Week 2: Challenges within Constructive Research

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# Challenges within Constructive Research

Constructive design is one of the most common research methods for information systems and technology (Silvestrini & Sammito, 2012). The methodology revolves around building artifacts, studying outcomes, and then deriving novel observations. During this process, the researcher needs to be cognizant of ethical and quality challenges. When the authors fail to address those risks, their efforts conclude with unacceptable and unused results.

# Ethical Challenges

Research needs to manage ethical challenges that arise from their work. These issues arise from societal norms and internal biases. While several frameworks exist to guide the conversation, they can be ambiguous or focus on a subset of the problem.

## What are ethics

Ethics are a system of moral principles that dictate the norms of a group. Societies implement these systems through social constructivism, enabling and constraining the group’s actions (Burr, 2015). Communities leverage this mechanism to assign truths and then infer a concept’s value (Gergen, 2010). Consider a project that seeks to prove that men are superior to women. Within a chauvinistic cohort, these results align with their world views and are ethical. However, a diverse group would chastise the very idea, regardless of methodology. Further complicating the matter, ethical identities are dynamic and evolve (or regress) over time.

## Internal Biases

Researchers need to understand their internal biases, in addition to the audience’s norms. Everyone has historical and cultural defaults that lead to prejudices. These subtle classification differences influence our language, which constructs reality (Owen, 2017). Picture two people, one fat another thin. Then change those definitions to obese and anorexic. Did all four imagined people have the same gender and race? Words matter and one needs to choose them carefully.

## Sources of Ethical Frameworks

Numerous professional, regulatory, and advisory groups create frameworks that outline strategies for approaching ethical designs. These professional standards can contain conflicts of interest, hidden agendas, and inconsistent moral standards (Tan, 2021). The Belmont Report (1979) famously defines three core principles: respect for persons, beneficence, and justice. These tenants ask researchers to treat everyone fairly and avoid harm.

## Limitations

However, even this simple statement has ambiguity. After fourth years, the ethical code requires modernization to align with the evolving worldviews. Adashi et al. (2018 p. 1347) argue that the Belmont Report’s “distinction between research and practice is disappearing within the commercialization of present-day research.”

Debates around the notion of “harm versus setback” demonstrate the need for more clarity. Roberts (2021 p. 15) states that researchers “must focus on risks of the research process itself, not outcome-related risks as downstream consequences are beyond the purview of ethical gatekeeping.” Under this framework, an organization like Facebook can ethically track relationships between billions of people. It has a moral (and potentially legal) mandate to protect its user’s privacy. However, it is not bound to prevent malicious use-cases (e.g., election interference). While this position resonates with specific cohorts, it faces fierce opposition from others.

# Quality Challenges

High-quality research must pass three litmus tests, specifically, that it is non-obvious, elegant, and practical (Zeller, 2014). Regardless of the methodology, a professional group would laugh at studies like *Sitting in chairs helps people rest* versus *Reducing carpal tunnel from ergonomic chair design*. The second topic proposes a business problem and concrete use-case. In contrast, the first subject is unlikely to provide new insights nor contribute to the body of knowledge.

## Framing the Problem

Properly framing the problem enables the researcher(s) to review the existing literature, recommend the next iteration, and find additional applications. Bryar and Carr (2021) outline a formal methodology for defining the problem statement called Working Backward. Their framework begins with identifying customer’s needs, determining outputs that cause that eventuality, defining processes that lead to those outputs, and finally, selecting the inputs into that system. This approach can be an effective tool for choosing a topic that passes the litmus test.

## Measuring Success

After deciding the project will “build a better widget,” there needs to be a strategy for assessing the effort’s success. This assessment can range from a list of User Acceptance Tests (UAT) to more formal performance objectives. While collecting those results, there need to be formal strategies for mitigating internal, external, statistical conclusions, and construct validity (Parker, 1993). These threats can originate from inaccurate instruments, selection-bias, weak controls, and among other reasons across the experiment.

## Explaining Results

Constructive research produces innovative purposeful artifacts (Hevner et al., 2004). Those artifacts are not necessarily production quality but must be explainable to peers. Projects that lack this characteristic will face healthy skepticism. Part of that explanation often comes with statistical data that backs any claims. Choosing appropriate tests is a challenging problem that roughly half of the publications misstate to some extent (García-Pérez, 2012). Those errors make observations non-reproducible and raise questions about the author’s diligence.

## Project Management

Lastly, researchers must be cognizant of the finite resources available and scope the engagement appropriately. Teams need to leverage standard project management processes like task tracking and identifying milestones. For instance, Northcentral University follows an eight-week schedule, ample time to write a great Operating System (OS) driver, not the entire OS. Always remember that a good project is a completed project.

# Addressing these Challenges

Risks from misaligned ethics and quality control can undermine the entire research project and nullify its value. These challenges amplify when the research involves health and safety, personal privacy, controversial subjects, and core business investments.

## Health and Safety

Medical research historically uses white males as their default study group (Roberts, 2021). Aside from introducing a selection-bais into the sampling process, the practice may violate ethical norms. Without a strong business reason, modern research needs to assume that “people are people” and treat them equally. This requirement could necessitate double-blind methodologies, where the researchers cannot determine specific racial profile information.

Other research projects might encounter the opposite problem. The Health Insurance Portability and Accountability Act (HIPPA) and Health Information Technology for Economic and Clinical Health (HITECH) provide legal recourse against negligent handling of medical records (Grimes & Wirth, 2017). These regulations may further restrict access to necessary patient files.

## Personal Privacy

## Controversial Subjects

## Core Business Investments