CIFREM SEMINARS

The Emergence of the Nonlinear Theory Of the Business Cycle - Betrayed Hopes, Resurrected Visions

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The birth of the nonlinear – endogenous – theory of the business cycle is usually attributed – with much justification – to the pioneering models developed by Kaldor, Goodwin and Hicks. But, as Borges via Kafka has reminded us: Every author creates his own predecessor. In such a Borgesian spirit of Kafka, the story of the emergence of the nonlinear theory of the business cycle is taken back to the prescient conjectures of the absolute pioneer of nonlinear differential equations that now bear his name – van der Pol; equations that underpin work in brain sciences, electronics, celestial mechanics, geophysics, cognitive sciences, evolutionary dynamics – and endogenous macrodynamics.The story I tell is structured along a timeline of the defining four decades: 1928-1938; 1938-1948; 1948-1958; and 1958-1968; and a mathematical and economic delineation. The former reflecting developments in dynamical system theory; the latter in the increasing mathematical sophistication of old-fashioned Keynesian and Keynes's economics (pace Axel Leijonhufvud!). The mathematical economic story begins with the attempt to interpret business cycles, endogenously, as being generated by the dynamics of the van der Pol equation. The first part ends with the fully fledged invocation of the Poincare-Bendixson theorem routinely in Keynesian macrodynamics and the introduction of Kolmogorov's generalization of the Lotka-Volterra equation to model aggregate dynamic in functional income distribution, over the business cycle.

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