

**ICHST 2009 - XXIII International Congress of History of Science and
Technology Ideas and Instruments in Social Context
Budapest, Hungary, 28 July - 2 August 2009**

ABSTRACT

Interdisciplinary issues in Early Cybernetics

Leone Montagnini
University of Naples « Federico II », Italy

The relations between Early Cybernetics and Cognitive Science represent an interesting historiographic topic. In any case in this paper I assume provisionally that the former can be considered one of the most significant pre-historical root of the latest (see for an analogue stance the Dupuy's book *Aux origines des sciences cognitives*, focused on the Macy Conferences on Cybernetics). On the contrary this paper focuses on the role played by interdisciplinarity in Early Cybernetics. It will start considering the many aspects regarding relations among disciplines in Norbert Wiener's intellectual itinerary, until the cybernetics of the postwar period.

In Wiener's intellectual itinerary (regarding this itinerary, see the Montagnini's book *Le Armonie del Disordine*) one can point out various issues concerning relations among disciplines: humanities and sciences *strictu sensu* (Wiener received a Ph.D. in philosophy, and worked as a mathematician), between pure and applied sciences (he collaborated with engineers for over 40 years), between social and human science and "hard" sciences; the importance of a social context in which putting together scientists from different disciplines was more normal than elsewhere (from the Royce's seminars on scientific method of 1911-13 up to the postwar Macy conferences), etc.

During the 1930's Wiener and the physiologist Rosenblueth elaborated an interdisciplinary epistemology that I would call the "Oregon epistemology". They thought that in science existed "no-man's lands" colonized by different disciplines, in which happened something similar to "what occurred when the Oregon country was being invaded simultaneously by the United States settlers, the British, the Mexicans, and the Russians - an inextricable tangle of exploration, nomenclature, and laws". Therefore "important work has been triplicated or quadruplicated; while still other important work is delayed by the unavailability in one field of results that may have already become classical in the next field" (Wiener, *Cybernetics*, "Introduction"). Wiener in particular had personally experienced that "hybridization" in scientific fields is very productive, and the successes of his strategy are irrefutable. The same early steps of cybernetics - from Wiener(-Kolmogoroff)'s prediction theory to the creation of von Neumann's computer - were the result of these kind of "hybridization". But, actually, "Oregon epistemology" contains a fallacy as well, and the metaphor itself helps us to understand it. In fact, in a way, Oregon was not the same land for British, Mexicans or Russians, and this constructivist opinion can explain the deep difficulties of communication that the "cyberneticians" met very precociously and already during the Macy Conferences. Difficulties stemming from different way of thinking that the participants had inherited from their different disciplines (or - in some case - from a different approach to the same discipline). Therefore while all of them used to speak using the same worlds (e.g. "feedback", "energy") they put them in different mental frames. Interdisciplinarity is not a luxury. We need it. But it entails a really steep training to construct common languages.