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Subject: Candidacy for the “Early-Career Scholars Research Fund”

Dear members of the Early-Career Scholars Committee,

I plan to visit the *Center for the History of Political Economy* (Duke University), at the end of January 2019. The goal will be to advance the research that Muriel Dal Pont Legrand and I are doing, on the history of agent-based macroeconomics.<sup>1</sup>

While at the *Center*, I will consult Kenneth Arrow's and Axel Leijonhufvud's papers. Both economists contributed to the emergence of agent-based macroeconomics. With Philip W. Anderson (a physicist), Arrow initiated a series of workshops at the Santa Fe Institute – i.e. “The Economy as an Evolving Complex System”.<sup>2</sup> This is where economists started elaborating agent-based models, in the 1990s (David Colander, 2006). In Arrow's papers, several boxes are referenced under the label “Complexity”.<sup>3</sup> It is very likely that Arrow engaged with macroeconomists interested in agent-based modeling. Accordingly, I might be able to explain why economists left aside macro issues when agent-based modeling was imported into economics.<sup>4</sup> In Leijonhufvud's papers, there are correspondences with Robert Clower and Peter Howitt.<sup>5</sup> All three were involved in the search for disequilibrium microfoundations for macroeconomics, in the 1970s. They eventually came to advocate for the use of agent-based

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<sup>1</sup> In macroeconomics, agent-based modeling consists of using computers to simulate the behavior of economies where agents are not alike, have limited cognitive skills, and interact without any coordination *a priori*. This modeling strategy comes from natural sciences. According to Arthur Turrell, an economist of the Bank of England, the first agent-based model emerged “in the 1930s when physicist Enrico Fermi was trying to solve problems involving the transport of neutrons, a sub-atomic particle, through matter” (2016: p. 175).

<sup>2</sup> Discussions that took place during Anderson and Arrow's workshops were published in three books (1988, 1995, 2005).

<sup>3</sup> <https://library.duke.edu/rubenstein/findingaids/arrow/>

<sup>4</sup> In 2001, the *Journal of Economic Dynamics & Control* devoted two special issues to agent-based modeling. No article focused on aggregate phenomena (e.g., unemployment, inflation, or the business cycle...). Economists were concerned either with microeconomic issues (e.g., John Duffy analyzed the evolution of consumption behavior) or with the functioning of isolated markets (e.g., Alan Kirman and Nicolas Vriend addressed price dispersion in the fish market, in Marseille).

<sup>5</sup> <https://library.duke.edu/rubenstein/findingaids/leijonhufvud/>

models. Accordingly, the analysis of their correspondence could be useful to trace the origins of agent-based macroeconomics.

Besides the archival work, I will take advantage of my visit to the *Center* to interview Kevin Hoover. Hoover was involved in the debates over empirical validation in agent-based macroeconomics. He was part of the group of economists that discussed the relation between theory and “stylized facts” in Colander’s book, *Post-Walrasian Macroeconomics: Beyond the Dynamic Stochastic General Equilibrium Model* (2006). Then, with Søren Johansen et Katarina Juselius, Hoover (2008) sketched an “empirical discipline” in agent-based macroeconomics. Therefore, the interview of Hoover could help me to better understand the problems posed by the empirical validation of agent-based models. It would also help me to obtain information about the structure and the dynamic of the group of macroeconomists interested in agent-based modeling, in the US.

Last but not least, my visit to the *Center* will be an opportunity to discuss how to trace the history of agent-based macroeconomics. Muriel Dal Pont Legrand and I have started recently this research project. Right now, we are in the process of reviewing the voluminous literature on agent-based macroeconomics. In January, Muriel Dal Pont Legrand is going to interview Domenico Delli Gatti, a macroeconomist involved in the development of agent-based models. In the longer term, our plan is to organize a witness seminar on the history of agent-based macroeconomics. The problem is that neither she nor I have ever used this oral method of research. But Kevin Hoover did, and Roy Weintraub has an expertise in the use of oral sources.<sup>6</sup> Their advice would thus be valuable to organize our witness seminar, and more generally, to tell the story of agent-based macroeconomics.

#### *Detail of expenses*

By applying to the “Early-Career Scholars Research Fund”, my goal is to defray the expenses of my stay at Duke University. Here is the detail:

- Airplane tickets (round trip from Nice Airport to Raleigh Durham Airport): 1000 dollars.
- Accommodation costs ( $\simeq$  2 weeks): 500 dollars.

Total: 1500 dollars (I will not have other source of funding to visit the *Center*).

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<sup>6</sup> See Till D ppe and Roy Weintraub’s recent book, *Interviews and the Historiographical Issues of Oral Sources* (2018).