Chapter 4

HYPOTHESIS GENERATION IN THE FIELD:
SHADOWING THE DESIGN TEAM

The empirical dimension of this research consists of three progressive steps:

1. Observation and analysis of a realistic design project in the field for hypothesis generation.
2. Design of a laboratory experiment to test the hypotheses.
3. Redesign of the experiment and the execution of the final version.

This empirical design research approach—segmenting the research project into three progressive steps—has been practiced at the Stanford University Center for Design Research since the late 1980s. It identifies a conceptual progression by structuring the empirical dimension of a research project into three sequential research components that build on each other, and by characterizing the scope and outcome of each component.

In order to provide more structure for each of the three steps, I relied on another approach that has been effectively used at the Center for Design Research. It entails the iteration of a cycle consisting of the “Observe-Analyze-Intervene” phases, and advocates going beyond merely observing and describing design activity to constructing meaningful interventions that test gained insights (Figure 4-1).

7 This method is too generic to be attributed to an individual. However, at the Center for Design Research, it was first used by Tang and Minneman [Tang 1989, Minneman 1991].
Iterative Approach to Empirical Design Research

![Diagram](image)

Figure 4-1. The iterative approach to empirical design research entails a cycle consisting of the “Observe-Analyze-Intervene” phases, and advocates going beyond merely observing and describing design activity to constructing meaningful interventions that test gained insights.

In order to use the two approaches in conjunction, I superimposed the iterative approach on each of the three empirical steps. Within each step, I conducted multiple iterations of the cycle. The differences in the nature of the empirical steps require more or less emphasis on the different phases of the cycle [Figure 4-2].

Specifically, during hypothesis generation, it is not useful—even counterproductive—to focus on intervention. The main purpose is to observe and understand the design situation and the phenomena of interest in the field. The goal of designing a laboratory experiment is to incorporate the understanding gained during hypothesis generation into experimental elements such as a design scenario, research variables, and a meaningful intervention, and create a pilot experiment. The final empirical step involves running the pilot experiment, observing and analyzing the experimental elements, and redesigning them to achieve the intended intervention. The redesigned experiment is then conducted and the data are analyzed in depth.

In this chapter, I address the first step of the empirical dimension of this research, hypothesis generation in the field. The other steps are addressed in Chapters 5, 6, and 7. In section 4.1, I discuss the grounded principles used in hypothesis generation. In section 4.2, I provide the context for the preliminary field observations. In section 4.3, I outline and compare two techniques for capturing design activity in the field. In section 4.4, I report the findings of the field research, which include key observations and a set of hypotheses.