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Processes and patterns in transitions and system innovations: Refining the co-evolutionary multi-level perspective

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Abstract

This article investigates transitions at the level of societal functions (e.g., transport, communication, housing). Societal functions are fulfilled by sociotechnical systems, which consist of a cluster of aligned elements, e.g., artifacts, knowledge, markets, regulation, cultural meaning, infrastructure, maintenance networks and supply networks. Transitions are conceptualised as system innovations, i.e., a change from one sociotechnical system to another. The article describes a co-evolutionary multi-level perspective to understand how system innovations come about through the interplay between technology and society. The article makes a new step as it further refines the multi-level perspective by distinguishing characteristic patterns: (a) two transition routes, (b) fitâ€“stretch pattern, and (c) patterns in breakthrough.



Keywords

Transition; System innovation; Co-evolution; Multi-level perspective; Patterns

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Dr. Frank Geels is post-doctoral researcher at the Department of Technology Management, at Eindhoven University of Technology, the Netherlands. His main research topics are technological transitions and system innovations. He has approached these topics in several ways, e.g., through theory development, using insights from sociology of technology, innovation studies and evolutionary economics. The conceptual work is grounded in thorough historical case studies on transitions in the past. He has also explored possible future transitions in transport and energy, using socio-technical scenarios as new exploration methodology.

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