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# Re-examining the ABM empirical toolkit in a world of big (behavioral) data

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**Abstract:** Robinson et al. (2007) identify five key modes of informing agent-based models (ABM): surveys, participant observation, field and lab experiments, companion modeling, and remotely-sensed data. Janssen and Ostrom (2006) hone in on some of the key dimensions that differentiate these approaches and the kinds of inferences that can be made from them, including the depth of capturing cognitive processes, the number of repeated observations made, and the size of the sample. A decade of technological change has occurred since these reviews were prepared, with mobile technologies in particular breaking down barriers to the scale and scope with which behavioral data can be collected. Many tools that heretofore were only possible in small-n case studies now have application in larger-scale representative and comparative studies. In the wake of this change, it is worthwhile to re-examine how these modes of informing ABM fit together as a comprehensive toolkit to capture different aspects of agent behavior and decision-making.

As prior distinctions among small-n and large-n approaches blur, a more appropriate lens to compare approaches to informing ABM may be as intermediaries between the true and the modeled decision structure. Any data collection instrument (such as a survey, experiment, observation protocol, or game) is a mediating object between A) the actual decision made by an agent, and B) the stylized decision implemented in the ABM. The instrument itself captures some differently stylized decision that may more closely resemble either A or B, depending on the approach, and will thus preserve different aspects of the original decision through to the model. I use this framework to compare different approaches to informing ABM, and recast their roles within the empirical ABM toolkit.

**Keywords:** Start keywords one space below the abstract and provide 3 to 5 keywords separated by semicolons.

## REFERENCES

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