

## Taking Usability Into The Trenches

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### Introduction

There are significant methodological and philosophical differences between ethnography- and laboratory-based processes in the product development cycle. These differences set proponents of these data collection methods at odds with one another, with members on both sides pointing fingers and declaring the other's shortcomings. They endlessly debate methodological purity, ownership and expertise. One fears a lack of scientific rigor, and the other worries about a sterile, contextually detached environment yielding irrelevant results. Both sides make valid points, but the fervor of the debate draws attention away from the fundamental question of product design: Does the product work in the broadest sense of the term? To defuse the debate and get back to this primary question requires an approach that blends the rigor of laboratory-based processes with the contextual richness of ethnography.

### Why We Bridge Methodological Boundaries

Final interface design and product planning usually begins after laboratory testing produces data that either prove or disprove the product's usability. After error and success rates are tabulated, the user interface is tweaked to increase overall usability.

This approach generates copious amounts of data that effects legitimate design changes. However, while the data are reliable in a controlled situation, they may not be valid in a real-world context. It is perfectly possible to obtain perfect reliability with no validity when testing. But perfect validity would assure perfect reliability because every test observation would yield the complete and exact truth. Unfortunately, neither perfection nor quantifiable truth exist in the real world, so the reliable data recorded during laboratory testing must be supported with valid data that is best found through field research. In other words, sometimes the numbers don't mean anything if they do not reflect the context of use.

To check validity, an anthropologist or ethnographer enters the field and spends enough time with potential users to understand how environment and culture shape what they do. When these observations inform the design process, the result is product innovation and improved design.

At this point, however, the field expert is dismissed from the project, and the product or website moves forward with little cross-functional interaction. The UI experts and scientists take charge of ensuring the product meets predetermined standards of usability using a controlled environment and scientific rigor.

The history of science includes countless examples of hypothesis testing and discovery that would fail to satisfy modern rules of scientific method, including James Lind's discovery of the cure for scurvy and Henri Becquerel's discovery of radioactivity. But bad science from the standpoint of sample size and environmental control doesn't negate the millions of people to have benefited from these discoveries.



## TWO WEST DISCOVERY

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Unfortunately, if we fail to account for the context in which the product will be used, we usually overlook the real problem. A product may conform to every aspect of anthropometrics, ergonomics, and established principles of interface design. It may meet every requirement and have every feature potential consumers asked for during the various testing phases. You may get an improvement of a second in reaction time in a lab, but what if someone using an interface is chest deep in mud while bullets fly overhead? Suddenly something that was well designed in a lab becomes useless because no one accounted for shaking hands, decrease in computational skills under physical and psychological stress, or the fact that someone is laying on their belly as they work with the interface. Context, and how it impacts performance with a web application, software application, or any kind of UI now becomes of supreme importance, and knowing the right question to ask and the right action to measure become central to accurately assessing usability.

### Field Testing: Getting Dirty

So what do we do? We combine elements of ethnography and means-based testing, documenting performance and the independent variables as part of the evaluation process. This means detaching ourselves from a fixation with controlled environments and the belief that our job is to yield the same sorts of material that would be used in designing, say, the structural integrity of the Space Shuttle. The reality is that most of what we design is more dependent on context than it is on being able to increase performance speed by 1%. Consequently, for field usability to work, the first step is being honest with what we can do. A willingness to adapt to new or unfamiliar methodologies is one of the principal requirements for testing in the field, and is one of the primary considerations that should be taken into account when determining whether a team member should be directly involved.

The process begins with identifying the various contexts in which a product or UI will be put to use. This may involve taking the product into their home and having them use it with all the external stresses going on around them. It may mean performing tasks as bullets fly overhead and sleep deprivation sets in. The point is to define the settings where use will take place, catalog stresses and distractions, and then learn how these stresses impact factors like performance, cognition, and memory. For example, if you're testing an electronic reading device, such as the Kindle, it would make sense to test it on the subway or when people are laying in bed (and thus at an odd angle), because those are the situations in which most people read. Does the position in bed influence necessary lumens or button size? Do people physically shrink in on themselves when using public transportation and how does this impact use? Test the product in the real conditions under which it will be used, and include external variables in the final analysis and recommendations.

It is not possible to document every variable and context in which a product or application will see use, but the bulk of these situations will be uncovered, and those which remain unaddressed frequently produce the same physiological and cognitive responses as the ones that were uncovered.

During the actual test, we do not forego measurement of success and failure, time of task, click path, and other common usability metrics Even though we are testing



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in the field, we strive to retain the same level of scientific rigor as we would in a laboratory setting while also understanding how context shapes usability.

Once the initial test is done, we usually leave the product with the participant for about two weeks, then come back and run a different series of tests. This allows the testing team to measure learnability as well as providing test participants time to catalog their experience with the product or application. During this time, participants are asked to document everything they can about their interaction with the product and what is going on in the environment. Once the research team returns, participants walk us through behavioral changes that have been the result of the product or interface. There are times when a client gets everything right in terms of usability, but the user still rejects the product because it is too disruptive to their normal activities. In that case, you have to rethink what the product does and why.

Finally, there is the issue of delivery of the data. Nine times out of ten the reader is looking for information that is quite literal and instructional. Ambiguity and/or involved anecdotal descriptions are usually rejected in favor of concrete data. The struggle is how to provide this up-close information without it simply seeming sensational. It means providing more than numbers. Information should be broken down into a structure such that each "theme" is easily identifiable within the first sentence. More often than not, specific recommendations are preferred to implications and must be presented to the audience in concrete, usable ways. Contextual data and its impact on use need the same approach.

### Conclusion

A product or UI design's usability is only relevant when taken outside the lab into the real-world context where it will be used. Rather than separating exploratory and testing processes into two discrete activities that have minimal influence on each other, usability can be maximized by employing a mixed field method that bridges the gap between ethnographic and laboratory approaches. Innovation and great design do not stem from one methodological process, but a combination of the two.



discovery + design