ESSAY 52 : The False Turns in General Relativity

The original ideas for relativity were developed by Heaviside, Fitzgerald and Lorentz in correspondence starting in the late eighteen eighties. They were trying to explain the results of an experiment by Michelson and Morley which showed that the speed of light in a vacuum, c, is a constant whatever the movement of the frame of reference. This correspondence led Lorentz to develop the Lorentz transformation from one frame to another in which the time as measured in one frame is not the same as the time as measured in a frame moving with respect to the first frame. This theory became known as special relativity because one frame moves with respect to another at a constant speed v. It was applied by Lorentz and Poincare to find an elegant tensor theory of the electrodynamics of Maxwell and Heaviside. Tensor theory had been developed around about nineteen hundred by Levi-Civita, Ricci, Bianchi and others. Classical electrodynamics is in fact the basis for special relativity because its equations do not behave as Newtonian equations do under the Galilean transformation. Electrodynamics behaves according to the Lorentz transformation.

Einstein was a student at ETH in Zurich around 1900, when he was about twenty years old. He was well versed in these developments and in a paper in Italian which derived what is now know as the rest energy, the famous E equals m c squared. He was also familiar with the work of Planck in pioneering quantum mechanics, again around about 1900, and explaining the failure of the Rayleigh Jeans law. In my opinion, Einstein's contribution to special relativity was to define the relativistic momentum, needed to merge the law of conservation of momentum with the Lorentz transformation. This produced an equation p equals gamma m v, where gamma is the Lorentz factor, m the mass of an object and v its velocity. It is this equation that leads to the rest energy, which is part of what is known as the Einstein energy equation of special relativity. Nearly all the tested features of special relativity are in fact tests of the much earlier Lorentz transform, notably the finding that a watch runs slower on board an aircraft, known in the foggy jargon, or fargon, as "time dilatation". Horst Eckardt and others have often discussed and revealed the flaws in Einstein's interpretation of special relativity. Poor historical scholarship and the immense pressures to conform are to blame for the dogma that attributes almost everything to Einstein.

In order to go further in relativity, it was necessary to let one frame move in any way with respect to another, and this theory became known as general relativity. The route taken by Einstein was to abandon the Minkowski or flat spacetime used by Lorentz, and to adopt a spacetime developed by Riemann, Christoffel. Levi-Civita and other mathematicians. This is a leap of imagination for which Einstein should be given full credit, but unfortunately his implementation of mathematics was irretrievably faulty, and astonishingly, it took a century for this to be to be finally accepted . It was Levi-Civita who introduced the concept of curvature and it was Christoffel who introduced the concept of connection. Due to poor historical scholarship these concepts are attributed to Riemann, who introduced only the metric. Einstein heard of Riemann geometry from Grossmann who worked at the time in Schaffhausen down the road from Zurich and at first sight described it as "horrible" or words to that effect. This remark reveals that Einstein was not a trained mathematician, but had the ancient idea in mind that physics is geometry. This crystallized out in 1907 in his equivalence principle, that gravitation and acceleration are equivalent. Eventually, after many false turns, he settled on an equation in 1915 which has become known as the Einstein field equation. Essentially, the second Bianchi identity known to Einstein is made proportional to the Noether Theorem, through a constant k, the Einstein constant.

The first false turn was to use this incorrect Bianchi identity without torsion,

which means the incorrect use of a symmetric connection. The correct Bianchi identity was given by Cartan in the early nineteen twenties, but was never implemented by Einstein or any of the dogmatists who accepted the incorrect 1915 theory. The 1915 equation and all its solutions are incorrect. My colleagues and I show this in great detail in our 2011 book "Criticisms of the Einstein Field Equation". In UFT 122 and following papers I deduced eventually that the connection must be antisymmetric in its lower two indices, because it has the same symmetry as an object known as the commutator of covariant derivatives. So at that point it became clear to me that there can be no symmetric connection at all. Out of this finding, now generally accepted but a surprise at the time, grew the antisymmetry laws of ECE theory.

In UFT 150 and 155 it is made clear that Einstein made several errors in his calculation of light deflection due to gravitation. Unfortunately his contemporaries did not find these errors, or if they did remained silent. This is described by the very popular essay "Nobody's Perfect", written originally in German by my co author Horst Eckardt, who checks all my hand calculations by computer and produces calculations which are far too heavy to do by hand, and could not have been done in Einstein's time. In UFT 190 and following the Einstein theory fell apart dramatically, and a forthcoming special journal issue will be dedicated to these pivotal discoveries of the AIAS group. It is issue six of "Journal of Foundations of Physics and Chemistry". The contents of this special issue will be described in the next essay, essay fifty three.