



COMMENTARY

Qualitative research is a fundamental scientific process

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Abstract

By framing the investigation of scientific inquiry around Plato's "arch of knowledge", we argue that qualitative inquiry is essential to the scientific process. We propose that because qualitative research applies a systematic and self-critical approach to induction and deduction, it should be considered a fundamental scientific enterprise. © 2018 Elsevier Inc. All rights reserved.

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1. Introduction

A recent debate about the status and utility of qualitative research [1] motivated us to consider how qualitative research is scientific. This requires a broad perspective on the systematic accumulation of knowledge. We characterize the scientific status of qualitative research by appealing to Plato's "arch of knowledge". Within this arch, knowledge development proceeds from induction to deduction; particulars (sensory perceptions) provide the basis for universals (concepts/models/theories), which in turn are supported by testable predictions and explanation. Although the "universals" are often considered to constitute scientific knowledge in the abstract, the interactions among the points of the arch constitute the scientific method, and all of the components are legitimate providing they apply rigorous methods. Qualitative research generates meaning through a systematic approach to induction and deduction, and thus is essential to the scientific method in the pursuit of knowledge.

Conflicts of interest: J.E.M.S. has been trained in qualitative research at the doctoral and postdoctoral level. She has 9 years of teaching experience at the graduate level at the University of Toronto with a strong emphasis on philosophical foundations, the role of theory, and theoretically informed critical appraisal (she has published several papers related to critical appraisal). S.T. has no conflicts of interest to declare.

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2. Recent debates about the status and utility of qualitative research

We define qualitative research as an inquiry process that focuses on interpretation and meaning and aims to explore social or human problems [2–4]. Furthermore, we consider qualitative research that is based on interpretivism [4–7] and constructivism [8]. The investigator and object of study are interactively linked, and findings are mutually created within the context of the situation that shapes the inquiry [8,9]. Several recent publications [1,10,11] have re-examined the status and utility of qualitative research. Denzin [11] suggested "critical qualitative research is under assault", but that an ethically responsible research agenda depends on qualitative perspectives. Torrance [10] questioned the definition of science as being primarily identified with randomized controlled trials and asked for "reasserting a wider definition of scientific method grounded in curiosity, observation, interpretation, and judgment". Greenhalgh et al. [1] expressed concern about The British Medical Journal's apparent de facto policy of rejecting qualitative research because such studies were seen as low priority and unlikely to be cited and proposed that the journal allocate space to qualitative research. The British Medical Journal subsequently defended their position by stating they did not prioritize qualitative research because qualitative studies do not provide generalizable answers [12].

What is new?**Key findings**

- In this article, we argue that qualitative inquiry is an essential part of scientific knowledge by appealing to Plato's "arch of knowledge".

What this adds to what was known?

- The arch of knowledge demonstrates how induction and deduction are essential processes in the scientific method.
- Qualitative research systematically generates knowledge through the process of induction and deduction and thus, solidifies the arch of knowledge.

What is the implication and what should change now?

- Qualitative research is therefore a fundamental part of the scientific process.
- The scientific status of qualitative research has implications for its inclusion in evidence-based medicine.

3. How is qualitative research scientific?

These articles reflect a contemporary conflict about what types of research deserve primacy and support, yet they only indirectly address a more fundamental question: how is qualitative research science? We acknowledge that not all qualitative researchers concern themselves with whether they are considered scientists. For instance, they may downplay or deny the special status accorded to scientific knowledge on the grounds that establishing its credentials involves the interests of scientists and groups of scientists, financial or social status, and professional interests [13]. However, although others have argued that scientific knowledge can be derived from qualitative inquiry (e.g., see Malterud 1993 [14]), we take this claim one step further by arguing that qualitative inquiry is an essential part of the "arch of knowledge" that science builds, and that such inquiry is thus fundamental to any validated scientific enterprise.

4. The arch of knowledge

The term "arch of knowledge" was used by Plato to describe the process of knowledge acquisition [15]. Aristotle refined this paradigm, detailing the process of ascending and descending the arch [15]. Induction is the means of ascending from "particulars" to "universals". Particulars are sensory perceptions that have been equated with observable facts or experimental results [13] and could be analogous to qualitative data in the form of interviews, observation, and text.

Universals constitute general statements, scientific laws, principles, or theories [13]. Although not using the term "generalizable", qualitative researchers describe findings that apply across various contexts as "transferable" [16]. Furthermore, qualitative researchers often describe their results as concepts and relationships and may refer to their work as being theoretically generalizable because it produces theoretical explanations about phenomena or contributes to a theory [17]. Thus, the term "universals" is analogous to concepts, models, or theories in qualitative research. Insofar as science focuses on general knowledge rather than facts about specific objects, times, or places, the universal findings at the apex of the arch constitute what we consider to be scientific knowledge in the abstract [13].

The descent of the "arch" involves deduction, a logical process that allows for predictions and explanations from the universals or generalizations [15]. These predictions and explanations can then be tested systematically, and results used to refine the general findings, a cyclical process back through the arch. Predictions and explanations are analogous to interpretation and meaning in qualitative research (see Fig. 1). Science is not simply the set of universals at the apex of the arch but rather the arch itself. Most of the arch is not composed of isolated facts, but rather of processes, the "scientific method", by which propositions are examined by means of systematic investigation.

5. Induction

Most of the inductive and deductive processes in the arch cannot be subjected to quantitative investigation. First, induction assumes that observed premises or particulars are true, but it cannot independently establish their validity, as by experiment [13]. Second, the inductive logic that extends from some to all can never be fully tested or proven because this logic goes beyond what is contained in the premises [13]. Third, observations are dependent on the act of observation that involves a specific observer working in a specific place and time. What we see depends on what

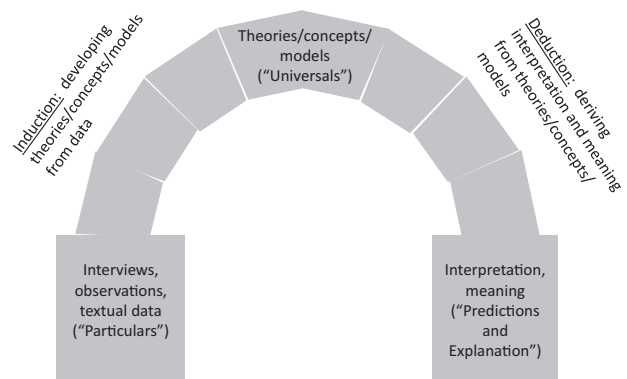


Fig. 1. The arch of knowledge applied to qualitative research. Adapted from Figure 1 in Chalmers A.G. What is this thing called science? Queensland, Australia: University of Queensland Press; 1982.

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