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Is Leibnizian concept of necessity absurd?

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Abstract
Being an eminent mathematician and philosopher, Leibniz suggests that necessary judgements are necessary truths, identity judgments and these are the source of ideal knowledge. But Leibnizian concept of necessity is ceased to exist if the theory of A.C. Ewing and the principle of uncertainty in Quantum mechanics of the Great German Scientist Werner Heisenberg are accepted. This paper is a critical appraisal of Leibinizian concept of necessity.

Keywords: necessary, identity, knowledge, uncertainty

Introduction

From the etymological sense of the term 'philosophy' Western philosophy is known as 'love of knowledge'. Immanuel Kant in his 'Critique of Pure Reason,' suggests that Ideal knowledge must be scientific which is conditioned by novelty and necessity. Scientific propositions, mathematical propositions and the propositions from geometry are the model instances of this type of ideal knowledge. In fact, Kant's theory of knowledge does not reject directly empiricism and rationalism although the empiricist philosophers have been emphasising on novelty, whereas the rationalist philosophers, as expected, have been highlighting on necessity. Leibniz (1646-1716), a radical rationalist, not only says that knowledge must be necessary but also says, 'Nothing is in the intellect that was not first in the senses, except the intellect itself.' Being an eminent mathematician and a philosopher, he tries to analyse the concept of necessity in his own way.

In order to understand the analysis made by Leibniz, regarding the concept necessity, let us peruse what Bertrand Russell (1872-1970) says in his *A Critical Exposition of the Philosophy of Leibniz* where he does not investigate directly Leibinizian notion of necessity. At the time of clarifying the notion of individual substance, he proceeds on the basis of finding the answers of the following questions and analyses Leibinizian notion of necessity.

1. Are all judgments reducible to the subject-predicate form?
2. Are there any analytic judgments, and if so, are these fundamental and alone necessary?
3. What is the true principle of Leibniz's distinction between necessary and contingent judgments?
4. What is the meaning of the principle of sufficient reason, and in what sense do contingent judgments depend upon it?
5. What is the relation of this principle to the Law of Contradiction?
6. Does the activity of substance unduly presuppose time?
7. Is there any validity in Leibniz's deduction of the Identity of Indiscernible? [1].

Among the questions mentioned above, the concept of necessity, as laid by Leibniz, is reflected on the answer of the question number—'(3) what is the true principle of Leibniz's distinction between necessary and contingent judgments?' Leibniz makes a distinction between two kinds of truths—truths of reasoning and truths of fact. According to him, truths of reasoning are necessary, and identical. In his own words,

> There are also two kinds of truths, those of reasoning and those of fact. Truths of reasoning are necessary and their opposite is impossible, and those of fact are contingent and their opposite is possible. When a truth is necessary its reason can be found by analysis, resolving it into more simple ideas and truths until we reach those which are primitive...Finally there are simple ideas, definitions of which cannot be given; there are also axioms and postulates, in a word, primary principles, which cannot be proved and indeed need no proof, and these are identical judgments, the opposite of which contains an express contradiction [2].

How Russell treats Leibnizian concept of necessity is not the purpose of this paper, because Russell, being one of the best analytic philosophers in his time, thinks that the analysis of the concept of necessity into its indefinable simple ideas made by Leibniz is wrong. That's why Russell says,

> What I wish to show is, that Leibniz's theory of definition, as consisting of analysis into indefinable simple ideas, is inconsistent with the doctrine that the "primary principles" are identical or analytic; and that the former is correct, while the latter is erroneous [3].

In fact, Russell's approach towards Leibniz on the concept of necessity seems to be a result of total misunderstanding, because in a necessary judgment the possibility of being falsehood is ruled out, whereas, in a contingent judgment the

possibility of being falsehood can never be ruled out. In this case, the possibility of ruling out the falsehood or the possibility of not ruling out the falsehood is fundamental. So, what is there in a necessary judgment which makes to rule out the possibility of being falsehood? Or, what makes a judgment necessary? should be taken as the fundamental questions and the precise answers of these questions are very important. Again, if the notion of the uncertainty principle in Quantum mechanics which has the philosophical implications for the way in which we view the world is accepted then one may raise the question: Is there any relevance of Leibnizian concept of necessity for the way in which we view the world?
The purpose of this paper is to find out the justifiable answers of these questions with the help of following phases.

Phase—I: Leibnizian concept of necessity
Phase—II: Criticism of Leibnizian concept of necessity
Phase—III: the principle of uncertainty in Quantum mechanics
Phase—IV: Critical appraisal of Leibnizian notion of necessity

Phase-I

According to Leibniz, all necessary judgements are a-priori. By necessary judgements he means the judgements which are also necessary truth. All judgements like A=A or A.B=A or [(A v B). ~A] = B in these forms are necessary, because these are identity judgement. To him, necessary depends upon identity. If we deny these types of judgements, then these judgments lead us to self-contradictory. For example—'All black crows are black.' is a necessary judgement, because its negation is self-contradictory. The negation of this judgement is 'Some black crows are not black' i.e. 'There is at least one black crow which is not black' and this leads us to self contradiction—p.~p.

In Symbolically

a. All black crows are black. [Bx: x is Black, Cx: x is a crow]
b. (x) [(Bx. Cx) ⊃ Bx]
c. ~(x) [(Bx. Cx) ⊃ Bx] ~of given
d. (∃x)~[(Bx. Cx) ⊃ Bx] by Q.E
e. ~[(Bx. Cx) ⊃ Bx] by E.I
f. ~[~(Bx. Cx) ∨Bx] by Imp
g. (Bx. Cx). ~Bx by Dem and D.N
h. Bx. ~Bx by Association and Simp.

So, 'All black crows are black.' is a necessary judgement, it is an identity judgement and it rules out the possibility of being falsehood.

On the other hand, an empirical judgment might have been false and its falsehood cannot be ruled out, because the denial of an empirical judgment does not lead us to self-contradiction. For example—'All crows are black.' is an empirical judgment. The denial of this judgment is—'It is not the case that all crows are black.' which means 'There is at least one crow which is not black.' does not lead us to self-contradiction—p.~p.

Symbolically

a. All crows are black. [Cx: x is a crow, Bx: x is Black]
b. (x) (Cx ⊃ Bx)
c. ~(x) (Cx ⊃ Bx) ~of given
d. (∃x)~(Cx ⊃ Bx) by Q.E
e. ~(Cx ⊃ Bx) by E.I
f. Cx. ~Bx by Imp

Now, the question arises what is there in a necessary judgment which makes it a necessary by ruling out its falsehood? How does Leibniz explain it?

According to Leibniz, a judgment which is in subject-predicated form has two factors—one is assumption factor which is the subject of the judgment. The subject refers to something. The other is the assertion factor which is the predicate of the judgement. For example: the judgment 'S is P.' is in the subject predicated form. S is the assumption factor which presupposes the existence of something. P is the assertion factor by which we assert that 'S is P'.

'If P then q.' is also a form of judgement in which these two factors are contained. In this judgement we can say that an assumption that p holds or p obtains, we are asserting that q holds or q obtains.

Let us consider the necessary judgement. If it is in a categorical form i.e. in the form A=A or A.B=A or [(A v B). ~A] = B then what we asserts has already been assumed by us wholly or partially. In A=A, the assertion factor and the assumption factor are same. On the other hand, in A.B=A, the assertion factor and the assumption factor are not same but what was asserted, had already been assumed. Similarly, in [(A v B). ~A] = B what was asserted, had already been assumed. Again, if it is in the hypothetical form of judgement i.e. in the form of if p then q (If A then A, if A.B then A, If (A v B). ~A then B) then it can also be said that what we assert in the consequent has already been assumed by us in the antecedent. As this is applicable to the both form of judgment—categorical and hypothetical, there would be no risk of falsehood. But in the contingent judgement the assertion and the assumption are altogether different that is why these types of judgments are not characterised to rule out the possibility of falsehood. So, these are not necessary truth i.e. these can not ruled out falsehood.

Phase-II

But A. C. Ewing (1899–1973) raises an objection to this theory. If a necessarily true judgement depends on identity then the relation between the premises and the conclusion of an argument must depends upon identity, because in deductive logic any argument can be converted in the form of hypothetical judgment and vice versa. In this case, we have to say that the conclusion of an argument must be contained in the premises.

According to A. C. Ewing the word 'contain' has two different meanings. The first meaning is—the conclusion is contained as a part or whole in the premises and the second is—the conclusion is entailed by the premises. Leibnitz holds the first sense of the meaning of 'contain'.

> The entailment theory is of course incompatible with the view which we earlier rejected that all logically necessary propositions are verbal or analytic in a sense which would make what is entailed part of what entails [4].

In the first sense of the meaning of the term 'contain' which is accepted by Leibniz can be validly applied in case of some arguments. For example: p. q ∴p. Here, the conclusion is contained as a part of the premise. Now, one may argue that the containment of a conclusion as a part of premise cannot be a proof of Lebinizian concept of necessity, because the concept of necessity is applicable to the form of categorical or the hypothetical form of judgment.

But, the argument form p. q ∴p. can also be interchangeable in the form of a hypothetical judgment. p. q ∴p means if p and q hold for something then q also hold. It can also be possible to show that the denial of this judgment is self-contradictory by this way—p. q and not p. So, we can say that the Leibnizian theory holds here.

But there are some arguments where the Leibnizian theory does not hold. For example: If p then q, p /∴q. In this argument, we cannot say that the conclusion q is contained in the second premise, because the second premise is p. Again, the conclusion is not contained in the first premise because here the q is conditionally asserted. Being conditional q, the function of q is not identical with the function of unconditional q. It can also be said that if the argument is interchanged in to a judgment form and if we deny it, we cannot get any self-contradiction. 'If p then q and p and not q' is not a self contradictory judgment form. So, it is not a necessary truth.

Phase-III

From the point of views of philosophical science, some scientific theories that are related the ways through which we look at the universe are based on the Leibnizian concept of necessary truths. Deterministic view of the universe is one of them. At the beginning of nineteenth century, the French scientist Marquis de Laplace (1749-1827) argues that the universe is completely deterministic on the basis of Newton's (1642-1727) theory of gravity. Laplace says it is possible for us to predict everything that would happen in the universe with the help of a consistent set of scientific laws only if we knew the complete state of the universe at one time, for example, the prediction of a solar eclipse.

But Laplace's belief has been challenged and abandoned when the British scientists Lord Rayleigh (1842-1919) and Sir James Jeans (1877-1946) declare that a hot object like a star must radiate energy in the form of electromagnetic wave at an infinite rate. It is supposed to be infinite by them, because a hot body should exude the same amount of energy in waves with frequencies between one and two million million waves per second. Since the number of waves a second is unlimited, this would mean that the total energy radiated would be infinite.

But the German scientist Max Planck (1858-1947), in order to avoid the infiniteness of the energy, says in 1900 that light, X rays, and other waves emit in a certain packets which is called by him quanta. Each quantum has a certain amount of energy that depends on the frequency of the waves. If the radiation at high frequencies would be reduced then the rate at which the body lost energy would be finite. This implies that the deterministic world view is again re-established.

However, in 1926 another German scientist, Werner Heisenberg (1901-1976), formulated his famous uncertainty principle with the contention whether it is really possible to predict the future position and velocity of a particle. If anyone tries to predict the future position and velocity of a particle then he has to be able to measure its present position and velocity accurately. The necessary condition of measuring anything, even a particle is to shine light or other rays in the form of wave on the particle. If anyone tries to determine the position of the particle more accurately then a short wavelength light or other rays is needed.

Amazingly, following Planck's quantum hypothesis, one cannot use an arbitrarily small amount of light that is to say one has to use at least one quantum which will disturb the particle and change its velocity in a way that cannot be predicted.

> The more accurately one measures the position, the shorter the wavelength of the light that one needs and hence the higher the energy of a single quantum. So the velocity of the particle will be disturbed by a larger amount. In other words, the more accurately you try to measure the position of the particle, the less accurately you can measure its speed, and vice versa. Heisenberg showed that the uncertainty in the position of the particle times the uncertainty in its velocity times the mass of the particle can never be smaller than a certain quantity, which is known as Planck's constant. Moreover, this limit does not depend on the way in which one tries to measure the position or velocity of the particle, or on the type of particle: Heisenberg's uncertainty principle is a fundamental, inescapable property of the world. The uncertainty principle had profound implications for the way in which we view the world. Even after more than seventy years they have not been fully appreciated by many philosophers, and are still the subject of much controversy [5].

The last line— 'Even after more than seventy years they have not been fully appreciated by many philosophers, and are still the subject of much controversy.' of the above mentioned quotation is very important. It is true that there is no way to avoid uncertainty principle. In that case (i) the deterministic view about the world, (ii) the logical rules including the laws of thoughts which are treated as necessary truth etc. are in question marks! It is a logical rules that it is impossible for an object to be present in the different places in the same time. Following the uncertainty principle, if the measurement of velocity of some objects (particles) is not possible should we abandon this type of logical rules that is the conception of necessary truth or in precise Leibnizian conception of necessary truth?

Phase-IV

Ewing's counter example against Leibnizian concept of necessity is no doubt a significant point, but the question is whether Ewing is successful in principle to reject the Leibnizian concept of necessity? In principle means, non-production of any counter example against Ewing. Anthony Quinton (1925-2010), a British philosopher accepts the view that all a-priori judgements are analytic i.e. necessary truth and put forwards a counter example against A. C. Ewing

which by default defends Leibnizian notion of necessity.

Quinton has defended Leibniz in this way— to Ewing, 'If p then q and p and not q' i.e. {[(p ⊃ q). p]. ~q} is not a self contradictory judgment form, because it is not in the form p. ~p. According to Quinton, 'If p then q and p and not q' i.e. {[(p ⊃ q). p]. ~q } is not a self-contradictory judgment form explicitly, but it is implicitly a self-contradictory judgment form. If we substitute not (p and not q) i.e.~(p. ~q) for if p then q i.e. p ⊃ q because p ⊃ q ≡ ~(p. ~q) then it can easily be shown that the above judgment is self-contradictory. Not (p and not q) and p and not q is equivalent to (p and not q) and not (p and not q). [~(p. ~q). p]. ~q ≡ (p. ~q). ~(p. ~q).

It is true that the uncertainty principle is unavoidable following the quantum hypothesis. Again, it is also true that Heisenberg would never deny that he has not used the logical rules including the laws of thoughts to establish the uncertainty principle. However, the deterministic view about the universe may lose its importance. But this does not imply that the logical rules including the laws of thoughts i.e. the necessary truths are abandoned.

Actually, the world of quantum mechanism is a different world. Even the physicists recommend a distinction between classical physics and quantum physics. In quantum physics the uncertainty principle is applicable, but in classical physics uncertainty principle is not applicable although classical physics works like the axioms of quantum physics. So, the Leibinizian notion of necessity is remained intact in classical physics and works like the axioms of quantum physics. But it is really a dilemma in philosophy of science unless and until the acceptability of necessary truth one never is able to invent such principle like uncertainty principle which is also in the same time unavoidable.

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