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Jevons Stanley (Stan) Metcalfe and his contributions to the Journal of Evolutionary Economics

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With the passing of Jevons Stanley (Stan) Metcalfe in March 2025 in Manchester, evolutionary economics has lost one of its most dedicated scholars, a leading figure in the field, an inspiring mentor to younger researchers, and a highly esteemed colleague in the exchange of new and emerging ideas. This editorial presents an overview of selected works by Stan Metcalfe published in the Journal of Evolutionary Economics. It highlights his central contributions to evolutionary economic theory.

The overarching question that Stan explored in his work on evolutionary economics concerned the dynamics of market-based systems, or what he called the restlessness of capitalism. Crucial elements of this restlessness are the creation and implementation of technological and other innovations, with selective competition for the market between companies and other suppliers. Equally significant are changes in demand-side needs and requirements, which also create opportunities for innovation, and then the system is characterized by accompanying institutions that promote and channel the evolutionary process. All three sides contribute to the restless dynamics of the capitalistic system, driven by innovation, imitation, winning, and losing in competition.

Against this background, Stan's scholarly articles in the Journal of Evolutionary Economics cover two broader topics: the development of capitalism on the one hand and the relationship between innovation and selection dynamics on the other.

1 On innovation and selective competition

In 1994, three years after the foundation of the Journal of Evolutionary Economics Stan's "Competition, Fisher's Principle & Increasing Returns" (1994) was published. It set a landmark in the analysis of evolutionary dynamics as he laid down a formal elaboration of replicator dynamics as a way to represent competition and

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competitive selection of firms in markets. Such competition underlies a mechanism based on Fisher's principle, which states that the rate of change of mean performance (exemplified via unit costs) is a function of the degree of variety in performance across the population of firms. Combined with various forms of increasing returns to scale, which are related to a Kaldor/Verdoorn dynamics of cumulative causation, the Fisher effect could cause different types of mean performance development. Conditions for progressive (towards improving) and regressive (towards worsening) mean performance development are derived. Overall, the paper shows how path-dependent structural economic developments occur in a competition where the competitiveness of companies is determined by increasing returns to scale.

In the article "Genetic Algorithms in Evolutionary Modelling" (1997) co-authored with Chris Birchenhall and Nikos Kastrinos, Stan extends the analysis of selective competition and Fisher's principle by looking at the generation of variety, i.e., innovation, and on the selection working on this variety. As a workhorse, the method of genetic algorithms (GA) is used, as "one possible approach to evolutionary computation in which a population of 'programmes' is generated by specific mechanisms (crossovers, mutative, inversion) and then subjected to selection in accordance with a particular concept of fitness." (p 376). While the creation of variety through innovation is driven by a process of mutation, selection involves a process of imitative adoption or, as the authors describe it, a process of modular imitation. Using a simple example dealing with technical change, the authors demonstrate the special properties of a GA and its suitability for mapping evolutionary processes driving innovation competition.

The evolutionary theory of innovation has mainly been a supply-side story. However, as the technologies firms employ change over time, so do consumers' preferences and consumption patterns. Such changes are both a result and a source of innovation. Stan's article "Consumption, preferences, and the evolutionary agenda" (2001) offers an evolutionary view of preferences, consumption, and demand, focusing on innovations that enable new consumer behaviors. It first considers time and income constraints, which allows distinguishing between consumption goods and consumption activities. On this basis, a behavioral model of consumption routines based on melioration theory is introduced. Innovations are considered new consumption activities that work on the time constraint. Adopting such activities leads to changes in demand. The underlying mechanism addresses consumer learning behavior—modelled using replicator dynamics—and shows how changes in wages, prices, and time requirements reshape demand for activities. In summary, this approach can be used to explain which goods are included in an individual's consumption and how changes in these goods and the time required for their consumption lead to innovation-driven changes in consumption habits.

With the article "Firm routines, customer switching and market selection under duopoly" (2001), co-authored by Martin Curie, Stan examines the dynamics of competition, this time in an expanded setting in which the implicit behavior of market actors from the 1994 paper is explicitly formulated. Now, companies in an industry apply relatively simple pricing, production, and investment routines, and there are consumers who switch between competing companies due to price differences, although not all of them do so immediately and simultaneously. The central concern

of the paper is to find out whether market competition leads to less efficient companies being displaced by their more efficient competitors. In the case of a duopoly, it is shown that the survival of the more efficient company is not guaranteed. Rather, the outcome of market competition generally depends on how quickly companies adjust their prices and production capacities and how quickly customers switch between competing companies.

Together with Jacob Rubæk Holm and Esben Sloth Andersen, Stan addresses in the article “Confounded, Augmented & Constrained Replicator Dynamics” (2016) the problem of competition-relevant characteristics that are decisive for the success or failure of companies in selective competition, modeled using replicator dynamics. Such models often assume a single selection-relevant characteristic and a uniform selection environment, with all companies being treated equally. However, such simplifications limit the analysis of real selection processes. On the one hand, companies operate in several markets and, on the other hand, they offer products with different characteristics. Taking these aspects into account complicates selection processes in a way that cannot be adequately captured by standard replicator dynamics: the selection process is confounded. On this background, the article presents a statistical approach that can be used to explicitly analyze such complicated selection processes. The relationship between different characteristics relevant to competition is accounted for the selection gradients of the characteristics and by their covariance, which can be zero, but can also take negative (constraining) and positive (augmenting) values. Simulation analyses examine some of these cases.

2 On restless capitalism

After the turn of the millennium, Stan explored the big question of “Why do capitalist economies develop the way they do?” and published his thoughts on the subject. In the article “Knowledge of growth and the growth of knowledge” (2002a), he addresses this question by looking at the complex relationships between economic growth and the growth of knowledge and insights. Driven by a non-equilibrium-oriented process of knowledge accumulation, capitalist economies are never in equilibrium but remain in a state of constant flux and develop relentlessly. The underlying forces of innovation activities and selection in markets and accompanying institutions are examined in more detail. It is made clear that capitalist development cannot be understood and analyzed in terms of an aggregate and on the basis of diverse microstructures with heterogeneous actors.

In the article “Capitalism and Evolution” (2014), Stan elaborates on his prior answers to the question of the restlessness of capitalism. On the one hand, he addresses the nature of human curiosity and the associated increase in knowledge, and on the other hand, he highlights the special rules that bring about the self-transformation of an economic order. Stan makes it clear that capitalist economies are non-ergodic systems, meaning that they develop with historical conditioning and memory. In this evolutionary process, organizing forces do emerge that bring about certain structural formations and drive developmental dynamics, but these are nevertheless accompanied by uncertainties, are open-ended, and therefore hardly

predictable. A standstill would only occur here if the accumulation of knowledge came to a halt—but that appears being an unimaginable state.

3 Miscellaneous

Besides these major articles, Stan published in the JEEC an “Introduction to the special issue: Change, Transformation and Development” (2002b), which contains articles that were presented at the 2000 Millennium World Conference of the International J.A. Schumpeter Society in Manchester, which was chaired and organized by Stan, serving at that time as President of this scientific society.

Furthermore, Stan published a short paper, “Wolfgang F. Stolper in memoriam” (2002c). Wolfgang Stolper was the founding president of the International J.A. Schumpeter Society, who passed away in 2002 in Ann Arbor, MI. In 2003, he contributed a “Tribute to Mark Perlman” (2004). Mark Perlman was founding member and Founding Editor of the International J.A. Schumpeter Society; he celebrated his 80th birthday in 2003.

With these articles, Stan Metcalfe made a significant contribution to the development of evolutionary economics and helped establish the Journal of Evolutionary Economics as an internationally renowned scholarly journal. We are confident that these timeless works will continue to serve as a source of inspiration for scholars in the years to come.

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