NON-CLASSICAL LOGIC AND SPECIAL RELATIVITY

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In his Autobiography Popper tells that his conception of science fallibilism started from a reflection on the birth of special relativity.[1] His reflections are unawarely expressed by means of doubly negated propositions whose corresponding affirmative propositions lack of evidence (DNPs), hence the law of the double negation law fails; this fact states that they pertain to the intuitionist logic. [2] An inspection of Einstein's celebrated 1905 paper shows that he also made unawarely use of DNPs (around 63). Moreover, he claimed that his theory is not a deductive one, but a "principle theory"; yet, he has insufficiently defined this model of organization of a theory. In addition, it is well-known that his paper is insufficient under some aspects, including its consistency.

The present paper rationally re-constructs the birth of special relativity according to Einstein's original intentions. A comparative study of all non-deductive theories shows that their ideal model tackles a problem whose method of resolution is discovered by means of an inquiry illustrated by DNPs, which compose indirect proofs concluding a universal predicate; this is then changed in a postulate according to Einstein's proposition: "We will raise this conjecture [i.e. the universal DNP] (the substance of which will be hereafter called the "[axiom-]principle of relativity to the state of a [affirmative] postulate".[3]

The first problem is to complete the. birth of electromagnetic theory through two steps. The first step is to state through Einstein's indirect proof that *c* is insuperable and then obtain Lorentz's group by choosing the suitable geometry among the four basic geometries which have been characterized by Poincaré.[4] The second step is to estavblish in Einstein's heuristic way (i.e. through DNPs) Lorentz' invariance of Maxwell's equations. The specific birth of special relativity occurs when one undergoes the classical mechanics to Lorentz' group. The invariants of classical mechanics are then obtained by following a heuristic suggestion of Levy Leblond.[5]

Bibliography

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