

The Small Experiment: Achieving More with Less

Rachel Kaplan
University of Michigan

Small experiments provide ways to try things out. They are unabashedly imperfect. They are "small" in cost, in number of participants involved, and, especially in their intention. A manageable study, however, need not be conceptually sloppy. To be useful, even small experiments need to be thoughtful and disciplined. The goal of this paper is to examine ways that environmental design research can be "appropriate" (in Schumacher's sense). The intention is to explore the use of small experiments in involving those without design training in the design process as well as involving those without research training in the research process.

Research is part of EDRA's name. We are all committed to the value of research. We are seekers of answers, eager to explore new directions, and continuously challenge yesterday's explanations. At the same time, however, research has its detractors. There are those who doubt that for all the effort, the money, the mystique, that we have better answers or that research findings would be heeded anyway. The purpose of this paper is to explore research that speaks to some of these concerns. The notion of the Small Experiment is proposed as a way to keep the research effort manageable and the findings useful (S. Kaplan, 1990; R. Kaplan, 1993).

Tapping A Vast but Unrealized Potential

Small experiments are not a new idea. In a sense, such efforts are quite routine. In many cases, it is difficult to know how something will work without trying it and seeing what happens. As Peters and Waterman (1982) pointed out, the willingness of some corporations to try out ideas on a small scale was an important element of their success. Government at the local level is also a hotbed of small experiments. New approaches to park maintenance, to crime prevention, to activities for young people, to making limited opportunities available are constantly being tried. One's personal life also is full of small experiments. One tries exercising early in the morning to see if it is a more workable time; or one tries a different brand of gasoline to see if it improves the mileage.

Often when one is not quite sure what to do, trying something out and seeing what happens can be a big help. Unremarkable though these efforts may be,

they nonetheless are a powerful means for sharpening our intuitions, overcoming indecision, and testing ideas without undue baggage. These tentative efforts are not intended for yielding definitive answers. Yet the accumulation of partial and imperfect answers can contribute to greater understanding as well as to new explorations.

In the personal realm we don't ask whether these small experiments are basic or applied, nor do we classify them in terms of methodology, strategy, ideology, or any other way. If we were to look closely, I think we would realize that they straddle many typologies. We accept qualitative information, but also find ourselves quantifying. We seek answers to applied problems, but draw inferences that become part of the models that we carry around to use in different contexts. We make errors in these applications, but these might motivate other small experiments.

The notion of small experiments proposed here is somewhat analogous to these explorations. It too straddles many of the classical distinctions that researchers have savored. Small experiments lend themselves to many applied settings, yet classifying them as "applied" would ignore their utility in developing and sharpening theoretical frameworks. Small experiments could be examples of action research, or participatory research, or evaluation research. But neither are small experiments limited to a particular approach, nor are all instances of any specific approach necessarily examples of small experiments.

The key ideas of small experiments derive from these two words: small and experiment. The intention is to keep the effort at a modest scale: small enough to be relatively manageable; small enough that mistakes are not overwhelming; small enough that, in due time, one will have the energy to tackle yet another small experiment. The notion of experiment suggests a quest, a search for an answer.

While examples of small experiments abound, many of these efforts have at best a modest impact. In many other instances, small experiments could readily be carried out, but are not. It often would not take a great deal of effort to capitalize on such opportunities. In a later section of the paper, I will discuss some essential features of small experiments that can fill the gap between local intervention and shared wisdom. Given the many social and environmental problems that beg for workable solutions, and the many exciting

efforts that go on with no effort at evaluation or dissemination, the small experiment approach fills a vital niche.

Small Experiments and Traditional Research: A Comparison

Although radically different on the surface, small experiments and traditional research share several key themes. Two of these are particularly important to our discussion here: conceptualization and perfection.

The conceptualization issue is unavoidable in any research, whatever its magnitude. Inadequate conceptualization will destroy the usefulness of any study, no matter how extensive the resources invested in other aspects. There are several areas in which one can shortchange the research process and still produce useful results; conceptualization is not one of them. I will return to this topic shortly.

Perfection, by contrast, is an inappropriate goal for either kind of research. With modest scale, a modest sample, and generally a modest budget, few would be surprised to learn that small experiments fall short of perfection. A reality that fewer are aware of, however, is that no study is perfect. The concept of "satisficing" (Simon, 1970) applies just as much to research as to any other domain of human endeavor. The more successful a study is, the more likely it is to raise issues that can only be answered by future research. The convergence of several studies, carried out in different settings and using varied methodologies, is the most credible way to secure a finding. This is true whether each of the studies involved is vast or modest.

Small experiments and traditional research also share a goal of credibility. There is a tendency, however, to believe the results of large and expensive research. Conversely, there is a tendency to be concerned about studies that lack some of the traditional trappings of research. In some circles, the mystique of sophisticated statistics and the ritual of reports too long to read, with appendices that must have the answers to any question, provide the comfort that the research is solid and important. Yet some large and well-funded studies have produced results that were meaningless and even damaging. The magnitude of the effort provides no assurance that the questions are properly asked. Surveys with inappropriately worded items are common enough to receive attention in the popular press¹.

Conversely, when a corporation launches a small scale, informal test of a new approach and finds unexpectedly enthusiastic reaction, it is unlikely to ignore the outcome because the sample was small and

nonrandom. Or when one tries a new approach to teaching a topic and finds it "works," one is likely to use it again even though there are endless uncontrolled variables in the situation. The point is that in many situations trying something out can make an important difference. It is most unfortunate when the onus of scientific propriety precludes exploration. Even a modest effort can lead to worthwhile outcomes which, in turn, inspire further modest steps.

What Makes Small Experiments Small

Smallness can express itself in terms of a variety of dimensions. The physical area of the study can be kept small (e.g., a pilot area rather than the entire site, or one housing development, rather than a system-wide effort). The number of people involved in the experiment can also be kept small (e.g., testing new orienting material with a small group of visitors). And, of course, the budget is likely to be relatively small as well.

Perhaps the most important sense in which small experiments are small, however, is in terms of the goal of manageability. The self-conscious effort to make the study manageable translates to reducing the number of comparisons that can be made, not controlling for everything that might possibly be an alternative explanation, limiting the number of questions asked, and being less ambitious about many other aspects of research design. Manageability also expresses itself in terms of the product. As we will see in the next section, the goal here is to share insights with those who can benefit from the results in a way that makes it possible to do so. In a sense, the commitment to keeping it manageable extends to a larger community, encompassing the investigators, study participants, clients, and the larger audience of users of the study results.

How Small Experiments Can Be Improved

The desire to keep the experiment small and manageable does not mean that "anything goes." Small does not mean sloppy. There are flaws that make any research useless; research that is meaningless or uninterpretable is not worth doing. However, while small experiments are necessarily modest, incomplete, and imperfect, they can nonetheless be extraordinarily useful. There are some issues that are particularly important to consider in making small experiments effective. Four of these are discussed here: conceptualization, sampling, tracking, and dissemination.

Conceptualization

The small experiment needs to have a focus; it must be about something, not everything. A clear question provides motivation; it also helps in formulating a study that is likely to yield useful results. The single most damaging problem in attempts to do small experiments stems from devoting too little effort to thinking through what one hopes to learn. Conceptualization is probably the most ignored, most essential aspect of doing a successful small experiment. It is a part of the process that can not be short-changed. It is also the part that receives least mention in design books (a chapter in Babbie, 1992, is an exception).

Unfortunately conceptualization is a difficult process, and one where there is no guaranteed path to success. It requires patience and tolerance for ambiguity. It benefits from both talking to oneself and talking to others. The concepts that are involved in any inquiry that is worth the effort are likely to be nebulous. Each concept is related to many others and yet each is distinct from the others. The struggle, therefore, is to find ways to tap some of this richness without losing track of the goal of manageability. Having a variety of ways to measure the concept is important. However, getting side-tracked by many issues that are not closely related to the study's focus is a fast route to unmanageability.

In teaching about research methods I find myself repeating one question over and over again: "What do you want to be able to say when you are done?" This apparently innocent query, intended as a way to anticipate hindsight, can have far-reaching consequences. It helps one confront the issue of conceptualization. By trying to anticipate what one wants to be able to say at the conclusion of the small experiment one can become more articulate about the key concepts. Anticipating the outcomes also makes it more likely that one will consider possible alternative explanations that others might offer. One then has the opportunity to figure out ways to design the study so as to preclude some of these alternatives. But it is important to realize that any single small experiment -- or even a big one -- can not possibly control for all imaginable alternative explanations.

Sampling

Probably the most emphasized aspect of social science research is sampling. People with little or no formal training in doing research will be quick to criticize that a sample is not "random" and assume that randomness is a necessary and sufficient condition for sound research. While sampling may be an important issue, it may not deserve all the emphasis it has

received. A well-conceived study can yield useful results even if it is based on a nonrandom sample. An ill-conceived study, by contrast, cannot yield useful information even with the most exemplary sampling methods.

In the context of small experiments, it is often the case that samples of convenience are appropriate. It is also the case that trying something out on a relatively small group provides much more useful information than not trying it out at all. This is a classic case of the old adage that Simon (1970) has made famous, "The best is the enemy of the good." If one decides not to try something out because a nonrandom sample is too expensive or not available, one is likely to be forfeiting valuable input due to a misguided concern for perfection.

There is another dimension to sampling, however, that should be considered. The reason to sample people is because one wants the results to be applicable beyond the specific individuals who participated in the study. Similarly, if one wishes the results to be applicable to environments or settings other than those in the study, then environmental sampling becomes an issue. Even at the local level sampling of different environments may well be worth the effort. An example might involve designing a neighborhood park. More likely than not, information drawn from several parks within the same city would provide a firmer basis for decisions than focusing on any single instance.

Tracking

A small experiment, like any experiment, depends on keeping track of relevant information. The information gathering, however, needs to be manageable. Too much information is likely to be overwhelming, increasing the probability that it will be left untouched. The temptation to add questions to a survey "while one is at it" is an easy way to lose focus and manageability.

The amount and form of information is thus important to weigh before launching the study. The choice of information to gather depends on who is to gather it as well as the available resources for analyzing and interpreting the information. In many small experiments these phases of the effort, those involved with data gathering and analysis, are likely to involve other individuals. Issues related to collaboration are discussed in a later section.

Figuring out what information to track is part of the conceptualization process. Developing a system for getting the desired information is a separate challenge. Sometimes no additional steps are needed and the small experiment can simply take advantage of information that is readily available or automatically

obtained. For example, the number of people enrolled in a program or requesting information may be useful to a particular study without requiring additional cost or effort. Many times, however, the "tracking" phase requires ingenuity and diligence. Checking on frequency of use of a facility can be labor-intensive. Monitoring the progress of a project requires consistency across time and across collaborators in the data gathering. Using check lists to track changes over time can be helpful, if the categories are clear and distinct, and reasonable in number.

Supporting evidence can come in many forms. It may require observation, interviews, or surveys. Sometimes useful information is also obtained through less systematic approaches, such as unsolicited comments. Such anecdotal information also needs to be tracked as it can play an important role. While doubters may discount such information if there is no other, use of several kinds of measures, when they provide mutually confirming information, can be far more convincing than any one of them would be alone.

Dissemination

To be useful the results of the small experiment need to be shared. Effective ways to communicate the outcomes will vary with the circumstances. Here the small experiment and more traditional research are likely to differ significantly. It is unlikely that informing the research community about the outcomes of the study is the major goal when disseminating the results of a small experiment. Rather the intentions probably include sharing the insights within the local community that was involved as well as letting others who may be able to adapt the situation to their own needs know about the approach that was taken.

Newspapers and magazines can play an important role in this dissemination process. Increasingly such publications feature information about small-scale efforts that have paid off. Many of these efforts involve approaches to urgent local problems related to crime, teen pregnancy, education, or health care. Some also focus on environmental issues and on stewardship. Such stories consistently draw on anecdotal material, quotes from individuals, and other forms of "softer" data. When available and understandable, they might also include some of the study's quantitative results.

Before reaching media attention, dissemination is likely to be at a more local level. If a nonprofit organization, for example, conducts a small experiment, it would probably communicate the findings and their implications through its newsletter or possibly issue a flyer on the subject. In some instances, the outcomes of small experiments might be

included in posted information -- for example, on trail signs that point out how increased species diversity was achieved.

Mention of these diverse dissemination formats is not to imply that a fuller report or journal publication of the small experiment is inappropriate. Rather, the important issue is to consider a variety of formats and, for each of them, to be mindful of the intended audience. An essential component of dissemination thus involves how the material is communicated. The form of presentation of the material is closely tied to whether it will be noticed. If the material that is disseminated is not understandable and/or not interesting, a great deal of the benefit of the small experiment will be lost.

Helping it Happen: The Benefits of Collaboration

In discussing "real world research," Robson (1993) devotes the book's last chapter to the advantages and disadvantages of being "researcher," "practitioner," or "practitioner-researcher." The last of these has the benefit of being an "insider" and, therefore, more likely to understand the needs of the situation. More often, however, practitioners and researchers represent different worldviews.

The practitioner is willing to admit that more information would be useful before settling on a solution to a problem. However, the answers should be forthcoming quickly. To the practitioner, the research process may seem prolonged, intimidating, and expensive. To make matters worse, the results of previous research have often not yielded useful answers, although it required wading through inordinate amounts of material to reach that conclusion.

The traditionally-trained researcher, by contrast, places a high priority on finding answers that are precise, eliminating possible alternative interpretations, and documenting the outcomes fully. The speed of delivering a solution must not interfere with the attention to the many details.

Being both practitioner and researcher may be desirable. However, finding individuals with sufficient expertise in both domains may be difficult, and for those who could perform these functions, finding the time may be problematic. These problems can be reduced if the effort is shared. Sharing the enterprise has many advantages, but collaboration is not without its own potential problems (Kaplan, 1990). At the very least it requires patience, effort, and mutual respect. When team members work well together the advantages to the project are many.

For the practitioner, many of the necessary tasks in carrying out small experiments can be

overwhelming. For the traditionally-trained researcher, by contrast, it is the constraints of the "real world" that are more likely to be daunting. Therefore, collaboration may well be important to every aspect of the study: finding a focus, conceptualization, sampling the environment, selecting appropriate forms of data, and dissemination to diverse audiences. The interest in the outcome of the small experiment is also likely to be enhanced if the "client" was involved all along.

The small experiment is thus likely to benefit from a shared enterprise. It brings together those with skills in research and in design to achieve ends neither could easily accomplish without the other. Through collaboration, the small experiment has a greater chance of being doable and being completed. The frustrations of doing research are more bearable, and the joys more exciting as the various collaborators draw on each others' expertise and perspectives. And, as Weick (1984) has suggested, such "small wins" provide valuable stepping stones to further progress.

Notes

¹ Many newspapers reported in April 1993 results of a Roper Organization survey that indicated "more than 1 in 5 Americans said it is possible the Holocaust never happened" (Briggs, 1993). A follow-up poll, also conducted by Roper, led to a dramatically different conclusion, showing less than 2 percent denying the Holocaust happened (Ann Arbor News, 1994). The difference was attributed to the "flawed survey," or more precisely, the wording of the pertinent item. Goleman (1993) provides additional examples of the way conclusions of polls are impacted by the question wording.

References

- Ann Arbor News, July 8, 1994. Poll: Few deny existence of Holocaust.
- Babbie, E. 1992. *The Practice of Social Research* (6th Ed.) Belmont, CA: Wadsworth.
- Briggs, D. April 19, 1993. 22% doubt Holocaust took place. *Ann Arbor News*.
- Goleman, D. September 7, 1993. Pollsters enlist psychologists in quest for unbiased results. *New York Times*.
- Kaplan, R. 1990. Collaboration from a cognitive perspective: Sharing models across expertise. In R.I. Selby, K. H. Anthony, J. Choi and B. Orland (Eds.) *Coming of age*. Oklahoma City: EDRA. Pp. 45-51.
- Kaplan, R. 1993. Environmental appraisal, human needs, and a sustainable future. In T. Gärling and R. G. Golledge (Eds.) *Behavior and environment: Psychological and geographical approaches*. Amsterdam, Netherlands: Elsevier Science Publishers. Pp. 117-140.
- Kaplan, S. 1990. Being needed, adaptive muddling and human-environment relationships. In R.I. Selby, K. H. Anthony, J. Choi and B. Orland (Eds.) *Coming of age*. Oklahoma City: EDRA. Pp. 19-25.
- Peters, T. J. and Waterman, R. H. Jr. 1982. *In search of excellence*. New York: Harper.
- Robson, C. 1993. *Real world research*. Oxford: Blackwell.
- Schumacher, E. F. 1973. *Small Is Beautiful: Economics As If People Mattered*. London: Blond and Briggs.
- Simon, H. 1970. Style in design. In J. Archea and C. Eastman (Eds.) *EDRA 2*. Stroudsburg, PA: Dowden, Hutchinson and Ross.
- Weick, K. E. 1984. Small wins: Redefining the scale of social problems. *American Psychologist*, 39, 40-49.