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PSA: Proceedings of the Biennial Meeting of the Philosophy of Science Association, Vol.

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Einstein himself had a few words to say about the writing of the history of science. From the first of his famous conversations with

In contrast to the development of general relativity, which is well documented in a series of increasingly technical papers over

of criteria of coherence. The only foundations are the few documents from 1905 and before, and thus the 1905 paper itself must bear the greatest weight. It is surprising then, given its overriding evidential importance, that this text has not received more attention. For its structure and contents raise a series of crucial questions. What are the relations between its various sections? Why are Maxwell's equations with and without sources treated separately? Why does the introduction motivate only the principle of relativity and not the principle of the source-independence of the velocity of light? What governs the choice of the optical applications found in sections seven and eight? Why is the powerful velocity addition rule used but once in the entire paper? Why does the final section on the dynamics of the electron appear, in the words of Miller "almost as an after thought" (1981, p. 332)? Why is the professed theme of the paper the

it would seem, presuppose the recognition of the relativity of simul-

thought simultaneously, nonetheless these ratiocinations are sequential. To say how a theory emerged just *is* to posit a sequentially

the theory's creator.

Thus, the common presupposition would impale us on one or the other horn of the resulting dilemma--either we give a scrutable but straw man reconstruction, or else an inscrutable non-account. The dilemma,

Conrad Habicht he refers to the relativity work as "im Konzept", i.e., in first draft or note form, thus suggesting a more protracted evolution of the manuscript than the standard account would like to imagine.

Proponents of the standard account will no doubt point to the rapid rate at which Einstein turned out articles in the spring of 1905 as evidence that he could have produced the special theory of relativity in its entirety in five weeks. But this requires misrepresenting these other publications as entirely independent investigations worked out seriatim. Einstein was a genius, but it makes no more sense to postulate a miracle of a genius than of a non-genius.

2) *Psychology and Epistemology.* The standard account, because it grants chronological priority to the discovery of the relativity of

asymmetries pose a direct challenge to the principle of relativity itself. For to coherently entertain the thesis that the electric and

the magnetic fields by themselves have only a relative existence, an

assurance is needed that there exist field transformation equations consistent with the principle of relativity. But this is not a problem which vexed Einstein in May of 1905, for by then he was quite settled on the legitimacy of the postulate. Hence, unless we deem Einstein's conception of the relativity of the electromagnetic field quixotic, this initial problem must have been addressed and settled prior to the spring of 1905. And, if the asymmetries of induction are appreciated with respect to "magnetomotive" as well as "electromotive" forces, then the only resolution is the discovery of the relativistic field transformations.

4) *Internal Evidence.* If sufficient attention is paid to the struc-

(b) There is no logical reason to devote separate sections to Maxwell's equations for free space (§ 6) and Maxwell's equations with sources (§ 9), and the natural procedure would have been to treat just the general case, as Einstein did in his 1907 review essay. But if § 6 had been written before Einstein knew how to treat Maxwell's equations with convection currents, it would have been far simpler, and logically innocuous, to add a treatment of the general case as a separate section.

(c) The velocity addition rule, despite the fact that it is commonly heralded as central to Einstein's resolution of the apparent incompatibility between the principle of relativity and the light postulate, plays a decidedly minor role in the paper. The apparent incompatibility of the two postulates is dispelled even before the derivation of the Lorentz transformations is completed, and the addition rule is used but once--in the treatment of Maxwell's equations with convection currents (§ 10), although we might have expected its direct application to such

Our account should not diverge significantly from an adequate one given on the basis of the customary view for the years prior to 1903, since it is in that year that Einstein began achieving partial solutions to the problems that motivated special relativity. Questions concerning aether and matter, and in particular, motion through the aether, had concerned him for a number of years. But in January of 1903 he wrote to Besso expressing an intent to undertake a thorough

study of the electron theory. The most important area of research for the newly emerging 'electromagnetic world view' was the dynamics

This period of "constructive efforts" included an examination of emission theories, which did not satisfy the light postulate. Presumedly, Einstein also demanded that candidates be adequate to the peculiarities of the thermodynamics of radiation which he had unearthed

> After I had this inspiration, it took only five weeks to complete what is now known as the special theory of relativity. (Stachel 1981, pp. 11-12).

The completion then consisted in (i) working out the 'Kinematical Part' (§§ 1-5), (ii) changing the derivation in § 6 so that the field transformations followed from the Lorentz transformations, rather than *vice versa* as in the proto-manuscript, and (iii) showing in § 9 that "the electromagnetic basis of the Lorentzian electrodynamics and optics of moving modies" remains consistent with the principle of relativity when suitably reinterpreted, carrying over Lorentz's definition of electrons as "electric charges invariably coupled to small rigid bodies". The original introduction to the proto-manuscript was deemed still appropriate, with minor additions, as an introduction to [redacted]

by the conflict between the definitions of 'electron' in § 9 and in his [redacted]

a unique geometric center appears to demand the Galilean rule. The

that he thought of the dilemma specifically in these terms.

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