Style and Substance in Cross-Disciplinary Scientific Exchanges: the Case of Chaotic Models in Economics

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Elements of nonlinear dynamical systems theory (popularly known as "chaos theory") originally developed in the natural sciences have found widespread use in the social sciences as well. Using the deployment of chaotic dynamical models in economics as a case study, I consider two philosophical formulations that shed light on the notion of "style" in cross-disciplinary exchanges between sciences. The notion of "styles of scientific reasoning" articulated by Ian Hacking can serve to clarify the epistemological status of a new approach that crosses disciplinary lines. In the case of nonlinear dynamics, Hacking's conception is helpful for characterizing a recently emerging style in a way that escapes the difficulties attending the notion of a paradigm. But the level of analysis for styles of scientific reasoning renders this concept less helpful for elucidating the details of traffic between sciences. Thomas Nickles' notion of heuristic appraisal directs attention to the context of pursuit where many salient aspects of cross-disciplinary exchange play out, allowing a finer-grained examination of the roles that styles play. In addition to conceptual styles of theoretical practice and technical styles of intervention, the context of heuristic appraisal also highlights the rhetorical resources that are called upon in cross-disciplinary exchanges.