Possibility Studies and Society

Case Study Special Issue Introduction

Case Studies: A Methodological Lifeline to World

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Case studies examine phenomena in order to understand the nuances and systemic complexity of how and why the phenomenon can unfold (Hanchett Hanson & Glăveanu, 2020; Stake, 1995; Yin, 2018). That definition has methodological implications beyond the interesting variety of examples of engagement with the possible that this kind of research can elucidate. The wide range of uses of case studies in this issue are meant to highlight some of those implications. As editors, we have assembled a collection of case studies to both showcase excellent examples of the method but also to make a point about the larger ecology of possibility studies and the often related field of creativity research. Positivist biases in the social sciences have bled into these fields but privileging experimentally derived, quantitative findings has too often led to a counter-productive isolation of those findings. That isolation tends toward a methodologically facilitated, theoretical in-breeding underpinned by self-reinforcing epistemological circles; the necessary constraints of operational definitions evolve into unquestioned assumptions, ecological validity becomes a permanent study limitation that is never addressed, and thus generalizations tend to go beyond warrant to maintain relevance. Case study research can act as a useful counterpoint to these tendencies.

Our point is not to critique or compete with experimental research, in which we are involved and which we support. Indeed, two of the papers in this special issue are firmly situated within the experimental tradition. Instead, we want to emphasize the benefits of an interdependence of experimental research, uses of case-study methodology, and contributions from various hybrid methods (such as historiometry and context-specific surveys). Case studies *need* the grounding and focused findings that come from experiments and the large data sets of other methods for triangulation. Such research provides a context that can serve as a check on bias and orient discussion of the significance of the case findings for the field at large. This is already a given in the field. At the same time, there is a neglect of the benefits

of case research for research on larger populations. Case research provides the context for experiments, surveys, and historiometric research, needed to address issues of ecological validity and, again, orient the work. Case studies provide both nuance and qualifications for the probabilities established by other research – under what conditions those probabilities tend to be true and what conditions can lead to other outcomes. In this issue Robert W. Weisberg argues that scientific research has provided examples of coordinated *in vivo* (e.g., real-time, retrospective, or historical case studies) and *in vitro* experimental research. *In vivo* examples include Hermann Ebbinghaus's study of his own memory, the analysis of memory in expert chess players by William G. Chase and Herbert Simon, and, outside of psychology, recent research on the COVID-19. However, lack of attention to real-world cases has led creativity research to focus undue attention on the "divergent thinking / remote associates" paradigm far beyond evidence of ecological validity.

Weisberg is citing an example of an entire field taking a direction without the grounding of case research. The cases in this issue also cover more discrete topics, which can, however, still inform the questions asked by the larger field. For example, Frédéric Vallée-Tourangeau and colleagues uses the case of a single subject in an experiment to investigate the concept of *outsight*, when insight comes from unexpected behaviors of objects during subject-object interactions. In a similar paradigm, Raul Scarabusci and colleagues looks at how unintentional movements can cue solution discovery. Patricia Stokes uses two cases, triangulated to earlier research, to consider different phases of creative careers in the arts. All of this research analyzes or illustrates the importance of the kind of *in vivo* research Weisberg advocates, informing what constructs are used and how they are conceptualized. In this type of research, it is not generalizability that is the aim nor the discovery of underlying laws of behaviour but the detailed documenting of incidence. This is an important task because it is necessarily messier than experimental research and this controlled messiness is akin to

Delbruck's "principle of limited sloppiness" (Delbruck cited in Grinnell, 2009) where close attention to the margins can provide the information for paradigm breaking research.

Case Study as Methodology

We are referring to case-study research as a methodology because it defines an overall approach, the detailed analysis of one or a few instances within specific contexts. The underlying conviction of this difficult and time-consuming work is the belief that the details of exactly what can happen and how it comes to pass are as important to understanding the phenomenon as are findings about probable outcomes across larger populations. Within this methodology, there are then many decisions concerning specific methods, such as different types of quantitative analyses to include, uses of interviews or video data with living subjects, and uses of historical data and expert analyses.

Here it is important to address a common misconception about case studies: that they are restricted to qualitative analysis. It is true that many case studies include qualitative analysis for context or for establishing datasets. Of the six cases in this issue, however, all but two include some analysis of quantitative data. In addition to the case presented by Vallée-Tourangeau, Yusuke Iwai and Takeshi Okada examine the influences on Stéphane Mallarmé's poetry using interactive stylometry, computerized quantitative analyses of word use and style to elucidate the influences of other poets – Théodore de Banville, Charles Baudelaire, Théophile Gautier, Victor Hugo, and Edgar Allan Poe – over time. Note that this case is itself an example of the interaction of qualitative and quantitative research. Selection of data sets for the quantitative case, including which works from what poets, builds on the analyses of literary experts. In addition, Joseph I. Eisman and Stella Wasenitz conduct a content analysis of historical evaluations of the work of the chemist Fritz Haber. He won the Nobel Prize for his groundbreaking work leading to the Haber-Bosch process for fixing atmospheric nitrogen to hydrogen to produce ammonia, an important ingredient in fertilizer and food production.

Haber's contribution literally helps feed humanity every day. But he is also remembered as the father of chemical weapons for his work for Germany during World War I. Eisman and Wasenitz examine Haber's long-term legacy by looking at when and by whom Haber is described as a "brilliant scientist," an "unethical antagonist," or a "complex man." The authors link this investigation to the challenges of presentism in trying understand varying contexts.

A second point to address: the belief that case studies are subjective compared to purely quantitative analyses. As case-study researcher Robert E. Stake (1995) has argued, all methods are subject to bias. In quantitative research, the bias tends to occur in assumptions about the constructs used, in the research design, and in the generalization of findings. Here, again, Weisberg's arguments about the divergent thinking/remote associates paradigm are relevant. Divergent thinking specialists do not consider the two terms equivalent (see for example, Runco, 2010). Nevertheless, studies of "creativity" are often designed with only divergent thinking tasks and then findings are discussed as if applying to creativity writ large (see discussion in Hanchett Hanson, 2015). We also have the long and sordid history of "scientific" research on race in the social sciences is a cautionary example (see review in Kendi, 2017). Bias, such as the presentism that Eisman and Wasenitz address, are always at play in research, both motivating work and threatening its validity. In the words of the creativity case-study researcher Howard Gruber:

> Methodological issues are never purely and simply methodological. Overtly or not, they always call into play deeply held convictions about the nature of knowledge and truth. Just as form and content are inseparable, epistemic passions lurk everywhere. Nevertheless, it is our task to disentangle these issues where we can" (Gruber & Wallace, 1999, p. 40).

Among the ways that the challenges of bias can be addressed is the mutual triangulation of different methodologies, including grounding from real-world examples provided by case studies. Most important perhaps is that case study research allows for, and often embraces, complexities and dualism. For example, Eisman and Wasenitz allow for Haber to be both good and bad and avoid bias by not needing to offer simplistic explanations.

Many Challenges

As argued above, we see case studies as crucial in linking larger population research to the world and the phenomenon which is necessarily abstracted and operationalized in this form of research. Case studies with extensive triangulation do not provide a silver bullet, however. Case studies are labor and time intensive and are hard to fund because they do not claim findings generalized to large populations. Good research design is always challenging, and mastering case study methodology is, if anything, harder than most. As noted above, this approach is an umbrella methodology which can include many kinds of methods from interpretation of historical documents to content analysis to experiments to stylometry to interviews and more. In addition, case study researchers operate within a wider cultural context and can thus find themselves following well-trodden lines of thought without thinking of what lines beyond.

The key challenge addressed here, however, is epistemological at the level of our field. Possibility Studies can sometimes struggle with an optimism bias. In addition, like all fields we must continually and critically address with the legacies of over-simplified or too broadly applied constructs. To address these challenges and the general issue of ecological validity, a more extensively connected distribution of methodologies is needed, necessarily including case studies. We may be able to afford and even profit from deep concentration on particular theoretical perspectives on the possible, but we cannot at the same time afford methodological siloes that isolate the laboratory and the world from each other. To be truly

interdisciplinary means holding many different methodological routines, meanings, and standards in productive tension. Nowhere is that ongoing dialogue more present than in case study research.

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