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To the Editors,

We are very pleased to submit our manuscript for consideration at Physical Review E:
"Simon's fundamental rich-gets-richer model entails a dominant first-mover advantage."

Simon's famous 1955 rich-gets-richer model is a fundamental and elementary system-growth mechanism that leads to power-law size distributions of component sizes. Also known as cumulative advantage and preferential attachment in networks, Simon's growth mechanism is of profound theoretical importance and widespread application across complex systems of all kinds.

Remarkably, we show that Simon's model has been drastically misunderstood for over 60 years.

In our manuscript, **we demonstrate that the first entrant into the system enjoys a first-mover advantage completely missed in Simon's analysis and, from what we believe, all subsequent work.** Through simulations and theory, we show that the first-mover advantage is powerful with the size gap growing as the inverse of the empirically small innovation rate.

As Figure 1 in our manuscript shows, the first mover may be enormous and seemingly impossible to miss—yet this is what we have discovered.

We also explore the dynamics of all groups showing the potential for a high degree of unpredictability in a group's long term success, connecting with similar observations in the literature.

We provide empirical evidence from citation count data that a pure Simon model can be invoked to capture a real system with a clear first-mover advantage.

Our work calls into question all past empirical analysis of real-world systems using Simon's model as well as much theoretical work, and, in going forward,

we provide possible adjustments to Simon's model to better fit real-world data.

We note that we have received valuable feedback from a number of outstanding colleagues after our initial posting on the arXiv and have improved the manuscript substantially.

Our correspondents include:

- Sidney Redner,
- James P. Gleeson,
- Mason A. Porter,
- Cesar A. Hidalgo,
- Matus Medo, and
- Mark E. J. Newman.

We believe our paper will be well received by a large and broad audience in the physics community and we hope will prove to be an important contribution in the years to come.

We look forward to hearing of your decision.

Yours sincerely and on behalf of the manuscript's authors,

Prof. Peter Sheridan Dodds