The Importance of Assumptions and Philosophy in Research Design

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Abstract

Many early-career researchers view data collection as the starting point of a study, often overlooking the philosophical foundations that justify their choice of methods. While a research problem can be addressed through various lenses, the specific path chosen depends heavily on the researcher's worldview. This paper highlights the necessity of understanding the "layers" of research, as categorized in Saunders et al.'s (2007) Research Onion. By examining the roles of ontology, epistemology, and axiology, the author demonstrates how these assumptions shape every subsequent decision—from research strategy to data analysis. Ultimately, this paper provides a roadmap for researchers to transition from superficial data gathering to philosophically grounded inquiry.

Keywords: Epistemology, methodology, novice researchers, ontology, research assumptions, research onion, research philosophies

1. Introduction

While many novice researchers exhibit a methodological urgency by proceeding directly to data collection, a robust academic inquiry requires a profound understanding of the foundational layers that imbue data with meaning. The central dilemma of scholarly investigation lies in why different researchers often arrive at entirely divergent methodologies even when investigating identical phenomena. When approaching any research topic, these paths diverge based on the researcher's internal philosophical compass. When approaching a research problem, a scholar must balance multiple factors: the specific research question, personal beliefs, the criteria for valid data, and the origins of that knowledge. To visualize this complexity, Saunders et al. (2007) propose the Research Onion, a model that compels the researcher to peel through successive layers of philosophy, approach, and strategy before reaching the pragmatic center of data collection. Understanding these layers

ensures that a research philosophy is not merely a random collection of ideas, but a coherent system of beliefs regarding the development of knowledge.

This paper aims at eliciting research assumptions and philosophies (the first outer layer). It positions them as the backbone of research design, for understanding one's assumptions in research delineates their choice of a philosophy/philosophies that guide the scientific conduct of research (other layers).

2. Philosophy as a Reflexive and Cyclical Process

A research philosophy is not a static starting line but a cyclical relationship between three core components that constantly inform and reinforce one another. This reflexive process moves away from the idea that philosophy is a mere preliminary step and shows instead that beliefs, philosophy, and design are in a state of constant dialogue.

2.1. Research Assumptions

The initial drivers are the researcher's internal assumptions—the seeds from which the entire project grows. Research assumptions can be seen as the hidden dimensions of the Research Onion (Saunders et al., 2019). Ontology, Epistemology, Axiology, and Methodology together form the internal logic of any study, shaping how knowledge is approached and understood.

2.1.1. Ontology

Ontology examines the nature of existence and asks what kind of reality is being investigated (Crotty, 1998). Ontology has two primary positions: (a) Objectivism views social entities as existing independently of human perception, while (b) subjectivism sees reality as constructed through the perceptions and actions of individuals (Saunders et al., 2019).

2.1.2. Epistemology

Epistemology focuses on how knowledge is acquired and what counts as valid understanding (Cohen et al., 2018). Positivist epistemology treats knowledge as objective and measurable, while interpretivist epistemology emphasizes subjective meanings and personal interpretations as essential to understanding human experience.

2.1.3. Axiology

Axiology considers the role of values in research (Creswell & Creswell, 2018). A value-free stance assumes the researcher can remain objective and unaffected by personal bias, whereas a value-bound stance acknowledges that the researcher's background, culture, and values inevitably shape the inquiry and interpretation.

2.1.4. Methodology

Methodology provides the overarching strategy that connects philosophical assumptions to research methods (Guba & Lincoln, 1994). It translates abstract positions into practical approaches: a belief in fixed reality and measurable knowledge often leads to experimental or survey designs, while a belief in subjective reality and personal knowledge aligns with qualitative strategies such as phenomenology or ethnography.

These individual beliefs eventually crystallize into a formal research philosophy, underpinned by raw assumptions that are organized into a consistent system of

thought, acting as the lens through which the world is viewed. Finally, this philosophy manifests as action through research design. The choice of methodology, strategy, and data collection techniques is a direct result of the philosophy.

The relationship is cyclical because a research design must reflect its underlying philosophy, which in turn must be grounded in beliefs and assumptions. If a researcher's assumptions about reality shift, the philosophy must be recalibrated, necessitating a different methodological design. Conversely, the practicalities of research design often force the researcher to reflect back on and refine initial philosophical assumptions (Cohen et al., 2018; Saunders et al., 2019).

3. The Methodological Spectrum: Objectivism vs. Subjectivism

Establishing a rigorous research position requires navigating the spectrum between objectivism and subjectivism across the three pillars of research assumptions. This choice of research tools is never arbitrary but is a direct consequence of where the researcher stands on this continuum (Saunders et al., 2019). In research, the method is the bridge between a researcher's philosophical stance and their actual practice by defining their position across these three key "ologies."

Under the pillar of ontology, an objectivist views reality as external, independent, and existing separately from social actors. Conversely, a subjectivist believes reality is a social construct, created through the perceptions and continuous actions of social actors. In terms of epistemology, an objectivist focuses on observable phenomena and credible data that can be measured and generalized, while a subjectivist values individual narratives, meanings, and the context of human experience as valid knowledge. Finally, axiology dictates the role of values; while objectivists strive for a value-free, neutral stance to maintain scientific integrity, subjectivists acknowledge that research is value-bound, with the researcher's personal ethics and perspectives being central to the inquiry (Creswell & Creswell, 2018; Saunders et al., 2019).

Therefore, if research assumptions lean toward objectivism, the method will naturally favor quantitative strategies like surveys or experiments to find universal laws. If research assumptions lean toward subjectivism, the method will shift toward qualitative strategies like deep interviews or ethnography to understand specific human meanings. Identifying where the researcher falls on this spectrum is the essential first step in ensuring the research design is philosophically grounded and internally consistent.

4. Navigating the Academic Chimera: The Plurality of Philosophies

Researchers might ask, "Which assumptions should I adopt?" or "What is the best philosophy?" The truth is, the best philosophy is the one that aligns with research goals and one's identity as a scholar.

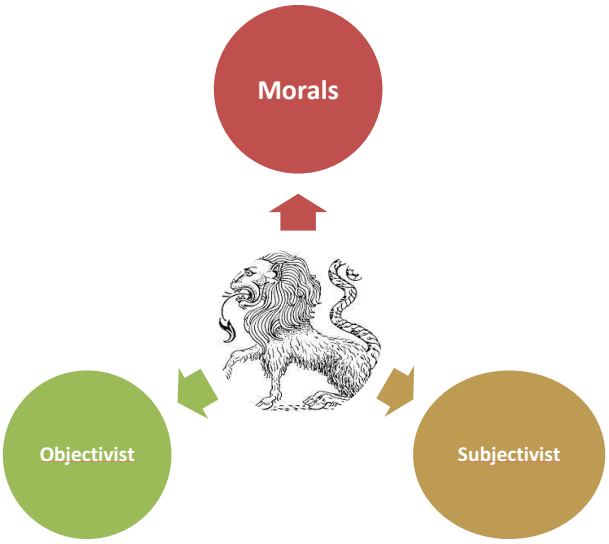


Figure 1. Academic Chimera

Deciding upon a specific philosophy can often feel like encountering an "Academic Chimera" (Figure 1). In classical mythology, the Chimera is a creature composed of disparate parts—the head of a lion, the body of a goat, and the tail of a serpent. Similarly, the choice of a research philosophy involves a difficult struggle between objectivist logic, subjectivist interpretation, and the researcher's own morals and values. There is no singular best philosophy; rather, the optimal choice is the one that most authentically aligns these competing forces to answer a specific research question. To aid in this identification, tools such as the **Heightening Awareness of Research Philosophy (HARP)** survey allow researchers to engage in self-reflection (Saunders & Bristow, 2014). By asking "Who are you?" and "Who will you be as a researcher?", scholars can maintain the internal consistency required for a valid research design.

5. Research Identities (Philosophies)

5.1. The Mechanistic View: Positivism and the Clockwork Universe

The Positivist identity is perhaps best understood through the metaphor of the "Clockwork Universe" or the "Duck of Vaucanson" Figure 2).



Figure 2. "Duck of Vaucanson" (1739)
Source. Riskin (2003

Just as Vaucanson's mechanical duck was a mechanism governed by physical laws, the positivist perceives the world as a measurable, predictable machine. For the positivist, truths are objective and exist independently of the researcher's influence. They seek to uncover universal laws and causal relationships through quantitative strategies, such as experiments or structured surveys. This stance assumes that social reality is stable and that the researcher can remain a detached observer, collecting data that is both observable and quantifiable.

5.2. Critical Realism: Confronting the Illusion

In contrast to the straightforward nature of positivism, Critical Realists acknowledge that what we observe is not always the full story. This philosophy can be compared to Adelson's optical illusions, where the human eye is deceived by shadows and light, misinterpreting the actual color of a square (Figure 3).

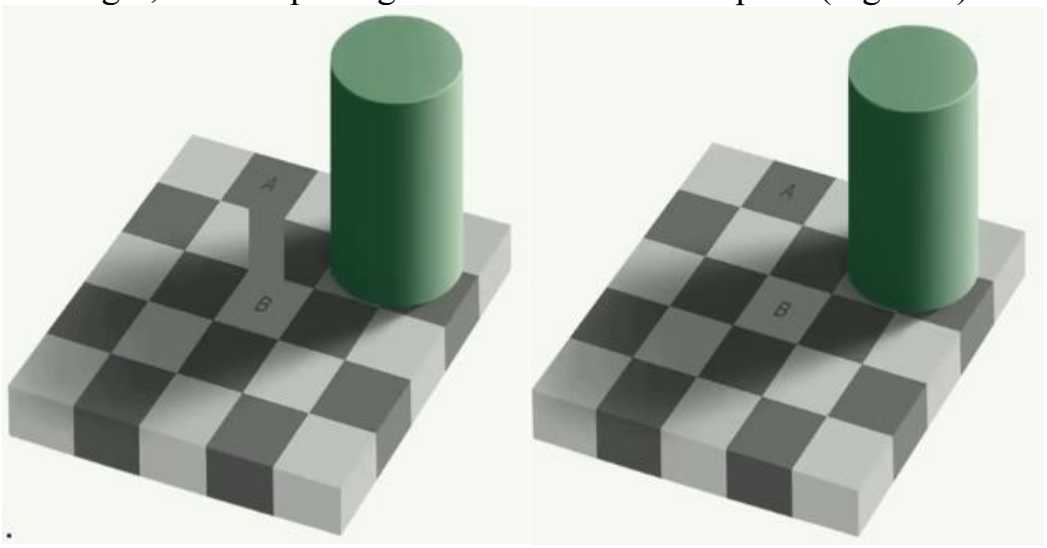


Figure 3. Illusions (Adelson, 1995)

A critical realist believes that while an objective world exists, our senses and social biases often obscure it. Therefore, the goal of the critical realist is to look behind these illusions to identify the underlying structures and generative mechanisms that shape our social reality. They accept that knowledge is socially situated but maintain that research can uncover deeper truths that are not immediately apparent on the surface.

5.3. The Interpretivist Identity: The Primacy of the Subject

Unlike the positivist who examines objects governed by mechanical laws, the interpretivist focuses exclusively on subjects. This philosophical stance is rooted in the belief that the social world cannot be understood through the same methods used in the physical sciences. For the interpretivist, people are not mechanical parts; they are conscious actors who create their own meanings and social realities based on unique historical and cultural contexts.

The ontological position here is strictly subjectivist, asserting that reality is multiple and relative. Epistemologically, the interpretivist seeks to understand the richness of human experience rather than seeking generalizable laws. This necessitates a qualitative approach, where the researcher often enters the world of the participants to see it from their perspective. In teacher training research, an

interpretivist would not look for a universal best practice but would instead investigate how individual teachers perceive their classroom challenges, acknowledging that truth is co-constructed between the researcher and the researched.

5.4. The Postmodernist Identity: The Deconstruction of Truth

The postmodernist identity represents a radical departure from the "Big Picture" narratives favored by both positivists and interpretivists. Postmodernism challenges the very idea of a single, objective truth, viewing it instead as a product of language and power dynamics. From this perspective, there is no correct version of reality, only competing narratives that are often used to marginalize certain voices.

Ontologically, postmodernism is anti-foundational; it argues that reality is fragmented and constantly shifting. The researcher's role is not to find the truth but to deconstruct the "Grand Narratives" that define academic fields. In a research design, this manifests as an intense focus on discourse analysis and the interrogation of power. A postmodernist study in education might analyze how specific policy language reinforces traditional hierarchies, seeking to uncover the silences in the text rather than providing a definitive solution to a problem.

5.5. The Pragmatist Identity: The Logic of Action

Finally, the pragmatist identity offers a move away from the rigid ideological conflicts of the paradigm wars. Pragmatists are characterized by their flexibility and their focus on practical outcomes. For the pragmatist, the picture of research is one of action; they are not tied to a specific worldview but instead choose the philosophy and the tools that best fit the specific problem at hand.

The pragmatist's ontological and epistemological stances are fluid. They argue that truth is whatever works best in practice to solve a tangible problem. This leads to a methodology that frequently employs mixed-methods research, combining the statistical rigors of quantitative data with the depth of qualitative insights. In the context of the research onion, the pragmatist enters the onion from the center—the research question—and works outward to select the philosophy that justifies the most effective methodology. This approach is particularly valuable in applied fields like education, where the ultimate goal is often the improvement of practice rather than the verification of abstract theory.

5.6. Navigating the Spectrum

By separating these identities, the researcher can more clearly see the implications of their choice. While the interpretivist seeks understanding, the postmodernist seeks critique, and the pragmatist seeks solutions. Identifying where one falls is the essential first step in ensuring that the research design remains philosophically grounded and internally consistent.

6. Conclusion

By utilizing the research onion to integrate philosophy into the research design, a scholar transitions from a superficial data gatherer to a philosophically grounded researcher. This integration ensures that the methodology is not an arbitrary choice but a direct consequence of a well-defined philosophical position. Ultimately, identifying where one falls on the philosophical spectrum is the essential first step in ensuring that the research design is internally consistent and academically rigorous.

When the method serves as a sturdy bridge between abstract ontological beliefs and concrete research practice, the resulting contribution to knowledge is both authentic and scientifically valid.

References

- Adelson, E. H. (1995). *Checker Shadow Illusion*. Perceptual Science Group MIT. https://persci.mit.edu/gallery/checkershadow
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
- Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. SAGE Publications.
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105–117). SAGE Publications.
- Riskin, J. (2003). The Defecating Duck, or, the ambiguous origins of artificial life. https://www.scribd.com/document/81254570/Defecating-Duck
- Saunders, M. N. K., Lewis, P., & Thornhill, A. (2007). *Research methods for business students* (9th ed.). Pearson Education.
- Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson Education.
- Saunders, M. N. K., & Bristow, A. (2014). Heightening awareness of research philosophy: the development of a reflexive tool for use with students' Developmental paper presented at the British Academy of Management Conference, Belfast.