Testable Theory Development for Small-N Studies: Critical Realism and Middle-Range Theory

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ABSTRACT

Theory testing within small-N research designs is problematic. Developments in the philosophy of social science have opened up new methodological possibilities through, among other things, a novel notion of contingent causality that allows for contextualized hypothesis generation, hypothesis testing and refinement, and generalization. This article contributes to the literature by providing an example of critical realist (one such new development in the philosophy of social science) theory development for a small-N comparative case study that includes hypothesis testing. The article begins with the key ontological assumptions of critical realism and its relation to theory and explanation. Then, the article presents an illustrative example of an e-government comparative case study, focusing on the concept of trust, which follows these ontological assumptions. The focus of the example is on the nature and process of theory and hypothesis development, rather than the actual testing that occurred. Essential to developing testable hypotheses is the generation of tightly linked middle-range and case-specific theories that provide propositions that can be tested and refined. The link provides a pathway to feed back the concrete empirical data to the higher level (more abstract) and generalizable middle-range theories.

Keywords: Case Study, Critical Realism, E-Government, Hypothesis Testing, Middle-Range Theory, Trust,

INTRODUCTION

Theory-testing in small-N studies is problematic. Small-N studies refer to studies with a small number of observations where the goal is not to represent a relevant population, but rather to conduct a more intensive study of a small number of phenomena (Gerring, 2007). From the positivist perspective, the small number of observations means that it is difficult to attain statistical significance. Consequently, researchers, especially qualitative researchers, have been advised in the past to increase the size of N as the best way to “enhance the inferential leverage of empirical tests”
(Collier, Seawright, & Munch, 2004, p. 27). From the interpretivist epistemological perspective, research is not thought to be subject to the same evaluation criteria as positivist work (Klein & Myers, 1999; Weber, 2004) as the goal of research is to understand, not to discover (Orlikowski & Baroudi, 1991, p. 14) or test (Avgerou, Ciborra, & Land, 2004).

There is a third perspective, underpinned by new developments in the philosophy of social science, known as critical realism. This article provides an example of how contextualized hypothesis (theory) generation and hypothesis testing and refinement are possible based upon the critical realist notion of contingent causality. It is this form of theory building that makes possible a qualified form of theory-testing in small-N studies. Perhaps not coincidentally, there are many other scientific realists and methodologists who, while not explicitly critical realists, have similar positions regarding causality (e.g., Bunge, 2004a; Bunge, 2004b; Cartwright, 2004; Shadish, Cook, & Campbell, 2002).

The goal of this article is not to argue for the relevance or superiority of critical realism; rather, it is to demonstrate how the critical realist notion of a contextualized causality can be used to develop testable theory that is appropriate for small-N studies. This article uses a comparative case study example to show the thought process behind the development of testable hypothesis following critical realist assumptions. In particular, it presents an approach to multi-level theorizing (including middle-range and case-specific hypotheses) that makes it possible for empirical evidence to feed back to more abstract theories. The contextually dependent causality and the different levels of theory are particularly useful for researchers who wish to explore empirical sites more in-depth, but also would like the potential to build on, test, and refine already existing theory. In doing so, this article looks to contribute to the broader discussion on how critical realism can contribute to information systems research.

The article proceeds as follows. First, there is a consideration of the key ontological assumptions of critical realism and its relation to theory and explanation. Second, the article presents an illustrative example of a comparative case study following a critical realist philosophy. In order to show how critical realist assumptions influenced the research process, the illustration delves into the reasoning behind the process of middle-range and case-specific theory and hypothesis generation, and the method of theory integration. Finally, the article concludes with a summary and some thoughts on the difficulties stemming from the approach to theorization taken here.

**HOW DOES CRITICAL REALISM INFLUENCE RESEARCH?**

Critical realism is a relatively new philosophy of the natural and social sciences developed in the late 70s and early eighties (Bhaskar, 1978, 1998b). Since then it has provided the basis for a range of social science research (Carter & New, 2004; Danermark, Ekstrem, Jokobsen, & Karlsson, 2003; Mingers, 2000, 2004d; Pawson & Tilley, 1997). In the information systems literature, the potential benefits of critical realism have already been touted (Carlsson, 2004; Dobson, 2002; Houston, 2001; Mingers, 2004a, 2004c, 2004d; Smith, 2006). Recently, more examples of critical realism actively applied in information
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