

Abstract Submitted  
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**Dynamics of the Earth Magnetotail, the Heliosphere Current Sheet and the Outer Planets Magnetosphere**<sup>1</sup> B. COPPI, MIT — Magnetic reconnection occurring in the back of the Earth had been proposed [1] as the origin of the coronal substorms before the discovery of the Earth magnetotail. This discovery incentivized the theory [2] of reconnection processes and of their non-linear evolution in neutral sheet configurations that could represent that of the Earth magnetotail [2]. However, rapid acceptance of the original theories left them severely incomplete as the lack of consideration of the effects of particle temperature gradients that have been found to be important for laboratory magnetic confinement configurations. The relevance of (laboratory) experimental results on magnetic reconnection processes to the understanding of the dynamics of space entities where these processes are important is pointed out. A special consideration is given to the Heliospheric Current Sheet, its topology and its role in producing the observed high-energy particle populations that could not be associated with the Termination Shock of the Heliosphere. The possibility to extend existing theories to the more complex geometries of the magnetotails of the most distant planets is discussed.

[1] B. Coppi, *Nature*, 205 (1965) 998.

[2] B. Coppi, G. Laval and R. Pellat, *Phys. Rev. Letters*, 16, (1966) 1207.

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