results in quantum theory is the uncertainty

principle. This principle indicates that the non-canonical variables can never be specified at the same time. From the viewpoint of possible logic and analogue set, this uncertainty may be the reflection of the fuzzy, non-unique, non-totally-ordered, and even moving nature of the continuum, wave and the analogue sets. The deepest insight on quantum waves given by the possible logic will be a productive acceptance of contradictions.

I-6, Possibly Deterministic Law

=Basics of the Law=

We know that essence of the micro-cosmos lies in the uncertainty. Status of physics can only be expressed by probability, being never deterministic. If so, since our macro-universe is uncountable accumulation of micro-cosmos, it is perfectly chaos and disorder, being sunken in the background noise. We are drifting and Dutch rolling every second in the grand sea of uncertainty, and even near future is essentially random and unpredictable. Virtue like justice and diligence makes no sense because nothing is promised. Even our mentality, since mechanism of the brains is electron transfers through synapses, our mentality is also governed by quantum uncertainty, and our thinking will end up with nothing but delusions.

However by looking around, we can easily find many local rules, and quite a few items are in fact predictable. For example, we guess every moment like “she is always an honest woman” or “he will act in such and such a manner”, and these guesses are successful very often. If the universe is really uncertain as discussed above, our daily communication can never makes sense, needless to say about the successful guesses. Also looking at the progress of human, especially in humanism, ruling system or making peace, we can conclude that there is surely a progress and in a well organized manner. Of course the progress is often very slow and even moving back and forth. Nevertheless, the progress is steady and never reversible as a whole.

Through these discussions we cannot but conclude that there are macroscopic deterministic laws in a sense of possible logic, in spite of the microscopic uncertainty. I would like to name this law as “possibly

deterministic law". But how can we demonstrate the law? Since this is only a law in the possible logic, convincing explanation or historical survival is good enough for conviction. In other words, the law is true only for the people who believe it, because the possible low always takes into account of subjectivity. But why accumulation of microscopic probability results in determinism? This may indicate that the probabilistic interpretation of the quantum theory by the Copenhagen school should be reviewed at least in a part as "possible interpretation".

=Derivations from the Law=

First of all, I would make clear that the possible deterministic law never adheres to any extremes, either fatalism or effort almighty principle, but settles down just in between, that is, at the modest middle. In religions especially the Western monotheistic ones, believers tend to fall into fatalism, because the fatalism is an automatic derivation from the almightiness of God. Believers tend to consider efforts just waste, thinking that everything is perfectly decided beforehand by God's will. The polar opposite reaction can also be seen in these religions at the same time. For the Christians, Apostle Paul in his reckless mission trip is considered the greatest model, and the believers are strongly urged to follow his practice. And this practice inevitably drives them to the effort almighty principle. So in Western religion, believers tend to assort either one of the extremes, and never go to the middle. Virtue of middle is emphasized only in Oriental culture. In Western culture where reasoning is almighty, mixture of plural opposite elements is heretic.

But the possible deterministic laws recommend people to be in the modest middle, having these two opposite elements in an appropriate manner. The modest middle is also an ideal status in Oriental culture. Paul in his reckless trip is nothing but an idiot person's petty braveness from the Oriental point of view. According to the possibly deterministic law, every phenomenon has more or less both fatal aspect and effort aspect. Please remember that the term "modest middle" is one of the important keywords for both possible logic and oriental thought. From this keyword we can also conclude that union with the celestial flow is very important to avoid either fatalistic idleness or

idiot effort.

Second of all, people usually takes it for granted that predictor can predict anything if he is real. But this is not the true from the viewpoint of possibly deterministic law. Since the law states that there are certainly quite a many matters undetermined yet in a future, he can never prophesy any such undetermined matters, even if he is excellent. Even matters of near future, almost obvious issues have no deterministic relations in a hand, while very remote matters can have deep causality in another hand.

Third of all, what is the relationship between mystic and breathing nature of continuum and wave, and the possibly deterministic law? Continuum and wave by propagation outside tend to create an order to the outer media, and thus crystallize to a certain extent matters, and determine causations to the issues. In a word, analogue wave has a potential to align matters. This is also an important character of continuum and wave.

II, Detailed Items

II-1, Continuum Related

=Language=

In this section, I would like to watch how, through communication by language, analogue and digital matters are related and compromised each other in the real world. The real world is essentially an analogue continuum. On the other hand, language is digital, because there are only finite numbers of words and language is finite combination of the word. But language is used to express all the phenomena of the world. So, there is a conflict between digital and analogue in the language. And the conflict is solved by each word to take in charge of certain area of continuum.

Any word has its own width and expanse of meanings with obscure boundaries. By doing this compromise, language works as an intermediary between the real world and our understanding. Of course, such an intermediary is never almighty. We sometimes have a hard time in communicating for example locations, features of person or tastes. Such

irritation takes place, because distribution of words in these items is only too sparse. And such inconvenience is inevitable not only in language but also in all such media that works as intermediaries. Such difficulties can also be seen in divinations like sixty four destination signs and other fortune-telling. Thus to be excellent foretellers, deep experience and intuition are required.

Then, another question rises up. If essence of the language is a continuum with certain width, being never points, why can we communicate each other? In continuum, the location of its center depends on person, case or circumstances, and is never the same: there is certain discrepancy. For example, the image from the word “kitchen” will vary depending on the kitchen system equipped in each house. Nevertheless, we can communicate each other the contexts containing “kitchen”.

I would say that only the possible logic permits common understanding in spite of the discrepancy. Classic deterministic logic can never surpass the discrepancy. And I would say that there will sometimes be misunderstanding because the possible logic never guarantees perfect. In spite of the misunderstanding, I would say that the language is still convenient enough for daily life, because it is the very wisdom of human to gather up similar matters as the same.

=Relations between Digital and Analogue=

Direct communication by a brain wave would be more exact, as probably done by ancient people. But the direct communication in only momentary and is not perceptible by any person. But by possible logic, we can do something like direct communication by wave. So, advance of possible logic is expected for a mankind to restore intuitive abilities. In the current scientific era people relies too much on reasoning. Reasoning is urged by the systematic theology of Christianity as well.

We need in daily lives more intuition to recover naturalness of life. Such a life is much more natural and human-friendly just as animism. Language and science never guarantees the highest performance of people. Rather, they guarantee the minimum with tremendous effort and labor. Capable by

anyone means that the system guarantees the minimum. Introduced by digital thinking and monotheism like Christianity, Language and science are something like democracy and individualism.

However, there are still certain fields where the digital treatment is mandatory. They are artificial fields like juristic act, promise, covenant, trial and so on. In these fields equitableness and certainties are mandatory and much more important than naivety. In a word, apply artificial method to the artificial field. Based on rigorous law application, punishment to a person one day after the coming-of-age is much different from that to a person one day before the coming-of-age. Just one day makes so big a difference. People sometimes feel naïve unnaturalness on such a big difference in a day, and this is exactly the same feeling we have when continuum is cut by point clearly into two. Reversal of order also takes place by such digital cut of continuum. Crimes committed by life-sentence prisoners look sometimes graver than those committed by death-sentenced criminals, even though each trial was carried out strictly.

Finally, I suggest some differences on the general theory. In the classical logic, especially in mathematics and physics, the more the theorem is general the more its importance is. However in daily life, general rule is no interesting. For example, beginners really enjoy walking, but when they get the general idea of walking by many times of practice, walking becomes less interesting. This difference on general rules between the classical logic and the possible logic may come from the difference of the keywords. For the former, diligence, efficiency and results are the important keywords. While for the latter, modest middle, pleasure and subjectivity are the important keywords, and these keywords are rather private and individual.

II-2, Possible Logic Related

=Proverbs and Sayings=

I think that possible logic can easily be conceived by examples. Good examples can be found in proverbs and sayings, and literatures and arts, rather than in logical formalisms. Ancient people predicted rain by a cloud

near the top of the mountain. Such a practice is a typical model of the possible logic. It was not always correct nor having scientific foundation, but predicted well especially in the critical case like the timing for seeding.

I am going to list up more of plausible proverbs; “the longest way around is the shortest way home”, “if you are going to shoot a commander, at first shoot a horse”, “penny wise and pound foolish”, “after a storm comes a calm”, “I shift an evil and do with fortune”, “who loves too much hates in like extreme”, “when you are in real trouble, you will find a way out”, “I do not get a tiger cub when I do not enter the tiger's lair”, “there's many a slip between the cup and the lip”, “you never get something for nothing”, “ugly woman has deeper affection”, “doubt the first finder”, “there is no delicacy in a noted product”, “thin person is more gluttonous”, “adult should take responsibility for his face”, “there is no medicine curing a fool” and so on. These proverbs and sayings are really good examples of possible logic.

These old proverbs and sayings really have meanings, because they survived the test of time. However, there is an important reservation for these proverbs. They really work well for persons with good perception, but do not work well for persons with poor perception. In this sense, we can agree that survived proverbs and sayings are good examples of possible logic. To train the sense of possible logic by these sayings will be more helpful for the daily life, than to train on reasoning by mathematics and physics.

However it is worth being cautious that there are quite a few meaningless, being almost superstitious proverbs and sayings. “two times always leads to three times”, “Sneezing is a sign of somebody rumoring”, “tooth fall indicates parent’s death”, “wolf loiters around under the full moon”, and so on. So, the possible logic is high risk, and needs special care to use them. Harmful cultic belief also sometimes takes the appearance of possible logic. However please keep in mind that the possible logic exists not to justify these cultic beliefs. Rather, it exists to distinguish and expel cultic beliefs out of the religions. Cultic beliefs never disappear and are rampant, because their essence and character are not well exposed. We should pull them out under the sun. And also for this purpose, study and training on the possible logic is important.

I am going to list up some more recent sayings impressive as possible logic. “You are finished if you come to dance hula.” “A knack to read through polytheistic myth is not to keep Gods names in memory.” “The city of San Francisco itself is a big park.” “In USA ‘no comment’ means yes.” “You’d better run for election as indie.” “Open the package of frozen food and find full of frost, it must be once dissolved.” “He who keeps money before 35 is thoughtless, and he who wastes money after 35 is also thoughtless.” “Those still staying at the head office after 50 years old are either president or custodian.” These sayings are also interesting in making a surprise attack to a common sense.

I explain some of these sayings above. The first one makes sense because many mental hospitals and nursing homes utilize Hula as a remedy. The second one makes sense because most of Gods appear only once in the myth. The seventh one persuades young people to investigate himself, and middle-age man to be deliberate to his life. The last one makes sense because most of the employees will work as staffs of subsidiaries in the countries of seniority. In these examples, surprise attack to a common sense has contradictory nature, and therefore they are also good examples that possible logic is deep enough to carry contradictions.

There is also a saying “life is always ups and downs”. Many people really feel his life like this saying although there is no scientific foundation. Its French version “c’est la vie” is often used as a term of giving up. Here “ups and downs” means wave, so it sounds as if it is endless. This saying is again a good example that wave has deep relationship with the possible logic. I am going to list up some more sayings having no foundation. “Chief Secretaries of the Soviet Union were alternately bald and non-bald.” “Athlete’s foot can be cured by putting it into hot vinegar.” “You can kill cockroach by detergent.” “Former astronauts tend to become farmer.” There can find no reason for these examples, but they are true very often, being still possible logic. The possible logic not always requires reason.

There are in fact quite a few possible logics that are treated as established theories, even among Western people who always require explicit proofs and foundations. For example Gospel of Mark is said to be written in some hurry

conditions, and this claim is taught even in seminary as an established fact. However you can find no proof that it was written in a hurry condition. The claim is based only on the impression of the readers. So, to those who do not feel hurriedness in the gospel, there is no way but persuade him to read the gospel with care.

Parable is also a kind of possible logic. It is usually used to intensify certain aspects of the fact, but it is not completely the same in all the aspects. For example, Taiwan was handed over from Japan to Republic of China after the Great Asian War, and Taiwanese people compared it as "dogs left out and pigs came in." Dogs are useful as watchers but pigs just eat all day long. They wanted to say that things got even worse. This parable expresses the situation of the Taiwanese people to a certain aspect, but not all the aspect. Pigs are also served as pork, but this aspect is ignored in this parable. Parable is always like this, being partly true. So parable is possible logic.

=Series of Possible Logic=

In this section, I would like to list up several series of possible logic in order to vindicate that possible logic is different from probability theory. First of all, I show you an example of witty possible logic. The story is as follows.

In the era of World War II, a foreigner happened to appear in some rural area of Japan. He might be from allied nations or might be a spy. A young man who just graduated from university tried to talk him with several languages, but it was in vain. Then, a retired old man showed up, and asked him "Churchill, Hitler or Mussolini?" The foreigner started to speak "Oh! Mussolini sono mio so and so…." The old man concluded "He must be Italian." Of course in the rigorous sense, there remained a possibility that a spy pretended Italian. But from a series of communications, we can agree based on the common sense that he is Italian. This anecdote also indicates that a witty possible logic is sometimes superior to just mediocre classical logic.

The next example is a series of what I thought, when I tried to buy a ticket through a ticket vendor in some soba restaurant. I wanted to eat a seasonal

menu, and two different seasonal menus were sold with the same price. I bought one of them, and the ticket was printed as “EVENT”. But I was not sure whether this ticket really corresponds to the one I wanted.
*The ticket title EVENT would mean that it is seasonal.
*But since there are two seasonal items, the ticket might correspond to the other one.
*In fact, I hate the other one. Why is the title of ticket not like “EVENT1”?
*The reality may be made clear by buying the ticket of the other one.
*But I do not want to use extra money only to know the reality.
*Anyway, let’s pass the ticket to a clerk even though there is some risk, and I will eat whatever is served.

In this series of meditation, each step is just a guess, so is a possible logic. However, this multifold guess never disappears behind the background noise. This fact indicates that the possible logic is different from probability theory.

The third example is also based on my personal experience about the maintenance of PC. One time, I carelessly removed a key top of my PC. And the following is a conversation on the phone with a serviceman about the repair. Statements in the parentheses are those I had in mind.
I: Hello, a lid of the key of my PC was broken.
S(serviceman): Lid of key? Do you mean a key top?
I: Oh, it is called a key top. I see. Yes, a key top was removed broken.
S: Do you mean that the key top was broken into two?
I: No, not broken into two, but the axle sustaining the key top seems broken down.
S: Axle was broken down???? What do you see at the back side of the key top?
I: It is just flat, remaining no part of broken axle. (At this moment, I noticed that there is nothing like axle to the key top, and the key top was just inlaid.)
S: Anyway send us your PC, and we will repair it. (At this moment, I began to doubt that the serviceman is trying to gain money, although he noticed that I was misunderstanding the situation.)
I: Send you my PC? Then, I will be without PC for a couple of weeks, although the trouble is only slight.
S: It does not take so long a time. Please use courier service. (Around this moment, I noticed I would better search about the phenomenon using

internet.)
I: Thank you so much for your kindness so far, but I decided to study the trouble myself and may call you again if necessary.
S: We can deal with your PC soon, so send it now! (In this response, I became sure that the serviceman is trying to earn money easily by exaggerating the situation.)
I: See you later. Good-bye.

After this conversation, I studied about key top using internet, and found that key top is easily removable. It is even recommended to remove and wash key top periodically. I put the removed key top as indicated, and it was inlaid to its original place. For a man who has only poor knowledge like me about the key top, this psychological battle was a labor but exciting. In fact, each step of my response was just wild guess or answer without any preparations. The event is a flexible and successive application of possible logic, and I won the game after all. This battle is a good example that the essence of possible logic is wisdom and insight. The matter gets clearer with the progress of conversation. So here again, the possible logic is different from a probability theory.

=Possible Logic and Probability Theory=

As pointed above for several times, possible logic looks pretty much the same with the probability theory, in a sense that both of them relates with uncertainty. But they are in polar opposite in the essence. Possible logic is a degree of wisdom and insight, while probability theory is a degree of ignorance. In this section, I would like to focus on the law of large numbers. This is a law of probability theory, and it states that things become clearer by repetition. And also in the possible logic, multitude of the logic tends to make things clearer. For example, a statement “it is green” makes a statement “it is a flower” more specific, bearing more information. However, the law of large numbers only states that repetition of the same trial will bring the prediction nearer to the expected value. In the possible logic, there is neither a priori value like expected value, nor multitude is never the same trial. Therefore, the law of large numbers has nothing to do with possible logic.

In other words, probability theory always increases entropy, while possible logic usually decreases entropy by the energy of wisdom and insight. Of course, the microcosm is controlled by probability as indicated in quantum theory, but nevertheless our universe has a wide variety of macroscopic orders, and thus works to decrease entropy. In a word our universe, from cosmos to biotic, is a multilayered ordered entity, ordered by waves and continuum, and therefore has affinity with the possible logic and the Oriental culture.

=Paradox=

As pointed above in the previous chapter, paradoxes are the remains of contradictions that are not dissolved when the limit is taken from the analogous set to the point set. In this section, I would like to meditate on how paradoxes look like in the analogous continuum world.

First example is the Russell's Paradox. This paradox is as follows. First consider a set of all sets. This big set can be divided into two parts, that is, a set of sets that contain themselves, and a set of sets that do not contain themselves. Then, the latter one leads to contradiction regardless of whether it belongs to the former or the latter. In the current set theory, such "monster set" is cunningly omitted out of the set theory, by defining set in the axiomatic manner (Zermelo-Fraenkel).

Here, the manner and moment of the omission of monster sets looks quite similar to that of neglecting the direct looking of analogous continuum. Then, how does this monster set looks like in the continuum world? Please remember now that continuum has its inner structure that is more like gradation, and it is impossible to divide it at some point clearly into two. That is, the big continuum of all the sets can never be divided into those that contain themselves and others that do not contain themselves. This gradation will turn out to paradox when the limit is taken.

Second example is the Liar Paradox. This paradox is as follows. A man said that he is a liar. If this statement is true, the statement is a lie, and it turns out that he is honest, and vise-versa. In the analogous continuum, the

continuum is again a gradation, and it is contradiction to this gradating character to divide all the people clearly into two. This paradox is also called as Cretan Paradox. As also pointed out in the previous chapter, there are interactions in the analogous set. So, there is a difference between character of each people and that of all the people. In this sense, a statement “Cretans are liars” is different from “This Cretan man happens to be a liar”. Therefore, it is not appropriate to substitute the former statement to the latter.

Third example is Zeno’s Paradox or Arrow Paradox. This paradox is as follows. Since a flying arrow stops at each moment, the flying arrow never moves. As pointed above in the previous chapter, continuum is much more than a gathering of infinite numbers of points. In other words, time span is much more than a gathering of infinite numbers of present. So the flying arrow is moving from the continuum point of view.

Fourth example is Theseus’s Paradox. This paradox is as follows. There is a chorus unit. The member changes one by one gradually. Then, until which moment is this unit the same as the original one? This is again a paradox created by trying to cut continuum at a certain point. Fifth example is Paradox of the Heap. This is essentially the same with the Theseus’s.

Finally, I would like to deal a little bit about Goedel’s Incompleteness Theorem. This theorem is as follows. If a system has no contradictions, there is at least one statement whose veracity can never be decided inside the system. This theorem is uncomfortable, posing a limit to mankind. But this unpleasantness is all the common with the ones people always feel in the analogous continuum and waves. Therefore, this theorem will be just ordinary in the analogue set. However in the process of demonstration, total order of the number is used. Total-order may require some modification on demonstration, because analogue number is never in total order.

II-3, Exterior of Science Related

=Practical Profits of Possible Logic=

Value of studying possible logic is never limited to an academic interest. It

really serves everybody's daily lives. This is because the daily life is a series of judgments between incomparable matters. For example, you will compare which to choose, design or function, to buy an electric pot. Management board must decide to which the board allots fund, advertisement or product development. In these cases, there is no scientific method to objectively compare incomparable matters. To compare them, we need subjectivity or affinity, and the judgment is never unique, but will vary depending on the situation. And even though incomparable, you should manage somehow to compare and choose out of the choices using possible logic, because otherwise you can never go forward.

There is a concrete example on how the possible logic has practical values. If a shop clerk asks customer "shall we send the purchase material, or will you bring it by yourself?" more people choose to bring it by themselves. But, if the clerk ask "will you bring the purchase material by yourself, or shall we send it?" more people choose to send it. Based on this possible logic, many shopkeepers instruct their clerks to practice the former to save cost.

Possible logic may control even national profits. There are quite a few territorial problems in the world. People try to settle the problems by diplomatic negotiation, and many nations declare that they will solve the problem according to the international law. This is a gentlemanly manner, but if you really believe that the international law is almighty and impartial, I must say that you are too naïve. International law is in fact a regulation between sovereign states, so it is not really mandatory, to be often immature. In a word, it is still possible logic. Judgment of the international court is very often only result ratification. For example, Israel captured Eichmann in the foreign nation, and hanged him by inventing "crime against humanity". And the world never protested against this activity. Just like this example, your territory may be captured, if the opponent nation is much more excellent in advertisement, even though you have enough reason.

As pointed above in the previous chapter, we must use classical deterministic logic for promise, agreement and especially legal acts, to keep equitableness and reproducibility. However, since it is practically impossible to gather all the proofs in the trial, the judge supplement the lack of evidence

with his expert impression. Here impression is typically a possible logic, even though the judge is an expert. So, I would say that possible logic is already used even in legal acts in the background. And I dare to propose to use the possible logic even in foreground, to reject barefaced evasive answer like "there are none in memory".

=Divination=

One of the most typical examples of the possible logic lies in divination. Divination in general is typically a non-science or even pseudo-science. So, divination is a good example to see the difference between science and possible logic. There are many kinds of divinations, and the first example is blood-type classification. The classification is a claim that there are general tendency of characters according to the blood-type. People of A-type are said to be earnest, sensible and pessimistic. People of B-type are said to be self-reliant, progressive and capricious. People of AB-type are said to be smart, cool and cynical. People of O-type are said to be simple-minded, optimistic and meddlesome.

This classification was even developed to discuss about groups like ethnicity. "The Japanese people have much A-type, so they committed hopeless suicide attacks in the Pacific War." "The Chinese people have much B-type, so they are realistic." "The Western people have much O-type, so they are pushy." "People of the Indian have no B-type, which brought about their defeat." This classification is also used to discuss affinities. "The people of AB-type like B-type, and hate A-type." "The people of A-type like O-type, and hate AB-type." And so on. In fact, many people are more or less using this classification as a hint to judge people.

However, there are also quite a few people who do not believe in this classification. They say "only 4-type classification is too simple to classify people", "blood type and character are so distant, and there can found no chain of logics between blood type and character" or "it is fatalism and ignores the acquired factor". Moreover, it is already demonstrated statistically that there is no correlation between blood type and character.

Result of statistics may vary depending upon what items to analyze, and upon how high the significant level is. In fact, this report has not the least intention to argue against the scientific fact that there is no correlation. I agree that blood-type classification is never a science. But, please pay attention that statistic procedure has an implicit premise that it is science. And I discussed above in the previous chapters that there are also important laws outside the science, like knowhow, knack, wisdom and insight. If measured by the probability on how the blood-type classification can predict well, it will be much less than 50%, just like the example of finding bathroom in a park. But the classification can predict well at the very typical moment with wisdom and insight. The discussion in this paragraph indicates that the classification is typically a possible logic.

It is never an objective law as far as the law is based on a possible logic. It is a subjective law because it bears wisdom, insight and awareness. For those who do not believe it, it is never a law. Possible logic has high risk. You can even insist for example Lysenko theory (heritability of acquired characters), geocentric model (Christianity, negation of heliocentric model) and creationism (Christianity, negation of evolution theory) as “truth beyond science” based on the formalism of possible logic. Then what we should do? We should train ourselves, our wisdom and insight to be distinct between the possible truth and the sheer mistakes.

How about other divinations? Tarot, alchemy, I Ching hexagram, physiognomy, palmistry (chiromancy) and astrology will be among the most famous. They are all very excellent as philosophy. But it really depend upon you whether you believe in them or not. Anyway, please keep it in mind that to predict well in these divinations, special talent, intuition and experience are required. I want to ask you never to discard or reject all these possible logics, in spite of the fact that there are so many trickeries. If you reject them all, it is too wasteful. There are quite a few witty laws worth to study.

For example, traditional medicine was once prevailed and still utilized in many regions, being sometimes as a part of divination. Their basic theory is totally different from the Western scientific medicine. Traditional medicine has no scientific foundation, but it really works. For example, how can you

describe the effective ingredients of medicinal herbs? They are usually super macromolecule, and are a mass. So, the essence of herbs is not describable nor can be organically composed. They are beyond science. Therefore, they fall in the category of possible logic, not science. And which do you want, remedy or scientific explanation? Of course, you want the remedy. Then, please keep working on the possible logic.

II-4, Logic and Culture Related

=Logics and the Background Civilizations=

In this section, I would like to discuss a little bit about logics and their background cultures. As for the possible logic, it is characteristic in having deep and positive meanings in contradiction, as pointed above. And such contradictory attitude is remarkable in the Oriental culture. In animistic polytheism, gods contradicts each other. In Buddhism, Q&A books for the spiritual awareness "Koan" consists of contradictions. In yoga, tuning in to the heavenly vibration is very important. "Modest middle" "deep implication" "vagueness", "flexible", "esoteric" and "vibration", keywords of the possible logic are also those of Oriental culture and religion. So, we can conclude that possible logic has its root in Oriental culture.

From this point of view, let us pay attention to the classical deterministic logic. It treats contradiction as taboo. You are finished if your argument drops into contradiction. "Point-wise", "rigid", "two-valued" and "exoteric", these keywords of classical logic are also those of Western culture and Christianity. So, we can conclude that the classical logic has its root in Western culture and Christianity. Here, I mean that the classical logic is neither neutral nor impartial. Rather it is in contrast to possible logic, and these two logics are complementary each other. In this sense, we can say that the world that bears only classical logic is crippled.

Christianity is a typical monotheism. In monotheism, God is almighty and governs everything, omnipotent, omniscient and omnipresence. Also in Islam, Allah exists before the creation and after the end of universe. He has neither beginning nor end. In monotheism, everything should be attributed to God,

so the theology becomes very logical with no contradiction. Different from Oriental religion, monotheism emphasizes little to spiritual training or experience, and most efforts are centered to the study of Holy Scriptures like Bible or Koran. Logical study is much more important than spiritual training, because the essence is to keep logic in memory. This scripture oriented attitude requires study, diligence and devotion. Islamic holy war "jihad" originally means "paying effort".

In monotheism, people are divided simply into two, those who believe the doctrine or not: there is only yes-or-no, and there is no middle. The doctrine is very rigid, and there is no flexibility to apply itself to the situation of the applicant. The doctrine is so rigid that even a small deviation will be branded to be heretic. The doctrine is very artificial at the same time, because it is created by reasoning, not by passion, in order to attribute everything to single God. As a result, there is only little room for pure humane feeling to participate. Syncretism, mixture of different doctrines or logics, is really damned, out of the question and sheer mistake.

Now, it is worth remarking that most of these characters of Christianity also fit to the science. Everything should be logical and well-founded in science. To be contradiction-free is much more important than whether it has any meaning. Even a taint of subjectivity is not allowed. Leap or error of logic is severely attacked as heretic. It is strictly required to abandon purely humane subjectivity. It is also severely required to be a servant of truth.

As understood so far, science and Christianity are almost like the two sides of coin. But why conservative religion can be another side of the advanced secular science? Protestantism started by negating the authority of pope. But the reformation went too far. Protestantism at last discards all the spirituality and mystery. Protestantism thus became rather something to be called as moral as ethics. By discarding these religious essences, Protestantism became nothing but something to analyze written manuscripts, and thus became logical. In a word, Protestantism is lowest and lightest as a religion, being almost non-religion. This secularity, together with its logical nature, cherished science instead of hindering it. Religion usually hinders science or any advanced matter by its conservativeness.

As for relations between science and Christianity, people tend to consider them as opponents, the trial of Galileo to be the typical example. Of course, there would have been some conflicts, and there were also some moments when Christianity considered science as heretical. But, to be heretical implies that they are close being basically in the same category. In general, modern science took shape by tracing the trait of the familiar Christianity.

"Science as a sect of Christianity" is typically seen in the fact that the regions excellent in science are almost the same with the influential area of Protestant. I would like to add more evidence to the discussion above. In Western countries, even ordinary people tend to think daily with logics rather than simple humane feelings. In a word, for the Western people, scientific thinking is no special, but it is just a daily custom. Thus, Protestantism cherished science. But to grow science is never a honor of Protestantism. It just happened so by an irony of history.

By the way, if Oriental culture does not consider diligence and efficiency as the first priority, why does it not keep company with unproductive boring person or matter for a long time? First, this is because such an act is no pleasant. As pointed out above, "pleasure" is one of the most important keywords in the possible logic and Oriental culture. Second, also as pointed out above, "modest middle" is another important keyword, and to be middle is different from boring or nothing. To be nothing is one of the extremes. Of course in the possible logic and Oriental culture, diligence and efficiency will also be esteemed, but to some extent. They will be esteemed as far as they are natural to human.

=Monotheism and Science=

I would like to discuss more about the relationship between Protestantism and science, especially from the religion side to the science side. Monotheism is in general monotone and too logical, because the theologians work very hard to attribute everything to his almighty God. As a result, they become too logical, too narrow and too servile. They deny pure humane feeling, never forgive even small deviation, and always require believers more

contributions. As a whole, believers tend to lose his natural common sense. They lose ability to avoid danger and they lose their sound mind. Is such loss different from new cultic religion? In fact, many cultic beliefs borrow basic ideas and techniques from monotheism especially for mind control, looting money and exploiting labor. Currently there is no cult in science, but its narrow-minded character is nothing but that of Protestant.

In Protestantism, theologians expel unfounded or subjective statements, never accept contradiction, disgust supernatural phenomena, form hierarchy in spite of the equality principle, addict to theological debate and persist in mission. As for believers, money is looted, labor is exploited, and meaningless and foolish activities are forced and praised. These characters are almost applicable to cultic beliefs and to some extent to science. Here again, there is parallelism between conservative religion and advanced science, as insinuated in somewhat different context by Fritjof Capla.

And it is worth to point out that there is one more brother to Christianity and science. It is Communism. Also in Communism, everything should be logical and well-founded on their holy scripture written by Marx. There is only two-valued logic of believe in Communism or not. It stubbornly insists that there is no contradiction. Communist does anything to gentiles for their ultimate purpose including telling a lie. There is never-ending dispute of directionality. There is never-ending conflict to get stronger interpretation right of their holy scriptures. Communists molest believers as servant. They have multiplex hierarchy. They are arrogant to call religions as opium or heretic. They believe their challenges to the current world as a holy war. And so and on.

Most of these keywords are also applicable to monotheism and science. Only difference may be in the absence of God, to which the boss man usually takes seat. Currently monotheism occupies more than half of the world if communist is included, and still spreading. Monotheism is really hazardous to human. And almost the same danger may exist in “belief in science”. “Too much is as bad as too little”, is a familiar proverb in Oriental culture.

=Oriental Civilization=

In this section, I would like to discuss more about relationship between Oriental culture and the possible logic, especially from the culture side to the logic side. First, we pay attention to the concept of impermanence. This is one of the general laws in Buddhism. This Buddhism law indicates that there is nothing constant, absolute or extreme, and these keywords have parallelism with softness, relativity and modest middle of the possible logic. Contradiction is constructive and productive in both Buddhism and possible logic.

Second, Oriental culture makes much of spiritual awareness and mysterious experience. Buddhism is open, not exclusive, to another sect having different doctrine, since content of awareness is much more important than the formalism. These characters are in parallel with realistic nature, wisdom and insight, and flexible nature as a wave, of the possible logic. Third, Oriental culture never emphasizes too much on reasoning as a method to reach the goal. This disregard of reasoning is in parallel with the contents-oriented character of the possible logic.

Fourth, animism including Shinto makes much of simple humane feelings, esteems all existences, because millions of god inhabits in all the existences, including plants and land, and try to coexist with each other. By feeling directly the millions of god, animists naturally accept nature's wide variety reality, and accept even supernatural power. There can find no problem in syncretism, a mixture of different doctrines. Syncretism necessarily contains uncountable numbers of contradictions. Shugendo, typical syncretism as ascetic animistic Buddhism, was developed in such background, and is often considered to be the "ultimate religion". These characters of Oriental religion are in parallel with humanity, simplicity, variety and flexibility of the possible logic.

To summarize the discussions above, science that may look as if it is ever-neutral and impartial, is in fact a procedure incubated in Western culture and especially by Christianity. Science is far from natural or simple. Science may also look as an excellent receptor of wisdom and insight, but in

reality, science usually admits only a matter of course just like Christianity. So, to be a scientist almost means conversion into Christianity. Not many people explicitly feel conversion, but many must have felt the artificial and frigid character of science. As for me, I really hate Christianity and never wanted to leave Shinto life, so I quit becoming scientist. I have been pursuing the real freedom of spirit up to now, and finally arrived at this report.

=Excessive Strictness=

There is also a distinct feature in science that it demonstrates a matter of course as a result of tremendous labor. This takes place because the classical deterministic logic is often just a superficial change of logical manipulation. For example, there is no addition of new information in deduction, so it is always the change of appearance. For example, demonstration procedure of Pythagorean Theorem is just transformation of the formula or the triangle, so this theorem is just a matter of course, even though many mathematicians praise it as one of the most beautiful theorem. The theorem is all the same with a different appearance. Such a tautological event occurs very often. For example, result of full scientific research to reduce accidents in a factory is the thorough helmet wearing. Scientists often recommend to never rely upon the common sense, but he better check his results if he gets some unreasonable result. Even though the result may look bearing surprise at a first glance, it is just a Columbus's egg very often.

Of course perfect reproducibility and infallibility, namely the scientific attitude, are very important. But are these items the only important matters? These items require people to be like monotheistic. But, if you really abandon common sense, you lose sensibility. There will be no pleasure in the world. To be like God sounds good, but it really is a human alienation to be a servant. Excessive strictness has a side effect of human alienation. The sense of pleasure has no meaning for both God and servant. There are just diligence and efficiency.

Even in daily life, most of the judgment is based on possible logic, not on science, as a result the choice is not always the best but good enough. To live

a good life, training on the possible logic is more helpful than the training of abandoning common sense by science. Buddha said “when you are shot by an arrow, will you investigate who shot it or who made it before you remove the arrow? If so you will surely die.” Countermeasure is much important than investigation.

=Reason of Science Success=

If science is considerably a matter of course as stated above, why was science so fruitful and successful in raising the living standard of people? As the first reason, it may be paradoxical but the answer is that the science is a matter of course. In fact, all the scientific results are promised before scientists try to prove and find them. It is obviously a contradiction, if not promised but is scientifically demonstrated. As the second reason, attitude of discarding subjectivity conducts people to the objective world like physics. Physics bears perfect reproducibility, so easily formulated scientifically. After all, we can conclude that scientific procedure is already well established, so further success of science in the future is already promised. On the contrary, as there is neither promised matter nor established procedure in the possible logic, study of possible logic will be much more exciting, and will require real wisdom and insight. It is more exciting with much more degrees of freedom guaranteed.

To be more fundamental, why was Protestantism so successful in raising the living standard of people? Again it sounds paradoxical, but it is because the Protestantism is low and light as a religion. Just like the Protestantism by its low level succeeded in introducing minimum humanistic social scheme like freedom, equality and fraternity, or democracy and majority rule, it succeeded in introducing scientific results to human. Such items like freedom, equality and fraternity are also included in the teachings of all other religions including Oriental ones, but those religions shed more light on higher matters like spiritual awareness. As a result, in those higher religions, those basic matters became rather obscure. Please pay attention that both democracy and science are common as a matter of course, and never guarantee maximum. Rather, both of them guarantee only the minimum by tremendous efforts and labor.

In a word, low religion can introduce only minimum systems. Its social version is democracy, and its natural version is science. If you want to pursue higher awareness, you should learn from the higher religion. This higher one is the Oriental civilization, and its tool is the possible logic. To be the minimum, democracy and science are at low risk. Low religion brings out only minimum with low risk. As a contraposition, high religion brings out higher system with high risk. Low religion resorts logical study of written Scripture with no spiritual training, while high religion elevate people to the spiritual awareness with contempt to written or logical matter. Now that teachings like democracy is universal to all the religions, and Protestantism just played an introductive role, liberation of these systems from Protestantism is highly recommended, since otherwise nation of other religions like Islam will not esteem democracy, considering it to be Christian's local matter.

Now, by taking into account that even such a minimum procedure could bring about so considerable a raise of living standard, it is highly recommended especially to those who are bright and sensitive in wisdom and insight to join the formulation and meditation on the every aspects of the possible logic. Advancement so far is centered mainly at physical items outside of the human being, and from now on let us makes progress on mental items inside the human being. By doing so, the knowledge of mankind will become in balance and harmony.

=Toynbee=

The possible logic is in fact already used in its essence in the great thoughts, even before the possible logic is explicitly proposed in this report. Arnold J. Toynbee is one of such scholars. He is a representative history philosopher in 20th century, and his achievement is remarkable on the point that he first introduced systematic laws in the study of history. Before him, study of history was a non-organized listing up of individual facts. Starting point of his meditation was a question on what for the extinct civilizations and religions were? If their existence was in vain, why does merciful God permit waste? Here, extinct ones are like Mycenaean Greece, Roman Empire,

Zoroastrianism or Nestorianism. Did they just waste tremendous amount of energy? Were their lives meaningless?

And his answer after long meditation was as follows. Encounter and conflict of different civilizations, through a creative sublimation of contradiction, brought a new and more universal civilizations and religions. Extinct civilizations were never wasteful, since they served as incubators for new ones. This law is so well organized as to direct the main stream, although there are quite a few branchy counterexamples. This law is of course meaningful with full of wisdom, but not always true, so it is apparently possible logic. Of course, proposal of his theory caused serious turmoil and controversy, mainly by his ex-colleagues. However after a long term of controversy, his law was accepted as one of the great heritages of mankind.

Trial and series of reactions concerning Toynbee's law is a typical and universal example for those who propose laws based on the possible logic. Possible logic has always counterexamples, and scholars who are specialists in those counterexamples are not happy on the law, so there will be even hysteric harassments. But needless to say, social science is always full of counterexamples and contradictions. And it is the duty of excellent and brave people to find out and pick up robust truth out of the melting pot.

=Toynbee Now=

More than 50 years have passed since Toynbee proposed his law. His proposal together with his manner of dispute was totally accepted. In a word, the style of finding laws in social science was accepted. And currently, main arguments against his theory are not branchy ones, but those based upon his arena. Since his laws and arguments are deeply related to the second object of this report, namely "science and religion", I would like to discuss a little more now.

First argument is "the most universal one is not always the best". The essence of his law is that extinct civilizations are meaningful as sacrifices to the best one. He listed up Christianity, Islam and Buddhism as the most

universal and best religions. However, as he was a pious Christian, he wanted to say that every lost culture will be ratified to the extent it contributes to the Christianity. However, recently arguments occur that so called "local and immature" religions like animism have their own excellences. This argument is the one based upon his arena. This recent arguments are against Toynbee's "universal is the best" conviction.

Second argument is, if "incubator of Christianity" justification is no more effective, how can we justify the extinct civilizations? The answer is that these civilization extinguished by some unhappy accident. These cultures are never low nor have high intrinsic possibility of extinction. We hope that these civilizations and religions revitalize again now, of course their cruel elements being removed. In retrospect, thrift and decline of religion strong depend on the relevant political power and meddlesomeness of the missionary. For example, Nestorians and Zoroastrians were converted forcibly to Islam. Africa, Asia and South America were usurped and victimized by either Islam or Christianity by military power and pushy mission works. Here, attention must be paid that both Islam and Christianity are monotheism. Monotheism is still propagating and is rampant even now. It is really a challenge to the stability of human system, and is jeopardizing mankind by monochrome.

Third argument is that "meaningful because it created the better one" way of thinking implies efficiency supremacy or result supremacy principles intrinsic to Christianity and monotheism. Is human just a slave or parts of God? According to Oriental polytheistic culture, the purpose of human existence is a pleasure. So, the lives of people in the extinct civilizations are meaningful as far as they enjoyed their lives. Since each civilization has its intrinsic pleasure, I want them to revive again to afford more choice to human.

Now, it is moment to generalize the lessons of Toynbee. Let me list up some of the greatest thoughts of human so far. Heliocentrism (Galileo), communism (Marx), evolution theory (Darwin), unconsciousness and psychoanalysis (Freud, Jung), embryological parallelism (Eamst Hekkel) and continental drift theory (Wegener). They are all too great, and none of them is thoroughly demonstrated by science. Nevertheless, these thoughts

are accepted as greatest thoughts of mankind, by passing through long-time criticism. In other words, these great thoughts are all possible logics just like long-lived proverbs.

This fact means, by the opposite interpretation, that thoroughly scientific facts are just local and small-scale findings, being far from great thought of human. In fact, it is practically impossible to prepare every demonstrations and foundations to such great thoughts. Again, the scientific procedure is the one to guarantee minimum with considerable labors. So, I feel only little excitement in science.

II-5, Mathematical Physics of Possible Logic Related

=Analogue Space =

As pointed out above so far, the discussion will become much more straight, direct and concrete, if we can explicitly propose a number system intrinsic to the analogue set, continuum and vibration. However, I must confess that this trial in not yet successful. The number system will be a considerable particularization of the analogue set, as is the case of digital set. Even though the number system is not yet formulated, if we can formulate the operation system, we can introduce analysis using unknowns. And if we can introduce analysis, it may lead us to calculus of continuum, like differential and integral calculus. Please pay attention that very small line segment in the epsilon-delta limit can be better viewed as continuum. If operation and calculus of continuum is developed, it may have some influence not only on mathematics but also physics like grand unified theory.

As I also pointed out in the previous chapter, there will be some other number systems even for the digital set. Q-number, an extension of conventional C-number will be one of such “other number”, but in fact I expect something much more radical. The new number system will exceed even field and ring algebra. Even such drastic extension in the digital set may contribute a lot to the advance of physics, needless to say about the algebra of continuum.

Now I discuss some more about physics. So far, fundamental concepts of physics are all described in mathematical formula. And in deriving the formula, guiding principle is aesthetics of symmetry. This conviction will be true at least to a certain extent, as demonstrated by the success so far. However, mathematics is not a slave of physics, and it does not exist in order to serve physics. In other words, physics is never a mere application of mathematics. From this point of view, mathematical formulation of physics so far may be just serendipity. We mankind may be satisfied only with facts that can be formulated. We mankind may be blind to the world outside of mathematical formulation.

Now, I would like to see a little about modal logic. The modal logic may look similar with the possible logic in a sense that both logics treat with uncertain non-deterministic matters. Modal logic expresses both necessity and possibility by operators, and these operators are extensions of the conventional classical logic. But in the modal logic, denial of denied possibility is exactly equal to necessity, and denial of denied necessity is exactly equal to possibility. From the viewpoint of possible logic, such operations are nothing but formal logical operations, having no relations with wisdom, insight or vibrant continuum. In a word, modal logic is still deterministic. So, it can be concluded that modal logic is very different from and have no relation with the possible logic.

By the way, are there any general tactics in deriving laws of possible logic, or are laws always individual with no meta-rule? As pointed out above in the previous chapter, the possible logic never prefers unified theory. From this viewpoint, there seems no need for meta-rule. However also pointed above in the previous chapter, the possible logic does not require rigorous demonstration like that of classical logic. So, it looks easier to find meta-rules. Anyway, we need to collect more examples of possible logic to answer this problem.

=Communication and Possible Logic=

As pointed out above in the previous chapter, the possible logic is very different from probability theory. The former is a degree of wisdom, while the

latter being a degree of ignorance. It is also shown by examples that conversation makes sense because of the wisdom contained in the possible logic. In the probability theory, measure to have a correct answer is a random shoot. It will hit someday. Again to be the same as science and democracy, it just guarantees the minimum with low risk. But in the possible logic, person with good sense can hit relatively easily the correct answer, although there is no guarantee of minimum.

Our daily communication usually makes sense. This means that most people have certain amount of wisdom to carry out daily communications, and communication is typically a possible logic. Human will acquire such wisdom either a priori or a posteriori. And this argument can be a further support that the human's basic principle is possible logic, not probability theory. An analogue number system to be found must reflect, or can express this communicability characters.

=Death of Contradiction=

Analogue set or continuum is never a point, and it has certain expanse. This means that continuum has certain inner structure. For example, "kitchen" has its inner structure, largely clean parts and non-clean parts. And you can see the detail of the structure, by taking out a part or paying attention to a part. Owing to this inner, subtle and gradational inner structure, the possible logic is neither deterministic nor totally ordered. By grasping successfully the center of relevant essence, you can derive remarkable and outstanding conclusions. In other words, if analysis is done by an idiot and dull person, the result will be a disaster. And to judge whether the result is meaningful or absurd, you need again a wisdom and possible logic.

Now, please pay attention that comedians sometimes make audience laugh by twisting the logic purposely. In an extreme case, comedians make audience laugh by purposely inventing contradictions. Yes, laughter is deeply related with subjectivity, and so with the possible logic. Different from classical logic, veracity is not utmost important in the possible logic. Rather, amount of wisdom and information is more important, and the amount is

high very often when the logic is contradictory. Almost the same phenomena take place with spiritual awareness. In fact, sermons of Buddhist high priest sometimes sound like laughter or joke. Delicate nuances that can be seen in the literature or the art are also brought about by a cunning twist of possible logic. This phenomenon is never strange, because the possible logic has deep relationship with subjectivity. The key word “pleasure” is also subjectivity. Pleasant daily life is given be contradiction very often. Contradiction-free daily life is just mediocre and no fun.

II-6, Possibly Deterministic Law Related

=Examples of the Law=

What is the purpose of proposing possible logic? It is because there are certainly meaningful matters outside the science. Too much reliance on reasoning has a danger of narrowing yourself. If everything can be solved by reasoning, life and world have no fun. Then what are the important matters outside the science? Proverbs and sayings, wisdom and insight, supernatural but useful phenomena like minus ion, laughter and jokes, literature and art, some divinations like blood type classification and chiromancy. These not-a-matter-of-course-but-interesting items can be accepted as truth to a certain extent by possible logic or as a possibly deterministic law.

The possibly deterministic law states that in spite of probabilistic nature of the microcosm, the macroscopic transition is not merely a simple accumulation of microcosm, but the transition has a deterministic character in a sense of possible logic. Example of the law can be found well in history. However since there is no ifs in history, it is not easy to develop possible logics in such a manner to be accepted by everybody. Moreover, to discuss history or anything, the depth of discussion is necessarily limited, so it is practically impossible to take into account all the relevant happenings to the discussion. So, knowing that there is a limitation, I would like to present somehow some examples that can be an example, not always correct, of possibly deterministic law.

=Communism=

There can be many questions in history that include “if”. Now, I propose one of them. If it were not for Karl Marx, does communism show up? Of course, a genius is needed for such a great thought to show up, and Marx is genius, but I suppose that the communism would show up sooner or later, if there were not for Marx. Even a genius like Marx was not independent from the surrounding contemporary culture. In the present case, cultures to had influence on him are humanism, science, industry and Christianity. In fact in communism theory, workers overwhelming in number are a copy of molecular statistics of thermodynamics. And as soon as these fields become mature, some genius would propose something called communism. It could be even earlier than Marx, if another genius happened to have participated in the conflict of capitalism and humanism.

And even if it were not for Lenin, communist nation would have shown up sooner or later. Of course, he needed the Marx’s theory as premise, and the character of the nation would have varied depending on the characters of Lenin or his equivalent. However, even if it were not for Stalin, the Soviet Union would survive, because he used communism only for self-protection. If it were Trotsky instead of Stalin, the doom of Soviet Union might have been very different. It might have finished earlier, because Trotsky is idealist and not realist. Stalin showed out the worst aspect of communism through his self-protection, which in turn called for the anti-revolution of Gorbachev. In other words, if it were not for Stalin the Soviet Union might have lingered and have lasted longer.

If it were not for Apostle Paul, did Christianity become global religion? My answer is negative. Paul had no ability to understand spirituality, and invented Christianity by picking up only what he could understand. As a result, Christianity became almost like a moral than a spiritual training. Moral is much universal and requires less talent and experience. So Paul’s Christianity, I would rather call it as “Paulianity”, could be accepted irrelevant of the background culture. However in exchange for universality, the Christianity was so contaminated by Paul’s personal temper. He was stubborn and arrogant. He is so arrogant to consider himself committing no misjudge. He was also very pushy. He lost the basic Jewish nature of high

adeptness and flexibility. He was just a reckless rusher, and lack in humor. He discriminated woman, persuaded man to be single, and expelled laughter by stubbornness. Modern Christianity is criticized and made fun as “they changed everything except themselves”. In fact, Paul tampered and invented Christianity. If it were done by some other apostle, Apostle Thomas for example, it would be the real Christianity, which I would rather call it as “Jesusism”.

Paul, by his perfect lack of spirituality, tried to explain the life of Jesus by reasoning. And by reasoning, he concluded that if you admit only two miracles, you can understand Jesus by reasoning. The two miracles are birth from virgin and death for compensation. Each mission works of Jesus was no importance for Paul. Paul’s analysis on Jesus was perfectly the same, even if Jesus was an outlaw like Barabbas. The two anomalies of “only birth and death” are just boundaries of Jesus life. It is noteworthy that theology of Paul coincides with current digital set theory in the sense that only boundaries are important. Paul’s theology and point set theory are common in their artificialness. If Christianity stays superficially logical as it is now, I should call it as “hinayana Christianity”. Here hinayana literally means “inferior vehicle”. It is just a moral rather than a religion.

By faithfully copying the Paul’s arrogant character, Christianity tried very hard to control, govern and exploit the nature and environment. And exploitation resulted in irrecoverable breach of the planet earth. In contrast to the Christianity, in the Oriental culture, coexistence and love with nature and environment is expressed in the following famous term “plants and even land have Buddha’s nature”. Not only human, but also even inorganic land can become as heartwarming and spiritual as Buddha. And Buddha said “those who say they know do not know, and those who say they got awareness do not get very often”. Here again, the essence is the active use of contradiction.

=Modern Japan=

Japan closed the country about 1600 A.D. to prevent colonization of Christianity and European nations. The closure continued some 250 years,

and Japan opened the country about 1860A.D. About the same time, Japan started so called the Meiji Restoration. It was a restoration of the hegemony from Shogun to Emperor, but the important aspect of the restoration was a quick absorption of Western culture and technology. The new policy turned out to be successful. Was this success high possibility? I do not think so.

Of course the Meiji government paid tremendous effort, but taking into consideration that all Asian nations were colonized except for Japan, the success was rather a miracle. One of the serendipity was the exquisite timing of opening the nation. If it was earlier than the reality, Japan would have been colonized by the momentum of colonizing other Asian nations. If it was later than the reality, Japan would have been broken open by Western military forces. The second serendipity was that Japan has only small amount of natural resources, and was located in the distant far-east Asia. There looked comparatively small merit to colonize Japan. In this lead time, Japan has succeeded in modernizing civilization very quickly. However, it should be also pointed out that there took place no restoration nor quick change and growth in other Asian nations. Here, we can find flexible and diligent national traits of Japanese people. These good traits helped to elevate the possibility. This flexible character can be attributed to the syncretism.

Then, Japan won Sino-Japanese War only after 27 years of restoration, and Russo-Japanese War after 10 more years. The possibility of the victory, especially the victory of the second one, would have been considerably low. Even in the first one, China had a big fleet, much bigger than that of Japan. If China was not in the decline phase, and if Empress West Dowager did not have misappropriated the navy budget, Japan would have had relatively small chance for victory. In the second one, Russian Empire was a superpower, and steadily realized its eastward policies. The moment of battle start would have been among the best but still reckless, and the fate of war had been almost hopeless. The only advantage would be that Japan knew that win was almost hopeless. In fact, Japan beat Russia only locally at the far-east area, and changed the local and bare win to victory by rather diplomatic efforts. The military did not go too far this time. Again in this case, Japan overturned the low possibility of win to a higher one, with diligence

and modesty.

However around this moment, Japanese national traits showed a change. The Japanese citizen took the bare and miraculous win of Russo-Japanese War for granted. Japanese people started to consider that Japan was really strong, at least spiritually, being constantly protected by millions of Gods. This excessive spiritualism made Japan blind, so the possibility of success became low whatever to undertake. This arrogance and imprudence as a result brought about the hopeless Greater East Asia War, which was developed to World War II. The war resulted in Japan's unconditional surrender, and lost much territory. This is a good example that sometimes low possibility can never be overturned even if there is tremendous effort.

Let us shed more light on the Pacific War. Japan's defeat was doomed by the Battle of Midway. If Japan won this battle, was there any chance for Japan to survive the World War II? My answer is no. After the Russo-Japanese War, the military authority became bureaucrat, and dropped in a totalitarian irresponsibility. Excessive spiritualism prevailed, although war is essentially a physical event. So, the strategy became unplanned, and Japan enlarged the front too much to support. Under such circumstances, the possibility of win became even lower. So, I would say that Japan would have been defeated sooner or later, with some detailed differences, which territory to lose for example. Does this conclusion mean that the result would be the same irrelevant of whoever the authorities were or how diligent they were? I am no communist. I agree that the ability of persons in charge largely affect the result. And the possible logic also supports this conviction, in a sense that possible logic esteems wisdom. If it were not for President Roosevelt, General McArthur and Admiral Nimitz, progress of the event would have been much more different.

Using examples, I discussed on the macroscopic deterministic laws so far. But in reality, there are many "middle levels" between microscopic level and macroscopic level. Going back to the example of war discussed above, it would have happened that soldier A happened to survive while soldier B sitting the next was killed shot. Such event would have happened so often just by chance. Does it mean that life of human is just random? The result of

war would be least affected by such random, but to survive or not is never a trifle matter for each soldier. Death and survival of soldiers is microscopic from the viewpoint of gross history, but is macroscopic and deterministic from the viewpoint of quantum level. Like this example, a “micro-macro set” can be taken in several hierarchies. This is again a general law of deterministic possibility.

II-7, Possible Logics in Daily Life

=de Facto=

Examples of possible logic can be found much more in daily life than in the science or academic world. There are many taboos and recommendations in each society, and most of these taboos are also possible logic. “Do not speak ill of others”, “be content with your lot”. These recommendations are rather common in mankind, and they are possible logic. “Give a bribe if you got a favor by police or official”. This persuasion is regional but also possible logic. In general, formal statements are rather classical deterministic logic, while real feelings are rather possible logic, because the latter connects tighter to the mentality and subjectivity.

Now I would like to talk a little about de facto standard. It is a spec authorized not by vote or conference but by selling to almost oligopoly a lot of merchandises adopting that spec. The spec becomes a standard without any official authorization process. The process is never democratic, and a fact that the spec was supported by many customers has an aspect of possible logic. The key strategy is how to grasp as a whole the favor of users by ignoring minorities. This character again reminds us of the possible logic. And as far as it is a possible logic, you need wisdom to win the race of standardization.

“American standard” would be the one of such trend. U.S.A. as a superpower has won and winning now in the protocol race of many fields, and as a result America itself becomes a big de facto. So, manufactures to produce and sell merchandizes in the world can never neglect the trends and activities of U.S.A. It is no good if it is a limit on freedom of choice. The

damage would be comparatively low, if the standardization stays in the manufacturing sector. But it is impossible. Sooner or later the standard gets influence on local culture and civilization, and finally on the mentality of that regional people. If the influence excesses too far, it will become so called a “mental colonization”. Mental colonization and resulting clash of local culture is as bad as physical colonization.

I personally believe that most dangerous element of the American standard is the naïve belief of the efficiency supremacy principle. This principle is originated from Christianity, and as a result is persistently evangelized even now. Christianity has a long history of forcibly convert gentiles under an excuse of kindness to educate them and save from ignorance and poverty. Such naïve kindness is in fact most hazardous, because they are innocent and even intoxicated in self satisfaction. But the locality in culture is in fact a lifeline to mankind. We should guard the diversity of culture for all the mankind. It is an obligation. We should work hard to confine the influence inside of the technology sector. Here again, polytheistic people has a culture of esteeming diversity and modest middle. I hope the 21st century to be of Oriental civilization. Prevalence of the possible logic may help us toward this goal.

=Economy=

One of the deepest effects of globalization is the belief in ordered numbers. Billions of people rush into a single race of Nobel Prize or Olympic games. In such competitive society, most of the people are doomed unhappy, although the efficiency may be high. But what is the efficiency for? Everything including efficiency should exist for the happiness of people through the elevation of life level. But in reality, most of people are not satisfied. There is a Christian order “One for all, and all for one”. But in fact this order means “One should work for all, and all should work for one, everybody should work all day long”. Racing society is obviously no good, everybody being servants. If the society is diverse in nature, there will be much more goals, and more people can feel pleasure of achievement. “To be a top runner in some field in a village” will be the happiest society.

Economy is one of the ultimate fields for the number believers. The current world is an economy supremacy world. To save people from economy supremacy, non-ordered number system of the possible logic will serve a lot. Wisdom is also important to escape from the antinomy of demand or supply. Economy is a system hard to control, because the measures for control are only limited. There are only official rate of interest and quantity of currency. And discussion of the antinomy is sometimes very poor and stifling. Here again, we need wisdom. Keeping distance from such barren disputes, please concentrate yourself for raising an added value. I believe that hint for new business lies in locality, because local society is diverse. The current society is too concentrated in big cities. Let us start with raising local culture.

=Knowhow=

In the previous section, I told that to be a standard you should become major at first. In fact, everybody is hoping to be a major, or to be successful, or their hope to come true. Industrial sector has the same hope, and it has great interest in success. If we can get some hint for success from the possible logic, it would be a great help to many people and fields. Is there any general rule or knowhow to be a major? The easiest method is a horizontal development. It is to apply the lessons of success event to similar matters. But this rule requires only low wisdom, and the result is rather mediocre. Better procedure is to find what you want first and then create the same thing. Another procedure is to take a questionnaire and find what people want. It seems that there is no better general rule, and you should use wisdom individually depending on the matter.

Edison invented many electric apparatus, and even founded General Electric Co. Such a great achievement can be carried out only by very great genius. Yes, Edison was genius, but even for a genius like him, total income by invention was not a great amount. Some inventions took time until they were sold. And he never told the knacks or general rules for the successful invention, because invention is a very individual matter and deep knack is difficult to express. Einstein found many great concepts of physics in a short time. He is also genius. And again, he never expressed knacks or general rules of finding laws, because finding laws came from the deepest part of

mind and meditation, and it is impossible to express the knacks. It seems that things are always like them. To find something new and useful, you first need talent and then you should use wisdom appropriately to your matter or field.

II-8, Literature and Art

=Mythology=

Each nation or tribe has its own myth. From the modern viewpoint, myth is mostly just imaginary story. I also agree that it is never scientific. They are rather virtual stories. But nevertheless, systematic study on the myth will be meaningful, because through the study we can find significant aspects on the subjectivity, imagination, hope and romance of mankind.

It is usually seen that quite many achievements are attributed to some hero of legend. According to legend, King Arthur did incredible number of miracles, achievements and blessings in response to the request of people. Among Japanese legend, the greatest hero is Yamato Takeru. He was a prince of Yamato dynasty, and worked hard for the dynasty to subjugate local adversary groups. Thousands of legend on Takeru was handed down widely in Japan, and each one of them is very exciting and full of miracles. Since it is apparently impossible for a single man to make such great achievements, the myth is generally thought that achievements and hopes of many people were entrusted in him. This conclusion is correct but no fun, because it is a scientific conclusion. I would rather accept the whole story as it is, from the viewpoint of possible logic, not as science but as a hero story. By doing so, we can see the inside of our mind. Viewing the mind is much more exciting than scientific conclusion.

=Literature and Art=

Literature and art are the polar opposite of science, the latter being the perfect objectivity, while the former perfect subjectivity. Is there any room for logic to participate in the literature and art? My answer is yes, if the logic is a possible logic. Description of subjectivity and fancy does not mean that

there can be anything freely. For example, abrupt change of personality or situation in a serious story just spoils it nonsensically. Any story or art has a motif or a message to deliver, and any disturbance against it is no welcome. This fact means that even in literature and art there is so called a tacit logic, and the tacit logic is a possible logic. With this logic, literature and art can form a beautiful continuum. And as far as it is continuum, it has vibration and contradiction. Well posed vibration and contradictions serve for literature and art to have deep implications. In this sense, we can even say that vibration and contradiction are the excellent spices and sources of artistry.

I would like to show an example that essence of a good literature is contradiction or unreasonableness. The example is a Japanese tale of Urashima Taro. Urashima, as known worldly by the Urashima effect in relativity theory, was a young and nice fisherman. One day on his way to work, he saw a turtle tormented by kids. So, Urashima saved and released the turtle. Several days later, the turtle invited him to the Dragon's Palace. The turtle was a subordinate of the princess Otohime there. Otohime thanked Urashima and invited him to a grand banquet. After a long series of banquet, he suffered from homesickness. On his return home, Otohime gave him a mysterious box, warning never to open it. When he came back home, he found that everything in his homeland has changed. There were neither acquaintances nor familiar houses. He became upset, and carelessly opened the box. Then white smoke came out, and suddenly he became an old man. Just one day in Dragon's Palace was in fact more than half a century.

This story is very sad and impressive. He had no measure to be saved. There is a similar story in Western half world. The hero is named Rip van Winkle. He was a woodcutter. One day, he went up to a mountain, and he found a group of people playing a very exquisite game there. Rip, lazy in his nature, joined them and played together. He wined and dined with them merrily, and fell asleep. When he woke up and went down to his homeland, he just found that everybody and everything have changed. One night sleep on the mountain was in fact twenty years.

These two stories are quite similar except for one important point. In the

case of Rip, cause of the tragedy was his laziness. His fault turned back to him like a boomerang. So, the story of Rip is an instructive story with no irrationality. Boys and girls who are told this story will make up their mind to be diligent forever. But this story is somewhat cheap just like slogans of road safety. How about the case of Urashima? He rescued a poor turtle out of mercy. His act is exemplary. But his fate was sad. Why can it be so happen? The sorrow of Urashima undulates in our mind forever. So, this is a deep story. It is a deep story because of irrationality. There are pathos and painfulness.

In general in Oriental literature, irrationalities and contradictions are positively used. By doing so, story becomes a highbrow literature. Many Noh works are also based on irrationality. For example in “Sumida River”, a boy was kidnapped and sold to a slave trader. The boy escaped but finally he died at Sumida River. His mother tracked the boy and also reached Sumida River, only to have found that her boy was already dead. At that moment soul of the boy appeared, met his mother and told farewell. And the mother got crazy out of sadness. There is neither salvation of poor people nor reasonable lessons. The audience just shed tears. And the tear indicates the masterpiece of that Noh literature.

Essence of the literature lies in contradiction. This remark is symbolically expressed in the title of literary works. The title is important because it expresses the contents in a word, and the naming of the title has great impact to augment the number of readers. There was once a movie entitled as “back to the future”. Future is something in the forward, but the title twisted the common sense. It intrigued people, and the movie was a great success at least partly by naming. You can find quite a few such examples in the art and literature. In a cartoon, the hero sentenced to a living man “you are already dead”. This announcement is again a contradiction, but the cartoon became very popular by this phrase. Here again, on purpose contradiction is the source of literature.

There are many types of contradictions, but the most outstanding one would be death. So, many writers dealt with death, and they even commit suicide themselves very often. For example, a famous writer Yukio Mishima

finalized his life and completed his literatures by suicide. For him, nothing is more beautiful than death, because the death is the highest contradiction, and to give a conclusion to his aesthetics of literature, nothing is more perfect than suicide. In fact for him, suicide is the perfect accomplishment much higher than millions of masterpieces.

There are also as many fields in art as literature. Sculpture would be a good example, since it uses material and three dimensional. Looking at world famous sculptors like Picasso, Rodin, da Vinci, Michelangelo and sculptors of the Roman Empire, we notice that their formation of muscle is very characteristic. It is as if the muscle is also an independent creature. The muscle swells up, breathing, vibrating and coming up toward us. In a word, for these great masters, muscle is a typical continuum.

As for painting, Picasso's pictures, far from realistic and somewhat decaying, would be a challenge to human reasoning and to mundane order. Calligraphy (Shodo) of Chinese characters is also a typical art. In calligraphy, invisible momentum that connects strokes is sometimes more important than the visible strokes. Chinese character, internally connected as an entity by the invisible momentum, is much more artistic than the original character. Also in the Oriental paintings, blank or shadow is much more meaningful than explicitly drawn objects. Zeami, founder of Noh, said that only hidden item is as impressive as flowers. Here again, contradiction of invisibleness has the priority to a visible reasoning.

In the art, free and unlimited explosion is its essence. Finally, I would like to ask why imitation and formalism are required so rigidly even in the Oriental civilization. Rigid formalism is rather a character of Christianity. I guess that it is because the Oriental art is very spiritual and subtle. If you try to do as you want, you will immediately damage the highest beauty and results in just a mess and not any more.

=Laughter=

So far, I explained many applicability of possible logic together with the danger of misuse. If the logic is used in a strange manner, it will cause

laughter even though the logic follows the formalism of the possible logic. However, this fact means all at the same time that you can make somebody laugh by purposely misusing the possible logic. In fact, many of the comedies by comedians are made in such twisting manner. Such a unified way of misuse is also a possible logic. Moreover, please remember that one of the keywords of the possible logic is pleasure or fun.

(Anecdote 1) "My honey, please borrow a hammer from the neighborhood." (after a while) "What? They do not lend us even a hammer. How stingy they are! They are no friend of mine. OK, we have no other choice but use our own. Bring out ours, my honey." This is a well known joke of Japanese traditional comedy "Rakugo". A man who tries to borrow a hammer and speaks ill of the neighborhood is even stingier. A twist of possible logic is the main point of this joke.

(Anecdote 2) (in a waiting room of a hospital) "Old Tommy never shows up here recently. I am anxious if he is ill." If Tommy is really ill, he must be in the waiting room now. This joke again baffles the expectations of possible logic.

(Anecdote 3) A famous singer sung about some local area, and the song really caught on. The local area became famous, and many tourists came and visited there. So, people thought that that local people are very glad and thankful to him, but in fact they did not. In the lyrics, there is a sentence "there is nothing special in spring" and there is almost no visit in spring.

(Anecdote 4) A designer designed a mascot character for some local area, but the figure is ugly and awesome. People thought that that local people got angry, but in fact they did not. Many media reported the ugliness of the character, and the character became famous as a result, and many tourists came in that area.

(Anecdote 5) A doctor, who is famous in terminal care with a slogan "never try your best", copied a part of other author's book in his. Readers commented "he just did not try his best". The slogan is for a patient to relax, but the reader changed the context to the famous doctor's laziness or

carelessness, as if the reader wants to say the doctor is no great.

Starting from mathematical logics, we finally came up to comedians' jokes. Of course, the present study is still under development and this report is yet immature. I am thankful that you read this report through. Looking forward to your comment.