

Empirical Epistemologies Applied to Human-Centered Computing Research

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EMPIRICAL FORMS OF INQUIRY

Positivist	Interpretivist
Empirical Goals: hypothesis testing proving knowledge	Empirical Goals: thesis formation building knowledge
Related Terms (but not necessarily synonymous): hypothesis-driven scientific method experimental design deductive "quantitative research" Warning: All research, including positivist research, requires interpretation of results.	Related Terms (but not necessarily synonymous): data-driven ethnographic inductive "qualitative research" Warning: The "qualitative research" term is misleading. Data- driven research can be highly numerical.
Positivist/Summative Example: How many people affected by a disaster turn to social media during the warning period of a hurricane?	Interpretivist/Summative Example: How do people make use of social media during the warning period of a hurricane?
Positivist/Formative Example: Did the intervention to improve warning messages change the number of users by comparing 2 regional samples?	Interpretivist/Formative Example: Are there ways to improve information access during the warning period of hurricane disasters through social media?

RESEARCH DESIGN COMPONENTS

Research Objective

Are the broad aims to prove something within an existing area or set of knowledge, or to create a new area or set of knowledge? Which parts of this will be reported on formally? These choices determine whether the empirical research program is positivist or interpretivist.

Research Questions (RQs)

Depending on the size of the research program, there may be multiple sub-research questions under the governance of the meta-research question or objective. Individual sub-research questions might be positivist or interpretivist, and summative or formative in nature. Often interpretivist inquiry will precede positivist inquiry.

Units of Analysis

Do the bounds of observation match the scope of concern? The bounds of observation are the "units of analysis." In interpretivist research, units of analysis can be large, but are still bounded. Do RQs, procedures, methods & participant selection match units of analysis appropriately at each stage?

Procedures

Positivist research will require an experimental apparatus that controls for variables using within- or between-subjects design and so on. Interpretivist research will require careful selection of participants in ways that match objectives, units of analysis, and methods. Procedures may vary for each sub-component of a larger research program.

Participants

Do participants need to be selected to be representative of a larger sample (this matter can be asked in both positivist or interpretivist inquiries)? Do they need to be selected to deliberately pursue understanding of a new behavior (this is more common in interpretivist/formative research)? Are they co-designers (participatory design; usually interpretivist/formative), or co-researchers (action research, which can be either positivist or interpretivist), or more classically treated as "subjects"?

Methods

The applications of methods and the use of their results can vary greatly and so therefore on their own cannot be inherently positivist or interpretivist. Methods can include: Interviews, Surveys, Participant or Non-Participant Observation, Diary Studies, Experiential Sampling Method, Eye Tracking, Field Deployments, Social Graph Analysis, Data Mining & Modeling and so on...

Summative

Research whose purpose is to explain something that is preexisting or has already occurred, without deliberate intervention (other than what the research might incur on its own simply by being conducted, as in ethnographic research)

Formative

Research whose purpose is to inform something subsequent, including design of artifacts, policies, procedures or more refined RQs. The aim of formative research is what drives Human-Computer Interaction commitments to iteration

**HCC-
ORIENTED
GOALS**