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Logic and Set Theory: A Note of Dissent

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“My underlying complaint is that political scientists eminently lack...a training in logic—indeed in elementary logic.” Sartori (1970: 1033)

Logic is an essential foundation for political analysis. It serves to evaluate “the validity of inferences,” i.e., the “relationship between premises and conclusion.”¹ In numerous publications, I contend that logic is indispensable for good research. However, I also advise caution in choosing tools for political research, arguing in favor of logic as a broad foundation for *methods*, and against excessive reliance on narrow *techniques* (1970: 1033).

I must therefore dissent from Goertz and Mahoney’s (2012) *A Tale of Two Cultures: Qualitative and Quantitative Research in the Social Sciences*. A central claim in this noteworthy book is that qualitative research is and should be based on set theory. In particular, they advocate techniques derived from set theory as the basis for qualitative work. They equate logic

¹ The definition in the Glossary of my *Social Science Concepts* (Sartori 1984: 78) is as follows. Logic is “the study of the validity of inferences (see: Validity). Thus logic deals with the relationship between premises and conclusion, not with the truth of the premises.” Vulgarly: logic applies to the form, not to the substance of arguments. Validity (1984: 85) is defined as follows: “In logic an argument is valid when its conclusion correctly follows (inferentially) from its premise. A measurement is valid (empirically) if it measures what it purports to measure.”

and set theory,² evoking my commitment to logic as an apparent endorsement of their approach.³ Yet I do not endorse it.

To frame my argument, a key point of agreement should be noted. I have long recommended a semantic approach to concepts, which they adopt.

However, the book's advocacy of set theory as the basis of qualitative research takes us in the wrong direction. They endorse fuzzy-set *techniques* that are far too confining. It is indeed essential to push ourselves—as fuzzy sets do, to ask the basic, logical questions: What is an instance of a concept? What *is not* an instance? Yet the intricate fuzzy set procedures cantilever out from these questions, posing dangers of technique that concern me. In some domains of social science we now see growing skepticism about complex statistical techniques—and a turn to simpler tools. The elaborate procedures of fuzzy sets merit the same skepticism.

In applying logic I strive for parsimony, combined with adequacy to the task at hand. Consider my “ladder of abstraction,” which organizes concepts to address the traveling problem in comparative research—the challenge of achieving conceptual traveling without conceptual stretching (1970: passim). Narrower concepts lower down the ladder are indeed subsets of broader concepts further up. However, as I formulated the ladder I kept the argument as simple as possible. I relied on Cohen and Nagel's (1936: 33) classic text on logic, noting their idea of inverse variation.⁴ This pattern captured precisely the framing I wanted—no more, and no less. This simple formulation stands at a great distance from Goertz and Mahoney's elaborate techniques of set theory.

Hence, I must dissent from their recommendation to apply set theory as a central technique in qualitative research.

References

- Cohen, M. R. and Ernst Nagel. 1936. *An Introduction to Logic and Scientific Method*. London: Routledge and Kegan Paul.
- Goertz, Gary and James Mahoney. 2012. *A Tale of Two Cultures: Qualitative and Quantitative Research in the Social Sciences*. Princeton: Princeton University Press.
- Sartori, Giovanni. 1970. “Concept Misformation in Comparative Politics.” *American Political Science Review* 64 (4): 1033–1053.
- Sartori, Giovanni. 1984. “Guidelines for Concept Analysis.” In *Social Science Concepts: A Systematic Analysis*. Giovanni Sartori, ed. Beverly Hills, CA: Sage Publications.

² Goertz and Mahoney (2012: 16, n.1).

³ My epigraph (above) about training in logic also serves as the epigraph that leads their Chapter 2, which introduces their argument about logic and set theory. This chapter is entitled “Mathematical Prelude: A Selective Introduction to Logic and Set Theory for Social Scientists.”

⁴ Sartori (1984: 68, n.40).