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Poincaré, Minkowski, and the Road to Space-Time: New Light on Some History that Did Not Happen FELIX T. SMITH, SRI International — In 1905 Poincaré identified in the Lorentz transformation equations both the 6-parameter Lorentz group generated by velocity boosts and the 4-vector space $s=$ *x,y,z,ict* on which they act, recognizing the R(4) rotation symmetry this space implies. In 1907 Minkowski (M.) showed that the Lorentz velocity boosts imply a nonEuclidean 3-space of velocity, expressed through a 4-vector v, and displayed the strikingly parallel structure of the 4-vector s. This velocity-position symmetry was bypassed in 1908 when M.'s forceful rhetoric merged space and time in a single space-time. An alternative solution has now come to light which connects the time-dependence of s with the Hubble expansion, the imaginary fourth components of s and v with the negative curvature of the background position and velocity spaces, and leads naturally to parallel 4-spaces of s and v (Smith, F. T., Ann. Fond. L. de Broglie, **35**, in press, (2010)). There are lessons to be learned about prematurely imposing a solution on an open problem by a hypothesis that is sufficient to agree with the known facts but may not be unique and may, in fact, foreclose exploration in other directions.

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