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Ontology vs Epistemology: The Difference, With Research Examples

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Abstract

Ontology and epistemology are among the terms that most often confuse researchers who are new to research philosophy, yet a methodology chapter or methods section in the social sciences, education, health and business is commonly expected to state a position on both. This article defines each term in plain language. Ontology concerns the nature of reality, and the article contrasts its two most common positions, realism and relativism. Epistemology concerns the nature of knowledge, and the article contrasts positivism and interpretivism, with a note on pragmatism. A single classroom example runs through both figures, and a side-by-side table summarizes the differences. The article then sets out how a researcher can identify a position and explains, through one topic studied under two contrasting positions, why the two positions together shape a coherent research design. Finally, it analyzes a published statement of ontology from a Master's thesis to show four moves that any such statement can make. It is intended for students and early-career researchers writing a methodology, and for the educators who teach research methods.

Keywords: ontology vs epistemology; difference between ontology and epistemology; ontology and epistemology in research; research philosophy; research paradigm; realism and relativism; positivism and interpretivism; open educational resource

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1. Introduction

Ontology and epistemology are two terms that researchers new to research philosophy often find confusing. In most programs in the social sciences, education, health and business, examiners and reviewers expect a methodology chapter or methods section to state a clear position on both, and many textbook explanations make the question harder rather than easier. In practice, what is needed is rarely more philosophy. It is a plain answer to two questions: what the researcher takes to be real, and how the researcher believes it can be known.

This article is written for students and researchers preparing that statement and for those who teach research methods. Sections 2 and 3 define ontology and epistemology and their most common positions. Section 4 compares the two side by side. Section 5 describes how a researcher can identify a position, Section 6 explains why the two positions matter together, and Section 7 analyzes how a published thesis states its position.

2. Ontology

Ontology is the study of being: the study of reality itself (Moon & Blackman, 2017). It asks a fundamental question: what actually exists? In research, ontology is concerned with deciding what counts as real and what does not. A phenomenon may be treated as a concrete fact, or as a perception, an idea or something a community has agreed upon.

Because ontology is a broad philosophical question, it can seem abstract. Every researcher nevertheless holds an ontological position, even one never considered explicitly. Guba and Lincoln (1994) define a paradigm as "the basic belief system or worldview that guides the investigator, not only in choices of method but in ontologically and epistemologically fundamental ways" (p. 105). Moon and Blackman (2017) add that research decisions can rest on such beliefs without the researcher realizing it. A researcher's ontological position shapes what that researcher is willing to study and which phenomena are regarded as valid objects of investigation.

Moon and Blackman (2017) illustrate ontology with two contrasting positions. *Realism* holds that a single real world exists independently of human experience. *Relativism* holds that reality is constructed by the people who experience it, so there is no single "true" reality to uncover. Figure 1 applies both positions to the same classroom.

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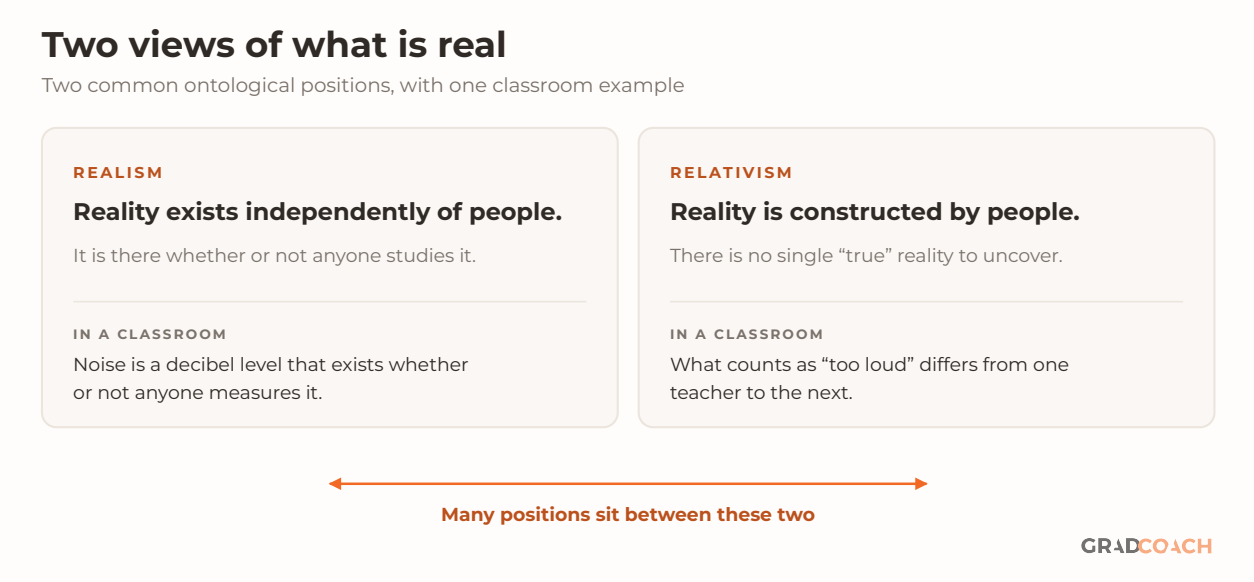

Figure 1. Realism and relativism, applied to the same classroom.

Under realism, classroom noise is a decibel level that exists whether or not anyone measures it. Under relativism, what counts as "too loud" differs from one teacher to the next. The two positions are best understood as the ends of a spectrum: many positions, such as critical realism, sit between them.

3. Epistemology

Epistemology is the study of knowledge (Moon & Blackman, 2017). It addresses questions such as what knowledge is, how it can be known whether something is true, what kinds of evidence count as good evidence, and whether certainty is ever possible.

A dissertation, thesis or research article aims to create new knowledge. A clear epistemological position, established at the outset, is therefore essential: the researcher must be able to explain what knowledge is taken to be and how the study will produce it. A researcher's epistemology describes that researcher's approach to building knowledge in the field.

In methodology chapters, the two positions encountered most often are *positivism*, the view that knowledge comes from objective observation and measurement, and *interpretivism*, the view that knowledge comes from understanding people's meanings and experiences. Strictly, each is a research paradigm, a shared set of assumptions about reality, knowledge and how research should be done, and each carries both an ontology and an epistemology. Positivism pairs realism with an objectivist epistemology, in which an impartial researcher discovers knowledge about an objective reality. Interpretivism pairs relativism with a subjectivist epistemology, in which findings are not uncovered but "created" as researcher and participants interact (Guba & Lincoln, 1994, p. 111). Guba and Lincoln (pp. 108–111) set out both pairings, though they call the second paradigm constructivism rather than interpretivism.

As Figure 2 shows, each points to a different kind of data. In the classroom example, a positivist study measures noise levels and tests whether they predict test scores, while an interpretivist study interviews teachers about how noise shapes their lessons. These links between paradigm

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and data are typical, not fixed: any paradigm can use quantitative or qualitative methods (Guba & Lincoln, 1994, p. 105). A third paradigm, *pragmatism*, selects whichever methods are most appropriate for answering the research question (Allemang et al., 2022).

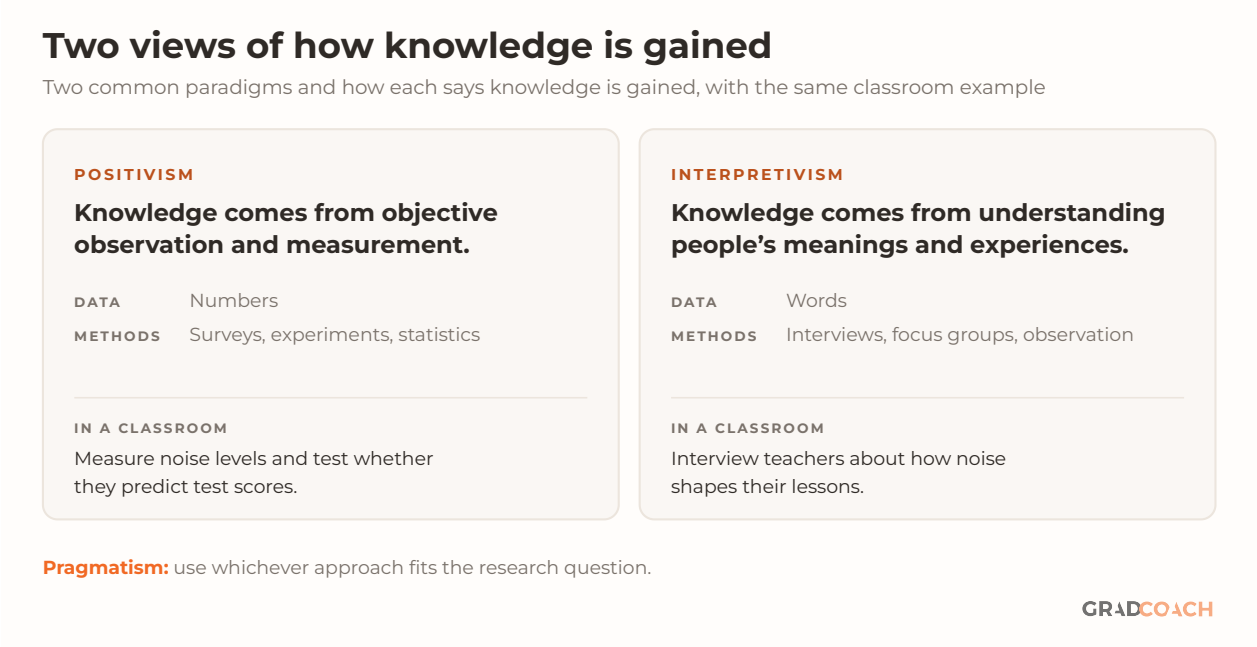

Figure 2. Positivism and interpretivism, applied to the same classroom.

4. Ontology and Epistemology Compared

Side by side, the difference between the two terms is easier to see. Table 1 compares them on the questions that matter for a study, using research on teacher burnout as the example.

Table 1. Ontology and epistemology compared.

	Ontology	Epistemology
The question it asks	What is real?	How can what is real be known?
What it concerns	The nature of reality: what exists to be studied	The nature of knowledge: what counts as evidence
Common positions	Realism and relativism	Objectivism and subjectivism (usually encountered as part of positivism and interpretivism)
The question it raises in a study of burnout	Does burnout exist apart from how teachers describe it?	Can a questionnaire capture burnout, or must teachers be heard describing it?
Where it appears in a thesis	The opening of the methodology chapter	The justification for how data are collected and analyzed

The epistemological question is difficult to answer until the ontological question is settled. Guba and Lincoln (1994, p. 108) set out the ontological, epistemological and methodological questions in that order. The order, they say, reflects "a logical (if not necessary) primacy", and the answer to the epistemological question "is constrained by the answer already given to the ontological question". For this reason, methodology chapters usually state ontology first.

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5. Identifying a Position

Identifying a position begins with ontology, because epistemology depends on it. The researcher asks whether the phenomenon under study exists independently of the people involved, as a blood pressure reading or a day's rainfall does, which places the study closer to realism. If the phenomenon is instead shaped by how people understand it, as workplace culture or professional identity is, the study leans toward relativism.

Epistemology follows. A useful first step is to read about the different types of knowledge. A standard reference work such as *The Oxford Handbook of Epistemology* (Moser, 2005) covers them in depth. With the main epistemological positions in mind, the researcher considers which one fits the research question and the aims of the study. Three questions help:

- What type of knowledge is the study trying to create?
- Is that knowledge practical and applied, or theoretical?
- Is it based on lived experience?

For example, a researcher in education who studies teaching practice might draw on practitioner knowledge: the knowledge that educators build through doing their work, day after day. The essential requirement is that the epistemology matches the research question and what the study sets out to achieve.

6. Why Both Positions Matter

The two concepts do different work. Ontology shapes what the researcher believes exists and is worth studying; epistemology shapes how it will be studied and what counts as evidence. The two are complementary, and clarity on both supports a coherent research design.

The difference they make is clearest when one topic is studied under two positions. Consider burnout among early-career teachers, the example used in Table 1.

- **A realist, positivist study** treats burnout as a real condition that exists whether or not teachers name it. On a positivist epistemology, that condition can be measured. It surveys a large sample using an established burnout scale and tests which workplace factors predict higher scores.
- **A relativist, interpretivist study** treats burnout as meaning different things to different teachers, shaped by their schools and their own experiences. It interviews a small group or runs focus groups, and analyzes how teachers describe and make sense of their exhaustion.

The topic is the same, but the two studies are entirely different. This gives a practical test for any draft methodology: if the methods do not follow from the stated ontology and epistemology, that is the gap an examiner or reviewer is most likely to question.

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7. Stating a Position

Researchers who remain uncertain after reading the theory can learn from completed dissertations and theses in their field. Those with a section on ontology or epistemology show how other researchers have framed these concepts. Each field is likely to have its own conventions and preferred approaches, and published examples provide concrete models.

The following statement comes from a Master's thesis in natural resources at Cornell University, a mixed-methods study of farming communities in the mid-hills of Nepal. It names its position and then explains why that position fits the field. In the extract, "SES" stands for social-ecological systems.

> My ontology, the ways in which I conceive of reality and in which I believe that reality shapes my research, are heavily influenced by realism, the notion that reality exists independent from human minds, perceptions, and theories (Niiniluoto, 2002; Jenkins, 2010). In the field of natural resources, it is important to acknowledge that the natural world, independent of human activity, forms the foundation and structure for human society and the ways in which we exist within SES (Tidball, 2012). If a tree is killed by emerald ash bore [sic] and a researcher is not around to record its death, the event stands.
>
> [...] Following the establishment of a foundation for what constitutes reality, a researcher must develop a system by which they know how, when, or if they know something to be real, an epistemic frame.
>
> Hughes (2024, pp. 37–38)

In a few sentences, the passage names its position (realism), defines it with a citation, ties it to the field and makes it concrete with a single image. The epistemology section that follows then opens by building on it. The same four moves can be made in any methodology chapter, whatever the position taken:

1. **Name the position,** such as realism or relativism.
2. **Define it with a citation** to the source being drawn on.
3. **Tie it to the field,** stating why it suits what is being studied.
4. **Make it concrete** with one example or image from the topic.

The same four moves then apply to the statement of epistemology. A researcher does not need to write such a statement from nothing. It is sound practice to learn from what others in the discipline have done and adapt it to the context of the study.

8. Conclusion

Ontology is a researcher's view of what is real; epistemology is a researcher's view of how it can be known. Ontology usually comes first in a methodology chapter, because it limits what the epistemology can claim, and the methods of data collection and analysis should follow from both. A study that names each position, defines it with a source, explains why it fits the research and illustrates it with an example gives a reader or examiner a clear line from philosophy to method.

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