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Introduction

The need for digital case study research

Three case studies of the digital age to make us ponder. First, imagine researching Reddit, the massive discussion-based website. You want to analyze one community forum, called a “subreddit,” in its totality. How do you go about researching this case study? What do you do to ensure analysis of the subreddit? What falls into the “slice of life” of this subreddit? What boundaries are necessary for you to keep the case coherent and organized yet comprehensive and rigorous?

Keeping in mind guiding goals and research questions, one could start this case study by web-scraping (data extraction using computational tools) the entire forum and then analyzing it. But the forum alone does not tell the entire story. Reddit has moderators who prevent certain posts and comments from being displayed and which, therefore, are not scrapable. Researchers likely need to identify, if possible, filtered content as well as the processes moderators have for filtering content. They’d need to interview users who participate frequently as well as the lurkers, thereby providing an effective range of perspectives about the forum. But what about these interviewees’ activity on *other* forums? Do researchers need to examine this activity? What about links on the target forum, especially when those links direct users to other subreddits? What do they do? The answer depends.

The second example. Near you, a local community of activists has taken to digitally “tagging” buildings around you. No one knows about this electronic graffiti unless you have a specific geolocation application on a smartphone. What conceptual and practical frameworks do you draw upon to research this case study? How do you analyze this group’s activity?

Keeping in mind my guiding goals and research questions, I should first perhaps investigate the group, getting to know them and obtain informed consent. I’d likely interview their members and leadership. A survey of their activities would help provide a lay of the land study—a needs analysis. We’d also need to investigate the infrastructure of the application, including its code, interface, and design. Interviewing the designers and programmers would supply added context. Evaluating the application’s

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geographical capability would describe an alternative perspective to the group's geographical distribution. But again, the aspects we emphasize depend on our research goals and questions. It depends.

Third, one of the most prolific online commenters (a "power user") on *The New York Times* is responsible for several thousand comments across dozens, if not hundreds, of articles. How can a researcher account for the case of this commenter as they move from article to article? We could collect *all* comments from the commenter and interview the commenter. But we likely need to interview other commenters with whom this power user has interacted. Recording and analyzing the articles to which the power user has responded would be helpful. Especially important here is recording and analyzing not only the content of the article but the layout, design, and interface of the article and comments. It wouldn't hurt to get the perspective of the articles' authors, if possible. But the perspective of the articles' authors will depend on the researcher's goals and purposes.

Each of these three examples has a different conception of a case. In the first case, the *unit of analysis* is a forum. The second case has an organization as its unit of analysis. The third case has a person as its case. I have used the word *depend* in describing these cases because case studies—especially digital case studies—can look radically different from one another and across domains. These differences require digital researchers to think *across* physical and electronic contexts, disciplinary boundaries, and temporal/spatial boundaries.

Case study research for digital phenomena

This book is meant to assist digitally oriented researchers with theorizing and developing their case studies. Its purpose is to help digital researchers consider if case studies are suited for their purposes and, if a case study approach is suitable, theorize a case, design a case, collect data, and write up the study. The philosophical goal of this book is to provide *epistemic* underpinnings to the case study as a method, thereby making it into a full methodology for research in a digital era of ubiquitous screens, information networks, and emergent artificial intelligence. I use the term "digital" as shorthand for these contexts and apply that term to case study research.

Like John Gerring (2017) and many others' approaches to case study research, I take a *pluralistic* approach to digital case study research because digital inquiry is itself a transdisciplinary or even *sansdisciplinary* approach: it necessitates seeing knowledge domains as deeply related and interconnected rather than discrete. By adopting a transdisciplinary approach, I frame the qualifier *digital* as an "ambient condition" (Boyle et al., 2018, p. 252) that is a "common feature of modern existence" (Hess, 2017, p. 6). Such an approach avoids technological determinism and essentialism in that technology and human sociality are inextricably linked and that technology is part of contextual frameworks.

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oriented researchers with theorizing purpose is to help digital researchers their purposes and, if a case study design a case, collect data, and write of this book is to provide *epistemic* method, thereby making it into a full ra of ubiquitous screens, information lligence. I use the term "digital" as y that term to case study research. y others' approaches to case study ach to digital case study research disciplinary or even transdisciplinary wledge domains as deeply related etc. By adopting a transdisciplinary as an "ambient condition" (Boyle et feature of modern existence" (Hess, ids technological determinism and l human sociality are inextricably contextual frameworks.

Turning to the case study approach for digital research may seem, at the outset, a methodological mismatch. Case studies are bounded systems created by the researcher or researchers. As Katherine Jocher wrote in 1928, "Case study... presumes a well-defined problem. That is, an intensive study is made of a certain person, a particular community, a definite situation or episode, an economic or a social institution" (p. 206). Case studies are often defined by researchers via particularities and boundaries, whether a person, community, organization, or another central unit of analysis.

Digital phenomena challenge Jocher's notion of a "well-defined problem" in that bounded systems don't seem particularly effective for the spreadable (Jenkins, 2013), participatory, and blurry boundaries of digital research because networked and emergent technologies allow information to permeate spatial and temporal boundaries. Websites, for example, are constantly linked to other sites. Websites are leaky, open to link rot, and consistently updated. Boundaries are messy. Why would digital researchers then turn to a case study framework? There are, as I see it, three distinct advantages in turning to a case study approach for digital research.

First, a case study approach attempts to represent *complexity* and *messiness* (e.g., Flyvbjerg, 2006, p. 237; Gerring, 2017, pp. 28–30; Miles, 2015, p. 309; Yin, 2009, p. 18), often with a focus on context (Merriam, 1998, p. 19; Yin, 2009, p. 18). Some types of research approaches, such as fully- or quasi-experimental research, flatten out such messiness to make determinations about variables. Conversely, case studies examine large swaths of context and do not distill a research project into a single variable—they are holistic in this sense. Social science research approaches that seek to isolate variables are not suitable to case study frameworks. Rather, as a type of qualitative research, case studies attend to "combinations of causes" (Goertz & Mahoney, 2012, p. 57). Digital research, such as studying users across networked spaces and times, benefits from the complexity of a case study approach because this framework emphasizes the importance of contexts and multiple elements at play in holistic, rather than atomistic, situations. Moreover, online information circulates at rapid rates and iteratively, thus necessitating methods that can describe this messiness with a narrative. A case study approach supplies such a narrative because narratives are a "substantial element" of good case studies (Flyvbjerg, 2006, p. 237).

Second, because the boundaries of case studies are reflexively, iteratively, and recursively produced by the case researcher and developed over time (Gallagher, 2019), they provide the flexibility to account for the diffuse, updatable nature of digital inquiry. Boundaries in case studies are not rigid or impermeable; boundaries do not emerge *ex nihilo*, nor are they autotelic. Instead, boundaries are created by researchers and dynamically account for the phenomena under study. Case study boundaries are epistemic schemas designed to investigate phenomena across a

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variety of contexts. Given the complexity and diffuseness of digital networks, this type of boundary thinking is beneficial and useful to digital research. The reflexivity of case study boundaries, too, assists researchers with accounting for the rapid, emergent, and varied scales of social media and other digital investigations.

Third, case studies of digital research are already being conducted but no books seek to explicitly theorize digital case studies directly. For example, some of the most-cited books on case study do not account for social media, networked technologies, and other digital issues (e.g., Gering, 2017; Merriam, 1998; Stake, 1995; Yin, 2009, 2018). The approaches of these books can be *applied to* social media and other digital contexts but their frameworks are not explicitly *designed for* such contexts. Case study frameworks strengthen digital work by bringing digital researchers' choices into explicit discussion. As a paradigm that focuses on cases *themselves* as well as the *process* of producing cases, a case study approach directs our attention to the creation of the case. In this latter sense, the case study framework, as a process-oriented paradigm, is practically beneficial to diffuse and spreadable digital research in that it helps to decide what to include and exclude.

Considering these three reasons, case study frameworks oppose reductionism and, therefore, enhance digital research. Case studies are known for their richness of detail (Yin, 2009, pp. 146–147), irreducibility of complexity (Burawoy, 1998, p. 12), and representation of ambiguity and uniqueness for readers (Stake, 1995, p. 126; Stake, 2006). Most case study researchers and frameworks advocate for the case study paradigm as a form of research that opens up inquiry and complexity. The careful treatment of participants' experiences in case study approaches documents and contextualizes multiple subjectivities, viewpoints, and realities. Rich, thick, nuanced descriptions are recorded and written in the case researcher's report(s). Good case studies represent cases with triangulated sources of data that recognize the multiple realities of cases. Case study research, then, emphasizes highly contextualized subjects (Dyson & Genishi, 2005, p. 11) and the "multiple realities" of subjects by constructing interpretations of other people's interpretations (Dyson & Genishi, 2005, p. 18; Stake, 1995, p. 43; Yin, 2009, p. 18).

Case studies, then, show the *multiplicity of experiences* and heterogeneity of the *objects of inquiry* within a case. Think here of a simple square. In terms of a poorly researched case, a square might be the representation of "the" case. However, high-quality case studies seek to represent the case with complexity. We can draw the square in *n*-dimensions. We might try to represent the square as a cube. Let's push this step further: we might try to represent that the cube contains multiple cubes and permutations of various cubes (and other shapes too) exist simultaneously. Case study researchers attempt to represent this chaotic complexity in a coherent narrative-driven way. The conceptual flexibility of the case study method makes it ripe for digital research.

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Digital intensity

While digital research benefits from a case study framework, case study theory needs to respond and be adapted to the ways in which digital phenomenon intensify (1) distribution, (2) frequency, (3) scale, (4) speed, and (5) access. First, digital networks have reduced the cost of information distribution, essentially removing the limit on circulation. One might think here of shared websites being read all over the world, on millions of electronic devices. While companies may put their content behind paywalls, endless circulation of information is hypothetically possible. Texts, images, and videos move about on different sites repeatedly. Discourse is remixed and manipulated to move in and out of a variety of contexts. Digital objects of inquiry thus have an intensity not bound by print or face-to-face notions of distribution and/or circulation. Such issues prompt thinking through the nature of a unit of analysis in digital networks, which I will take up in the next chapter.

Frequency and scale, as the second and third elements of digital intensity, prompt considerations about the irreducibility and uniqueness of case study frameworks. Frequency here means repeatability and occurring multiple times. Scale here means the ability to expand and grow without altering fundamental elements of a phenomenon. The key issue here: what is a case, if it becomes scaled up and frequent across websites or even physical spaces? How do the boundaries of a case need to be considered in these contexts? Chapter 2 addresses these boundary questions.

Digital cases, due to scale and frequency, may not be unique in themselves; instead, their uniqueness may exist in terms of *how* they are repeated, shared, circulated, and spread throughout many spaces and times. Some social media accounts may share the same types of information but at different times. This savvy timing may generate wider distribution and circulations for that account. In this sense, the frequency and scale of the account are unique, even if that account shares information shared by millions of other accounts. The sheer size of a case study can be enormous, even if the bounded system is relatively small, such as a case study of a particular user on a specific social media site. A user may post hundreds or thousands of times during a collection period, making an individual case massive in terms of data collection. Similarly, posted information may take on a life of its own. Automated collection methods, such as web-scraping, can help case study researchers collect large amounts of data that fall within their case's boundaries. Chapter 3 addresses automated and manual collection methods for digital case study research.

Fourth, the rapid movement of information—or the speed—challenges some of the long-standing epistemologies of case study research. If cases are a unit that "...connotes a spatially and temporally delimited

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phenomenon of theoretical significance" (Gerring, 2017, p. 27), then electronic speeds challenge this delimitation by speeding up circulation of information and discourse. David Harvey (1989) has described this concept as *time-space compression*, locating the origin of such speeds not necessarily in digital technologies *per se* but in the capitalistic drive to delimit distribution costs. In Harvey's formulation, digital technologies that compress time-space are the outgrowth of capitalist ideology seeking such compression. Due to this economic incentive of freeing up the circulation of capital, digital information moves at rapid speeds *while* data is being collected; the goal of these technologies in many cases is to produce as much data as possible that is not limited by temporal or spatial boundaries. Time-space compression overloads researchers with data collection possibilities, thereby rendering older pertinent information invisible. Due to the speed of information exchange, methodological boundaries therefore could be retheorized for digital worlds, which I address throughout this book.

In addition to time-space compression, speed can be invisible for digital researchers because it is occluded in digital infrastructures as backstage processes and routines. The role of speed must then become an explicit aspect of digital case study research. Galloway and Thacker (2007) have noted, by way of Paul Virilio (2006), that the importance of speed may not be perceptible to human beings.

...disappearance is the unforeseen by-product of speed. Technology has gone beyond defining reality in the quantized frames-per-second of the cinema. Newer technologies still do that, but they also transpose and create quantized data through time stretching, morphing, detailed surface rendering, and motion capture, all with a level of resolution beyond the capacity of the human eye...

(p. 137)

Implicit in Galloway and Thacker's argument is that technologies contain entire worlds below the visible world—and digital researchers necessarily must account for these worlds. Code, HTML and CSS, JavaScript, packets in packet-switching, and tacit software "daemons" (McKelvey, 2018) all move at speeds imperceptible in comparison to typical strategies of case studies. Through the chapters in this book, I advocate for thinking about the ways that these digital concerns make legible and explicit the many realities within case studies.

Fifth, access to digital objects of inquiry or cases may be much broader than researchers anticipate, resulting in a wide range of narrative possibilities. In terms of empirical storytelling, record-keeping can be precise, such as with timestamps. Because case studies are multi-sourced, detailed, and holistic research projects, case study researchers need to contend with such issues. Ethically, the pervasiveness of networked

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surveillance becomes an issue in terms of how, when, and where researchers collect data. This book will address ethics (Chapter 5) and writing up narratives (Chapter 6).

Description of chapters

Chapter 1, "Definitions, descriptions, and entities," provides background on the scholarly conversation of case study research, providing discussions of the terms "digital" and "case study." By doing so, I identify key descriptions to expand the case study approach into a methodological paradigm based on the concept of an *entity*. Doing so allows digital case study researchers to have more theoretical purchase for evaluating a wide range of networked phenomena.

Chapter 2, "Iterative design and digital considerations," explores designing case studies for digital contexts via iteration. Rather than establishing boundaries ahead of a research investigation, a case study with an entity at its center seeks to represent the phenomena on its own terms without a predetermined framework. In the second half of the chapter, I discuss eight considerations for iterative design: (1) users, (2) interfaces (3–4), websites development and computer code, (5) software/applications, (6) databases, (7) computational models/algorithms, and (8) infrastructure.

In Chapter 3, "Collection practices for digital case studies," I describe digital data collection theory and practice. The chapter explores theoretical stances on data collection and then explores practical qualitative methods, such as digital observations and fieldwork, fieldnotes, interviews, questionnaires, and surveys. It also lays out the basics of web scraping, which is a way to automate data collection for case study work. I conclude with remarks about the conundrum of when to stop collecting data.

Chapter 4, "Analysis for digital cases" provides analytical frameworks for digital case study analysis. It begins with concepts for beginning data analysis, such as atomization, structures, and attention, before moving on to workflow usage. After laying out workflow habits, it describes a variety of analytical techniques, including qualitative techniques such as interface analysis and the integration of texts, images, and emojis. It then discusses quantitative, computational techniques for generative thematizing, including topic modeling, named entity recognition, and sentiment analysis. I touch on generative machine learning and analysis as a type of ethics.

Chapter 5, "Ethical habits in a digital world," presents four ethical paradigms for digital research: deontology (obligation or rule-based ethics), consequentialism (outcome-based ethics), postmodernism (critique-based ethics), and virtue ethics (virtue or character-based ethics). I describe the strengths and weaknesses of each before advocating for the paradigm of virtue ethics to address the intractable problems of pluralism

8 Introduction

and emotivism in our networked world. I address how habits, rather than strict rules or outcomes, are a contingent yet normative way to build ethics for digital case study research.

Chapter 6, "Writing and visualizing the digital case," provides advice on writing up case study research, as well as visualization suggestions and dissemination practices. I provide general strategies about audience, genre, writing habits, planning, and revision. I discuss writing up case study methods, including positionality statements. I lay out strategies for visualizing case studies. I end this chapter with suggestions for dissemination practices on social media.

In the brief conclusion, "Case study work in an era of artificial intelligence," I remark on (1) the importance of case study in an era of AI, specifically the granularity that case study research provides, (2) the concepts of a "study" and "macro" cases, and (3) future directions of case study research.

How to read this book

This book has attempted to balance nuanced, complex theoretical concerns with practical applications. As a result, parts of this book will be more or less relevant depending on the purpose a reader brings to it. For audiences more theoretically inclined, I recommend Chapters 1 and 2, as well as the first half of each chapter. For those practically inclined, Chapters 3 through 6 are likely to be more relevant, notably in the second half of each chapter. Because print books are necessarily linear, some relationships between chapters are left unexplored, notably the back-and-forth nature of data collection and data analysis. I have attempted to gesture to this non-linearity; however, I stress here that moving across and between chapters is encouraged.

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1 Definitions, descriptions, and entities

What exactly is a *digital case study*? What *isn't* digital in the twenty-first century? In the introduction, I loosely referred to case study research and case studies as involving bounded systems of inquiry conducted for research purposes. A case study is a type of *study*, which distinguishes it from an example, exemplar, or anecdote. While case studies absolutely contain examples and granular details, they are neither examples nor stories alone. Certainly, high-quality case studies involve stories and have a narrative. What distinguishes a case study from an example or story is that a case study implies a multi-source collection of data, such as historical archives, surveys, interviews, and observations. Case studies are consequently informed by data and first-hand research. This distinction helps to separate case study research from the more popular and less rigorous version of the term "case study" that tends to accompany digital marketing and online retail wherein a case study is an example of a phenomenon.

The above qualification addresses the term "study" in "digital case study," leaving us with two remaining terms: digital and case. The first half of this chapter examines the term digital, arguing for its relevance. Digital phenomena saturate contemporary life. Digital media, networked devices, and electronic infrastructure enable and encourage inordinate amounts of information to be shared by users and disseminated by organizations. They speed up the flow of information and, as noted in the introduction, create a hyper-availability of it. Our electronic devices and the multiple realities of online and networked culture have made us into cyborgs; one need only watch strangers dodge each other on the street while staring into their multipurpose networked devices (phones) to know this is true. Children climb on playgrounds with one hand because the other holds their phone. We already know that the distinctions between human and non-human, human and animal, and human and machine are epistemologically thin at best and, at worst, myths built to maintain hegemonic conditions. Our cyborg world has made those epistemological conditions materially relevant. Consequently, any case is now fundamentally digital.

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What *isn't* digital in the twenty-first referred to case study research and systems of inquiry conducted for 'pe of *study*, which distinguishes it ote. While case studies absolutely s, they are neither examples nor se studies involve stories and have study from an example or story is e collection of data, such as his- nd observations. Case studies are st-hand research. This distinction from the more popular and less " that tends to accompany digital : case study is an example of a

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Following this discussion of the digital, the second half of this chapter examines the term "case," focusing on the epistemological center of a case. For most case study researchers, a case's center is conceived as a unit or "unit of analysis." This perspective understands cases as people, places, or things but not relationships. I reconceive of the center as an entity, which allows for relationships and processes to be included as cases. By having entities, rather than units, as an epistemological and ontological center, digital phenomena can be more accurately depicted and narrated in case studies and as case studies. In turn, this allows more purchase for a case study approach to be understood as a full methodology, as opposed to a less robust approach or method. Equipping ourselves with entity as a conceptual and theoretical center provides researchers of digital phenomena, such as social media or artificial intelligence (AI), with a broader way to construct a case. Practically, entities, as a term, suggests a flexible theoretical framework for understanding the various complex *relationships* between online and offline relationships necessary for a case study to be created.

The term "digital"

Nearly everything is digital, or at least touched upon by digital elements, in our screen-saturated world. Using the qualifier "digital" thus may seem outmoded in the twenty-first century. As Benjamin Peters (2016) notes,

the sweeping success of digital techniques has rendered the term a quintessentially twentieth-, not twenty-first-, century keyword. As digital techniques continue to saturate the modern world, we increasingly find the keyword digital, understood in its most conventional sense, slouching past its prime.

(p. 93)

These perspectives are emblematic of a post 2010s perspective: everything is digital, rendering the term so ubiquitous that it is obsolete. However, simply because a term can be applied to a broad array of activities does not mean it is worth abandoning. Or as James Wynn (2017) writes,

The ubiquity of digital technology and the myriad ways that it has become integrated into the fabric of modern life have changed the quantity of available information, the speed with which it can be accessed, and the distances across which it can be broadcast. Though there is a widely shared recognition that the Internet has transformed the ways we communicate and interact, there is less frequently an understanding of how this technology actually impacts our communications and interactions.

(p. 1)

The ubiquity of digital objects, phenomena, and research requires us to examine our methodologies more closely, including *how* we create digital research studies and the way a case coalesces. The rubric of “digital” is useful precisely because it encompasses so many phenomena.

There are two related but distinct meanings of “digital” research as I use it: research *about* explicitly digital phenomena (such as studying a virtual world) and research that *uses* digital tools (think here of using machine learning techniques to reveal/create latent patterns in data). There are, of course, other connotations of the term: electronic components, computational processes and processing, networked social worlds, media platforms, gaming elements, screen design and user experience, infrastructures, and so on. A flexible approach of “digital” is therefore necessary to account for a broad swath of phenomena.

My primary use of “digital” in digital case study research relates to networked phenomena that use electronic means, partially or entirely. While using digital tools to create a case study also falls within this scope, I foreground the phenomena—rather than tools—in my discussions and examples. From time to time, I will invoke the tool aspect of “digital.” As will become clear in my discussion of case-as-entity, however, I do not draw a distinct demarcation between online and offline phenomena when referring to digital research. Rather, digital describes the ways that phenomena are both electronic and embodied in which online and offline lives are imbricated and inseparable.

The labor practices of social media platforms are some of the most compelling examples of the blurriness between online and offline activity. We have seen how content moderators (Gillespie, 2018; Roberts, 2019) experience PTSD (post-traumatic stress disorder) from observing, identifying, and deleting heinous content on social media websites, such as Facebook, Twitter, and YouTube. These jobs often come with other physical consequences, including a lack of bathroom breaks (Roberts, 2019), that are often legalized due to these jobs being outsourced to countries with lax labor laws (Duffy, 2017) or even because “big tech” companies have seized law-making capabilities (Suzor, 2019).

Likewise, the infrastructure of the internet replicates historical precedence and biases, demonstrating that digital lives are part of offline lives. Starosielski (2015) shows that our internet traffic patterns follow material networks, including environmental, political, colonial, and military histories. These histories and infrastructures become baked into social media cultures, creating an algorithmic feedback loop of what is deemed acceptable. For example, we know that the literary publishing industry was (and still is) predominantly white. Using a massive corpus of fiction, So’s *Redlining culture* (2020) identifies that people of color are predominantly excluded from publishing fiction. So addresses the reception of literature as crucial to equality because, he finds, that most of the reviewed fiction is written by white authors. White-centric fiction

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becomes the basis for what is reviewed, discussed, and analyzed on social media platforms such as YouTube, Goodreads, and Amazon. In turn, these websites use algorithms to determine what content is popular. Social media platforms cannot program their way of the problem. Code will not solve the problem because it's a data problem. It's a problem of the empirical world. No model could correct biased data.

As a result, the historical racism of the publishing industry, Hollywood, and mass media conspire to create consequences for digital researchers. This conundrum might be understood as an outgrowth of the *ideology of prediction*, or what Wendy Chun (2021) calls an ideology of correlation (pp. 180–184). That is, social media platforms and other industries use previous data to train models upon which future decisions are made, regardless of whether causality can be determined. All these companies use representations of activity, not the activity itself. Regardless of the model deployed, the *training data* will corrupt models because it contains bias—as all data will, especially when harvested with historical racism, misogyny, and homophobia. The data are representations of activity.

These examples show the ways that "digital" remains highly relevant, if not always hearkening back to the utopian vision of early internet research from the 1980s, 1990s, and early 2000s. Without an explicit focus on digital, we lose focus on the networked and mediated nature of contemporary phenomena. With such a focus, we can better connect contexts, understand offline and online activity as intimately tied together, and find resonance between offline histories and online contemporary experiences.

From a practical standpoint, foregrounding the term "digital" prods us to explore connections within networks and communication technologies. As Mejias (2013) writes, "While the Internet is the most notorious example of a digital network... digital networks can encompass other technologies not based on the Internet, technologies such as mobile phones, radio-frequency identification (RFID) devices, and so on" (xiii). To reframe Mejias with case studies in mind, digitality can refer to a panoply of technologies, relationships, artifacts, and discursive social issues that deserve granular investigations in which the phenomena are understood on their terms, within their contexts, and not reduced to variables.

Within our current era of big data, machine learning, and artificial intelligence, an emphasis on statistical inference without much explanatory power (Lipton & Steinhardt, 2019, p. 2) has emerged to obfuscate—or worse, replace—granular complexity. As multiple scholars have noted, the use of large-scale tools with ideologies based on averages, matrices, and linear regressions are themselves outgrowths of the Eugenics movements of the 1800s and 1900s (e.g., MacKenzie, 1981). The simplification that occurs with these approaches leads to issues of systemic bias from computational, algorithmic approaches (Bender et al., 2020; Eubanks, 2018; Noble, 2018; O'Neil, 2016; Pasquale, 2015) and instances in which no individual fits the average (Rose, 2016).

"Digital" case studies provide a counterweight to these approaches as a major part of their value is to reflect the "multiple realities" of a case (Dyson & Genishi, 2005, p. 18; Stake, 1995, p. 43; Yin, 2009, p. 18). If machine learning and large-scale data analyses are now normalized and accepted, then we need granular narratives to counterbalance these approaches. In an exemplary article about misunderstandings of case study research, Bent Flyvbjerg (2006) crystalizes the importance of narrative and story when he writes,

The problems in summarizing case studies, however, are due more often to the properties of the reality studied than to the case study as a research method. Often it is not desirable to summarize and generalize case studies. Good studies should be read as narratives in their entirety.

(p. 241)

Narrative, as a case study method, attempts to understand contradictions and paradoxes, issues that can arise in any research project but often with networked digital research. The value of a digital case is thus its ability to tell a coherent story with detailed explanation—something that large-scale data analyses, such as machine learning, often miss: "[machine learning] papers often offer speculation in the guise of explanations, which are then interpreted as authoritative due to the trappings of a scientific paper and the presumed expertise of the authors" (Lipton & Steinhart, 2019, p. 2). The relevance for "digital" in case study research is the necessary complement that cases provide. Machine approaches often do not account for narratives, granularity, complexity. Case study approaches do precisely this.

The value of case studies, including digital case studies, is consequently their *irreducibility*. Data do not tell complex contextualized narratives, nor do computational models. That's our job as researchers. The ability to look at a bounded system in a deep, meaningful way creates exceptional contextualized knowledge that could be applicable in spaces where variables are difficult to categorize and recognize. Digital case studies, and case studies more generally, look at specific segments to craft a detailed and particularized narrative about social encounters so that others might learn about a case. But if that's a goal of digital case study research, what marks the beginning? Or perhaps more accurately, we might ask, what is the center or core of a case study?

Wrestling with the term "case study"

At the heart of case study research is a case. A case is a source of confusion for researchers, who typically note that a case has no unifying definition and is responsive to domain knowledge, disciplinary

weight to these approaches as a "multiple realities" of a case (Yin, 1995, p. 43; Yin, 2009, p. 18). If analyses are now normalized and alternatives to counterbalance these out misunderstandings of case studies, however, are due more to the case study as desirable to summarize and generalize than to the case study as should be read as narratives in

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use. A case is a source of conceptual knowledge that a case has no unifying disciplinary knowledge, disciplinary

conventions, and practical constraints (e.g., Bartlett & Vavrus, 2017; Bennett & Elman, 2007; Bromley, 1986; Dyson & Genishi, 2005; Gerring, 2017; Jocher, 1928; Spinuzzi, 2023; Tellis, 1997; Yin, 2009). A decided lack of consensus about a "case" creates friction between domains and disciplines. (See Table 1.1 for case study definitions and descriptions of case studies from major case study monographs.) There are no templates or strict rules for what describes a case study or case that transcends disciplines or knowledge domains. Some have simply described case studies as a trans-paradigmatic heuristic.¹ This book wrestles with what it means to be a case.

There are, however, recurring patterns and Wittgensteinian "family resemblances" (Wittgenstein, 1968) regarding case study definitions. To examine a case more closely, I want to describe the case study through four foundational elements: case studies are (1) epistemically open-ended, and (2) do not draw clear demarcations between subject of analysis and its context. Case studies are demarcated through (3) a bounded system aimed at holistic investigations, and (4) are based on multiple types of data to better understand the multiple realities of a case.

First and second, the case study is an open-ended in-depth investigation (Dyson & Genishi, 2005; Merriam, 1998; Morgan, 2012; Stake, 1995; Yin, 2009), where the delineation between the subject of analysis and context is not clear or inseparable (e.g., Duff, 2008, p. 30; Flyvbjerg, 2006, p. 222; Lillis, 2008, pp. 374–377; Morgan, 2012, p. 668). Case studies are epistemically open-ended with a detailed level of *density* and *holism*. Researchers such as Crowe et al. (2011), Dyson and Genishi (2005), Gerring (2017), Kenny and Grotelueschen (1984), Stake (1995), and Swanborn (2010) argue that cases are holistic and intense due to their comprehensive and fully elaborated nature. Colloquially, case studies examine phenomena "up close." For this reason, researchers should come to case study research understanding that their investigations will not "pin down" their inquiries. Maxwell (2009) reflects this epistemic positioning by framing the case study as about the process of research, not the product of a research investigation, writing that case study research questions "involve an open-ended, inductive approach to discover what these meanings and influences are and how they are involved in these events and activities—an inherently processual orientation" (p. 83). The case study approach, as I view it, necessarily sees multiple meanings in an investigation, reflecting a multiplicity of contexts, some of which are contradictory, paradoxical, and messy. Case study knowledge is therefore context-dependent rather than "ground truth." The implications here will be discussed in the following chapters but they include: the role of generalizability (either intrinsic or extrinsic) when analyzing and writing up case studies, the extent to which case study research is preliminary (leading to further study and studies in terms of design), and the purpose of a case itself (to learn about phenomena or to transfer knowledge from one context to another).

Table 1.1 Definitions, types, and disciplinary approaches to case study research according to well-cited case study theorists and their works

Author	Year	Title	Definition	Types of case studies or their selection criteria	Discipline from which author emerges
Bartlett and Vavrus	2017	<i>Rethinking case study research</i>	Depends on epistemology and methodology of author (p. 27)	• Variance-oriented • Interpretivist • Process-oriented (pp. 27–42)	Education
Bassey	1999	<i>Case study research in educational settings</i>	No definition but provides overview of others (pp. 22–36)	Argues that taxonomies of others are overlapping and intersecting (p. 35)	Education
Blatter and Haverland	2012	<i>Designing case studies: Explanatory approaches in small-N research</i>	A non-experimental approach that has the following four elements: “1. a small number of cases; a large number of empirical observations per case; a huge diversity of empirical observations for each case; and an intensive reflection on the relationship between concrete empirical observations and abstract theoretical concepts” (p. 19)	• Co-variational Analysis • Causal-Process Tracing • Congruence Analysis (pp. 27–29)	Political science
Bromley	1986	<i>The case-study method in psychology and related disciplines</i>	“...a relatively short, self-contained episode or segment of a person’s life” or “a close view of important life-event” (p. 1)	Case studies are contrast with life-history (p. 39)	Psychology

Bromley	1986	<i>The case-study method in psychology and related disciplines</i>	... a small number of cases; a large number of empirical observations per case; a huge diversity of empirical observations for each case; and an intensive reflection on the relationship between concrete empirical observations and abstract theoretical concepts" (p. 19) "...a relatively short, self-contained episode or segment of a person's life" or "a close view of important life-event" (p. 1)	Case studies are contrast with life-history (p. 39)	Psychology
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Author	Year	Title	Definition	Types of case studies or their selection criteria	Discipline from which author emerges
Duff	2008	<i>Case study research in applied linguistics</i>	Identifies key recurring principles: • boundedness • singularity • in-depth study • multiple perspectives • triangulation • particularity • contextualization • interpretation (p. 23)	• Single case study (p. 36) • Multiple case studies (p. 36) • Longitudinal (pp. 40–42)	Linguistics
Dyson and Genishi	2005	<i>On the case: Approaches to language and literacy research</i>	A case study is "a small naturalistic social unit" recognized by participants (p. 2). The researcher focuses on others' understanding of the phenomena under study (p. 12)	Only addresses single case study design but seems to imply other frameworks exist. Single case studies do not "determine context-free associations" (p. 11)	Education (literacy)
Orum, Feagin, and Sjoberg	1991	<i>A case for the case study (Introduction)</i>	"A case study is... an in-depth multifaceted investigation using qualitative research methods, of a single social phenomenon." The study is detailed and "... often relies on the use of several data sources" (p. 2)	Single case study approach	Sociology

Author	Year	Title	Definition	Types of case studies or their selection criteria	Discipline from which author emerges
Gerring	2017	<i>Case study research: Principles and practices</i>	"A case study is an intensive study of a single case or a small number of cases which draws on observational data and promises to shed light on larger population of cases." It is "highly focused" (p. 28)	Descriptive, causal, or omnibus (p. 41)	Political science / government
George and Bennett	2005	<i>Case studies and theory development in the social sciences</i>	A case is "an instance of class events" out of which the research can develop theory regarding the similarities and differences among related instances (pp. 17–18)	n/a (generally appears to be a single case study approach)	Political science / government
Hamel, Dufour, and Fortin	1993 (1991 in French)	<i>Case study methods</i>	Case study is a "monographic approach" (p. 1) deploying multiple methods. This approach consolidates various "objects of study" (p. 32) into the approach (for further elaboration, see pp. 41–44)	While a taxonomy is not presented, cases are generally conceived of as a way to view larger social forces and cultures	Sociology
Hamilton and Corbett-Whittier	2013	<i>Using case study in education research</i>	Does not define case study. Instead, discusses various researchers' conceptions of case study. Approaches case study research as a genre	Views the case study as an approach "...within a bounded unit, using different forms of data collection and is likely to explore more than one perspective. Case study as a research genre could then be defined as a way of framing a particularity (bounded unit), providing guiding principles for the research design, process, quality and communication" (p. 10)	Education

Hamilton
and Corbett-
Whittier

2013

*Using case study in
education research*

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providing guiding principles for the
research design, process, quality
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Education

Author	Year	Title	Definition	Types of case studies or their selection criteria	Discipline from which author emerges
Merriam	1998	<i>Qualitative research and case study appli- cations in education</i>	The case is "a thing, a single entity, a unit around which there are boundaries." The case needs to be "intrinsically bounded" (p. 27)	Disciplinary, descriptive ("intent"), and multiple	Education
Stake	1995	<i>The art of case study research</i>	"The case is a specific, complex functioning thing" that includes a bounded system that is an inte- grated system (p. 2)	• Intrinsic: to learn about the phenomenon itself (p. 3) • Instrumental: to learn about the phenomenon for purposes outside the phenomenon (pp. 3-4)	Education
Swanborn	2010	<i>Case study research: What, why, and how?</i>	An in-depth study conducted within its natural setting. Full definition in the notes ²	Multiple and single	Sociology
Yin	2009	<i>Case study research: Design and methods</i>	"Case study is an empirical inquiry that investigates con- temporary phenomena in-depth within its real-life context, wherein this phenomenon and context are not clear" (p. 18)	Exploratory, descriptive, and explanation case studies (pp. 7-8)	Social science

Third and fourth, case studies are holistic, bounded systems (Dyson & Genishi, 2005; Gerring, 2017; Stake, 1995; Yin, 2009) that draw on multiple sources of data, that is *triangulation* (e.g., Baxter & Jack, 2008; Blatter & Haverland, 2012; Gerring, 2017; Miles, 2015; Simons, 2012; Yin, 2009). A bounded system is identified by the researcher through their own research questions, disciplinary background, tools, life histories, and practical constraints. A bounded system, though, is not rigid. Rather, it is a *flexible* approach for demarcating when, where, and how to begin and end conducting research. Merriam (1998) writes that a case can be "an intensive, holistic description and analysis of a bounded phenomenon such as a program, an institution, a person, a process, or a social unit" (xiii). The "case study approach moves us one step closer to being able to study a phenomenon as an integrated whole" (Anderson et al., 2005, p. 681).

Because case studies are in-depth and attempt to understand the system under investigation in rich ways representing complexity, triangulation is necessary. Of triangulation, psychologist Bromley (1986) writes, "The navigational metaphor suggests that if several independent sources of evidence point to a common conclusion, then one's confidence in that conclusion is strengthened" (p. 6). Duff (2008) elaborates on Bromley's claims when she writes:

Data, methods, perspectives, theories, and even researchers can be triangulated in order to produce either converging or diverging observations and interpretations. Although the notion of triangulation may have originally had positivist undertones (multiple sources of information leading to one "truth" to be discovered by the researcher), it can also be used to ascertain multiple forms of interpretation (or multiple realities) at work in order to clarify meaning by identifying different ways the case is being seen.

(p. 30)

Baxter and Jack (2008), too, write, "Triangulation of data sources, data types or researchers is a primary strategy that can be used and would support the principle in case study research that the phenomena be viewed and explored from multiple perspectives" (p. 556). With these perspectives in mind, researchers can, consequently, develop a case study that combines interviews, surveys, observations, fieldwork, user experiences, and many other data sources. The use of multiple data sources underscores the epistemic open-endedness of the case study as a methodology.

Typically, these data sources are combined to reflect the "multiple-realities" (Dyson & Genishi, 2005, p. 18; Stake 1995, p. 43; Yin, 2009, p. 18) of a case, meaning that case studies do not represent a single unifying reality but rather sets of historically contingent activity. Indeed, Baxter and Jack (2008) note that "researchers should... plan for opportunities to

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contingent activity. Indeed, Baxter
& Jack (2008) should... plan for opportunities to

have either a prolonged or intense exposure to the phenomenon under
study within its context so that rapport with participants can be established
and so that multiple perspectives can be collected and understood" (p. 556).
Due to these multiple realities and perspectives, including the blurring of
work boundaries (Spinuzzi, 2023, p. 2), the bounded system of a case study
can be *iterative* in nature (Gallagher, 2019, p. 5), meaning that bounded
systems are recreated over time if the inquiry needs the boundaries to be
redesigned or rethought. In fact, because case studies are meant to be
detailed in nature, boundary production probably should be iterative in
nature (cf., Gerring, 2017; Yin, 2009).

In addition to these four descriptive elements, there are two common
themes around the case study as a research approach. First, case studies
yield complex results that are often unable to be distilled into summar-
ized bullet points. Philosopher of science Mary S. Morgan (2012), for
instance, writes, "The outcome is a complex, often narrated, account that
typically contains some of the raw evidence as well as its analysis and
that ties together the many different bits of evidence in the study" (p.
668). Likewise, Bent Flyvbjerg argues that the case study should result in
a narrative, one that does not close the inquiry but *opens* it to possibility.
Flyvbjerg (2006) writes:

I try to leave scope for readers of different backgrounds to make dif-
ferent interpretations and draw diverse conclusions regarding the
question of what the case is a case of. The goal is not to make the
case study be all things to all people. The goal is to allow the study to
be different things to different people. I try to achieve this by
describing the case with so many facets—like life itself—that different
readers may be attracted, or repelled, by different things in the case.
Readers are not pointed down any one theoretical path or given the
impression that truth might lie at the end of such a path. Readers will
have to discover their own path and truth inside the case.

(p. 238)

Here, Flyvbjerg echoes the open-endedness of case study research but
with an emphasis on writing up the study. The narrative of a case study
can be scaled up or down to account for the inquiry and allows the
multiple realities to be reflected directly in the writing.

The second theme is to understand the history of the case study as a
marginalized form of research—generally before the 1990s and especially
within the fields of psychology and sociology—and then to argue for the
strengths of the case study approach (Gerring, 2004; Stoecker, 1991).
However, I have not read many articles published since the 2000s that
explicitly malign case study research. Most researchers appear to me to
accept the case study as a legitimate approach, although there is con-
siderable debate over its status as an approach, a method, or a

methodology. Gerring (2017) and Bartlett and Vavrus (2017) articulate some of these issues, although the discussions tend to be ensconced in disciplinary conversations, such as causal case studies or small-N versus large-N case studies.

Wrestling with the term “case”

Some researchers avoid a case (not case study) definition and thereby allow readers to fill in their own approaches/definitions for what a case study is and means. For instance, Yin (2009), whose canonical multi-edition *Case study research* has been cited over 200,000 times, does not define a case by itself.³ Bassey (1999), Merriam (1998), and Stake (1995) opt not to define a case, instead going with the fuller-fledged term, “case study.” Ragin (1992) has addressed this question of a “case” by simply arguing, “it depends” (p. 6). Political scientist John Gerring (2017) notes that a case “connotes a spatially and temporally delimited phenomenon of theoretical significance” (p. 27).

While Gerring’s definition is direct and clear, this definition immediately poses two queries, both related to how a case exists or, more precisely, comes into existence. First, if a case is to be investigated and *learned about*, it is unlikely that researchers can immediately delimit a case before investigation. Case study research is not experimental. Researchers do not thus find neatly bounded cases *ex nihilo*. Researchers need to investigate to understand the phenomenon under investigation. Due to the theme of “multiple realities” discussed earlier, I have often been left with questions about the boundary issue: what is included in the case and what is left out of the case?⁴ My answer here is the refrain I began this book with: it depends on the case and its context.

The second query: Gerring’s use of “theoretical significance” implies that the significance is already manifestly clear before investigation. By extension, then, the researcher—who brings the theory to bear on the research—makes the decision about when, where, how, and why to delimit a case—thus complicating the implied notion that a case exists outside the investigation. From this perspective, a case study is a case with the study of the researcher included as scaffolding. If a case is a temporally and spatially delimited thing, then what is at a case’s core?

Typically, case study researchers have labeled this core a “unit of analysis” (Bartlett & Vavrus, 2017; Bassey, 1999; Bromley, 1986; Bur-owoy, 2009; Dyson & Genishi, 2005; Orum et al., 1991; Flyvbjerg, 2006; Gerring, 2017; Merriam, 1998; Stake, 1995; Swanborn, 2010; Yin, 2009). Others have tried complicating the unit of analysis (Spinuzzi, 2023; Wertsch, 2009). The unit of analysis represents the fundamental building block of a case similar to the concept of a sample in survey research. This causes some confusion between case and unit of analysis, a tension that Bartlett and Vavrus (2017) highlight:

Bartlett and Vavrus (2017) articulate discussions tend to be ensconced in usual case studies or small-N versus

case study) definition and thereby approaches/definitions for what a case is (in (2009)), whose canonical multi-cited over 200,000 times, does not (Merriam (1998), and Stake (1995)) with the fuller-fledged term, "case" his question of a "case" by simply scientist John Gerring (2017) notes temporally delimited phenomenon

and clear, this definition immediately how a case exists or, more precisely, a case is to be investigated and researchers can immediately delimit a study research is not experimental. Founded cases *ex nihilo*. Researchers phenomenon under investigation. As discussed earlier, I have often secondary issue: what is included in the case? My answer here is the refrain I the case and its context.

"theoretical significance" implies mostly clear before investigation. By brings the theory to bear on the when, where, how, and why to implied notion that a case exists perspective, a case study is a case ided as scaffolding. If a case is a g, then what is at a case's core? I have labeled this core a "unit of issey, 1999; Bromley, 1986; Bur-Drum et al., 1991; Flyvbjerg, 2006; 1995; Swanborn, 2010; Yin, 2009). unit of analysis (Spinuzzi, 2023; presents the fundamental building f a sample in survey research. This and unit of analysis, a tension that

Case is often defined as place. Researchers may use "case" to mean one setting, place, or institution, or they may use "case" for both the institution (or place or setting) and each person in it. We may also use case interchangeably with "units of analysis," but this can be problematic because it does not sufficiently separate the categories we use to organize our data and the categories we construct based on our theoretical framework.

(p. 27)

Bartlett and Vavrus are leery to conflate the case with a place, setting, or thing because (1) their sociocultural approach understands that context is not a container but rather is the phenomenon, and (2) that a case contains analysis, thereby making a case the unit of analysis and analysis from the researcher(s). The case, on this view, already contains analysis through the construction of the case itself.

The ambiguity between a case and unit of analysis (hereafter referred to as a unit) underscores that a unit is generally understood to be a thing, person, or program that *prefigures* and *presupposes* the researcher. A "unit" of analysis is a thing researchers choose to study outside of themselves. Two frequently cited case study researchers adopt the view that cases exist outside the researcher. First, Stake (1995) asserts that the "case is a specific, a complex functioning thing" (p. 2). Stake goes on to write, "The case is an integrated system. The parts do not have to be working well, the purposes maybe irrational, but it is a system. People and programs are clearly prospective cases. Events and processes fit the definition less well" (Stake, 1995, p. 2). This system is a crucial epistemic understanding of case study research. For Stake, the integrated systems of case studies are identified, not created. People and programs are conceived of as units, systems before the researcher arrives. Events, relationships, and processes, in Stake's view, are not systems because they are too leaky and porous. The spatial component of a unit is determined by the case, not by the researcher's investigation, according to Stake. A case thus cannot be a relationship—and I will argue this view must be disrupted to make case study research more effective for our networked, digital era.

Second, Yin (2009) implicitly asserts that a unit of analysis exists outside the researcher: "Selection of the appropriate unit of analysis will start to occur when you accurately specify your primary research questions" (p. 30). While Bartlett and Vavrus (2017) address Yin's statement, the main point here is that a unit, for Yin, is prefabricated prior to the researcher. Despite his careful avoidance of epistemological commitments (Yazan, 2015, p. 137), Yin goes on to note that the unit can be refined or redefined but the unit remains outside the researcher. The researcher is convinced by the data, the case, or another consideration (such as practicality) to re-evaluate the unit. Yet the unit, or in Yin's approach the case, remains a stable thing. Both Stake and Yin, then, take a flexible approach to the unit in a case study but

understand the unit as a stable center that a researcher refines or a stable thing that is uncovered as the research project progresses—colloquially, as the research project unfurls.

Contra Stake (1995) and Yin (2009), Gerring (2017) posits that units are made by the researcher. Units are the building blocks of the case study method. As Gerring writes,

Occasionally, the temporal boundaries of a case are more obvious than its spatial boundaries. This is true when the phenomena under study are eventful but the unit undergoing the event is amorphous. For example, if one is studying terrorist attacks it may not be clear how the spatial unit of analysis should be understood, but the events themselves may be well bounded.

(p. 20)

Gerring's conception of a unit of analysis relies on implicit understanding that the unit "tells" or "informs" the researchers on how to make demarcations and bounded systems—that same type of systems to which Stake refers. But with Gerring's shift in perspective, the agency, onus, and responsibility falls to the researcher(s) because the researchers need to make cuts not into a unit but into the case itself. It's a slight distinction but crucial as an epistemology of case study research.

Extending Gerring's theoretical formulation of the unit thereby achieves a fuller and transparent version of the case study as a methodology, one especially relevant to digital research. A case study's center is necessarily complex but conceiving of the unit as persons, places, or things does not account for the relationships that form in our digital, networked world. In a world of social media and networked websites, cases are inherently relationships in that cases contain a milieu of connections.

From an epistemic view of digital case study research, the case study and its center are the needed complement—a salve—to big data analyses. Machine learning is not especially useful without case studies to serve as the core to connect correlations. Centers of cases are consequently relationally ideographic; they are the granular level of understanding the things/people/events/relationships that surround us. In our cyborg cultures and networked world, studying phenomena at granular level consequently necessitates a reconceptualization of the unit.

From unit to entity

The term and concept "entity" reframes the center of a case study. "Entity" draws from Albert North Whitehead's *Process and reality* (1979). As a conceptual schema, entities as Whitehead conceives them never exist in isolation—and this is the reason that entities are not solipsistic. Whitehead writes the following:

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For you cannot abstract the university from any entity, actual or non-
actual, so as to consider that entity in complete isolation. Whatever
we think of some entity, we are asking, What is it fit for here? In a
sense, every entity pervades the whole world; for this question has a
definite answer for each entity in respect to any actual entity or any
nexus of actual entities.

(1979, p. 28)

Two points are relevant here for case study research. First, entities are
situated, specific, and grounded ("Fit for *here*," my emphasis). They possess
concrete granular details—particularities—that case study researchers seek.
Entities exist in a context but only by someone asking the question; they
are *hailed* into existence. Whitehead's phrase of "we are asking" is note-
worthy: entities require direct thinking. In this sense, entities are created
through, in part, the act of conceiving of them. The implication here is that
the question-poser is partially responsible for the creation of the entity
under study. Researchers, of course, don't create their subjects of inquiry
but they do create the inquiry.

Second, entities can be nestled inside and adjacent to one another;
they cannot be isolated from one another. Through their mere existence,
they draw on a host of other relationships. Those relationships are emer-
gent, more than the sum of their parts. A useful supplementary here is
Manuel Delanda's work in *Assemblage theory* (2016). He writes,

Assemblages have a fully contingent historical identity, and each of
them is therefore an *individual entity*: an individual person, an indi-
vidual community, an individual organisation, an individual city.
Because the ontological status of all assemblages is the same, entities
operating at different scales can directly interact with one another,
individual to individual, a possibility that does not exist in a hier-
archical ontology, like that composed of genera, species, and
individuals.

(DeLanda, 2016, pp. 19–20, emphasis in original)

The entity to which DeLanda (2006, 2016) is referring is the ontologically
flat nature of case inquiry. Even when researchers are confronted with
different investigative scales, such as a person, a group of people, a large
organization of people, or a collection of organizations, these entities are
ontologically—and I add epistemologically too—flat. This position allows
for a fundamental blurring between people, places, things, and the rela-
tionship among them. By adopting such an emergent perspective, case
study research can methodologically collect and analyze data in ways
that represent the multiple realities of their entities under study.

Since case study researchers assert that cases are *holistic* representa-
tions (e.g., Stake, 1995; Yin, 2009), *entities*—as the unit of analysis of the

case—elicit the multiple and possibly contradictory relationships of such perspectives. Indeed, most statistical approaches could not represent the contradictory elements of an entity because such relationships would likely be *dismissed as noise*. Entities, both in nomenclature and philosophy, can better account for the contradictory stories and entanglements that accompany the creation of a case study's center.

Whitehead goes on to elaborate on the depth of connections between entities in "Facts and forms":

The principle of universal relativity directly traverses Aristotle's dictum, "A substance is not present in a subject." On the contrary, according to this principle an actual entity *is* present in other actual entities. In fact if we allow for degrees of relevance and for negligible relevance, we must say that every actual entity is present in every other actual entity.

(1979, p. 50, emphasis in original)

The connections between entities are not homogenous but rather by degree. For example, the relationship between a social media post and how it is shared possesses connections to a variety of other platforms. But the degree of sharing—how often it is shared—on a platform does matter to the relationship between the post and other platforms.

Isabelle Stengers, in *Thinking with Whitehead* (2014), directly and lucidly explicates the previous passage, reminding us that Whiteheadian metaphysics is perhaps counterintuitive.

We have, for better or worse, become accustomed to think that two bodies can interact "at a distance," that is, *qua* distant, but we are reassured by the fact that distance makes itself felt (at least in the definition of the gravitational interaction), and that the interaction responds to a regular mathematical function. Here, the conceptual scandal is fully deployed, irreducible to a redefinition of space-time as Einstein proposed it. If I feel something, this thing certainly enters into the definition of my experience: it belongs to my experience, and it is not forged by my experience. I sense it insofar as it testifies to something else. I produce myself *qua* feeling that which is not me.

(p. 295)

Stengers' lengthy explication points to two important aspects that an entity, rather than a unit, brings to case study research generally, and digital research specifically.

First, different entities can "touch" and influence one another even if they are not necessarily in contact. While there is some ontological and imperialist baggage with this perspective, i.e., not everything is equally connected to everything else,⁵ we can more readily see the messy edges

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of an entity and that connections in a case are made by the researcher to draw out the entity's emergent nature. Practically, by conceiving of entity as the unit of analysis, digital case study researchers can show how, for example, real-time social media posts can have an impact on the case study. Watching a speech on a social media platform equipped with real-time reaction emojis—as YouTube is—can influence users' experiences with that video (Riddick, 2019) and their subsequent views of that speech even if those reactions are *no longer present*. Because entities themselves are relationships, uncommon connections are more readily made with entities than with units, the latter of which has an embedded implication: units precede the researcher. Entity, on the other hand, emphasizes the multiplicity of realities—a common reframe from case study researchers—of a case study. This gives new meaning to the BF Skinner passage often quoted by case study researchers: "instead of studying a thousand rats for one hour each or a hundred rats for ten hours each the investigator is more likely to study one rat for a thousand hours" (Skinner, 1966, p. 21). Entities ask us to think about how thousands of rats might affect our one rat and vice-versa.

Second, Stengers argues that Whitehead's approaches go against an Einsteinian version of physics. An example helps to frame such a radical proposition. Within an Einsteinian framework, i.e., principles of relativity, scientists measuring in the same way would find their measurements the same. In a Whiteheadian framework, those scientists have the same measurement principles but due to their experiences, they measure differently and there is variation in what measurement means and in the measuring methods. This difference is more than the result of equipment, approaches, or techniques. *It's a difference of actual experiences*. One caveat: it's easy to render this approach as nonsensical: I did for many years and even still have some reservations of such a perspective. However, as I have grown more experienced, this means that measurement and statistics means different things to different individuals—and the *same individual at different times*. This perspective is key to changing the ontological nature of case studies to make them suitable for the networked nature of digital phenomena.

The center of a case study, as an entity, helpfully shows the instability of a unit for digital case study research. Most "units" of digital phenomena are far too leaky as bounded systems. For example, researching the case of a social media user on one platform typically requires examining their spaces in and across multiple platforms. Entities, both in language and theory, account for leaky phenomena, rife with relationships that *constitute* people, places, and things. Since people, places, and things are often considered the center of cases, I have attempted to show that these centers are themselves processes and relational. Entities, as an alternative term to units, explicitly frames relationships as cases.

Agential cuts: Practical implications of entities

Using entity, rather than unit, enables case study to include relationships and processes as cases. Karen Barad's notion of agential realism (AR; 2007) is important methodologically, and quite practically, to understand how things are relationships. *Entities* allow digital case study researchers to leverage a methodology for seeing *potential* relationships in their cases as part of the case.

AR prompts researchers to see case studies becoming a series of relationships that are necessarily snipped and culled. Digital, networked inquiries become processes. For example, for online research, understanding the ways that users exist materially on screens but have embodied presences off screen requires connecting non-human screens with human effects of the body; some of my participants have recounted experiencing panic attacks from reading threatening or misogynistic social media posts. Likewise, understanding the cultures and languages of a country as intimately connected to its websites, digital realities, and electronic devices (Takhteyev, 2012) thereby demonstrates that a case's center is not a unit but rather *always-already* a relationship.

Barad argues that an indeterminacy exists between people, objects, things, and phenomena. Barad's AR is not a unified theory but rather functions as inquiry by which cultural and natural forces are differentiated (2007, p. 66). AR then does not begin with a point at "this is culture" and "that is nature" but functions to question how "culture" and "nature" come into being and come to be treated as such. I quote Barad at length:

knowing, thinking, measuring, theorizing, and observing are material practices of intra-acting within and as part of the world. What do we learn by engaging in such practices? We do not uncover preexisting facts about independently existing things as they exist frozen in time like little statues positioned in the world. Rather, we learn about phenomena—about specific material configurations of the world's becoming. The point is not simply to put the observer or knower back in the world (as if the world were a container and we needed merely to acknowledge our situatedness in it) but to understand and take account of the fact that we too are part of the world's differential becoming. And furthermore, the point is not merely that knowledge practices have material consequences but that practices of knowing are specific material entanglements that participate in (re)configuring the world.

(2007, pp. 90–91)

Cases are the construction of a particular reality by the researcher, but the reality depicted is an attempt to highlight variability of the phenomena

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under consideration. By creating a case study, researchers genuinely produce a specific version of reality in relation to a combination of research questions, methodologies/methods, and theories.

One of the most consequential ideas for case study researchers from Barad's AR is agential cuts, or the idea that doing research requires a cutting apart of phenomena that simultaneously puts the phenomena together. Barad (2007) writes:

the agential cut enacts a resolution *within* the phenomenon of the inherent ontological (and semantic) indeterminacy. In other words, *relata* do not preexist relations; rather, *relata-within-phenomena* emerge through specific intra-actions. Crucially, then, intra-actions enact *agential separability*—the condition of *exteriority-within-phenomena*. The notion of agential separability is of fundamental importance, for in the absence of a classical ontological condition of exteriority between observer and observed, it provides an alternative ontological condition for the possibility of objectivity. Moreover, the agential cut enacts a causal structure among components of a phenomenon in the marking of the "measuring agencies" ("effect") by the "measured object" ("cause"). It is in this sense that the measurement can be said to express particular facts about that which is measured; that is, the measurement is a causal intra-action and not "any old playing around." Hence *the notion of intra-action constitutes a reworking of the traditional notion of causality*.
(p. 140, emphasis added)

To orient this passage for case study researchers, the bounded system is not just slicing entity away or "carving it" from reality. Agential cuts function as different moments of power to create boundaries, distinctions, and disjunctions. They are formed in relation to the researchers and the research project but not solely the result of the researcher's own choices. Those choices are entwined with entities under study, emergent together. The bounded system is a way to "cut" and to put back together, or as Barad argues, *together-apart* (2007).

Agential cuts, when thought about in terms of case study creation, frame researcher subjectivity as necessary to investigations. Most qualitative researchers accept the poststructuralist approach that subjectivity is unavoidable. As linguist Patricia Duff (2008) writes, "[qualitative researchers] see [subjectivity] as an inevitable engagement with the world in which meanings and realities are constructed (not just discovered) and in which the researcher is very much present" (p. 56). Duff goes on to argue that researchers need to be forthright, transparent, and credible with their qualitative schemas and coding procedures. Perspectives such as Duff's are useful for us without wrestling with postmodern theories and their anti-foundational perspective toward truth: digital case studies can *literally* look different to different researchers. For example, the texts,

videos, audio clips, and even augmented realities displayed to one researcher can vary with the algorithmic and computational procedures researchers encounter as they make observations, record audio, take fieldnotes, and collect texts, images, and screenshots. These data appear different due to time, place, user, and other factors. Shifting realities are thus not a theoretical poststructuralist element; they are a practical consequence of the scale of digital phenomena interacting with the researcher(s) as they proceed with their investigations.

Let me offer a few emblematic observations I have from my research on social media. I have studied redditors, Amazon reviewers (people who write reviews), and aspirational influencers. The entities at the core of my case studies are typically the people, although some might describe them as "users." I collect data on these users over the course of time. I notice that their habits are different depending on the time of year. Users tend to have different habits around holidays, summertime versus wintertime, and day of the week. The reviewers post more often and with a more critical tone around and during holidays. Redditors have different tones when at work versus the weekends. YouTubers produce different types of content depending on the season. On the one hand, we might simply be describing how users change over time. But on the other hand, as entities, these changes constitute the multiple realities of the cases. By adopting entities that require agential cuts, we can bound users' embodied relationships with their respective online communities and with our own encounters of them, thereby accounting for change within the case study.

Digital entities

Using entities, rather than unit of analysis, is not simply a shift in language. The language shift undeniably prods us, as researchers, to think of cases as lived entities rather than finished units. Part of my motivation for shifting the language is to avoid the implications invoked by the figurative language of "unit of analysis." Even now, when I read or hear the phrase "unit of analysis," the image of a completed house or a block comes to my mind. Entity, alternatively, invokes something much more lived and living and connected with other entities. Entity along with agential cuts elicits living relationships in ways that "unit of analysis" does not, notably through an epistemic apparatus that approaches phenomena as emergent. An entity, within a case, is only ever partial. There are always-already more elements to account for and create. A consequence of this theoretical commitment is that entities contain other entities and are inherently relational. Case study research becomes an outgrowth of such relationality and researchers' attempts to produce a narrative about the research undertaken and ways in which they both present and do not present such information. The cases are consequently a direct result of the researchers' choices, an issue that I discuss at length in the next chapters.

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Two final notes here about entities as centers of case study research. The first is that most readers may ask, "Isn't this entity approach applic-
able to all case study research and not just digital research?" My direct
answer is yes. All phenomena are networked. The earth is an ecology,
with relationships emerging in unexpected and unforeseen ways. Second,
entities are, conceptually, especially useful for digital phenomena
because such phenomena are networked at a higher intensity and
broader scale. Let's use two examples. First, let's imagine a student in a
classroom without any mobile devices. The classroom is certainly
networked: students interact with students, teachers, and other living
creatures, such as classroom pets and bugs that enter the space.
Classrooms are typically nested with other classrooms in larger net-
works of activity. But once we add elements of mobile devices and
electronic technologies that possess internet access, suddenly the scale
of networking and its role in networked interactions become sig-
nificantly more prominent. Second, a social media user engages with
their respective platforms, e.g., Twitter, Facebook, and TikTok, at a
more frequent pace than mass media. While it's true that listeners of
radio and watchers of television are participating to some degree,
these mediums do not hail us to participate. Listeners and watchers
have no intentionally designed space for participation. On the other
hand, social media interfaces and UX templates are overtly designed
not only for users to participate but also to entice participation through
habituation and attention (see Fogg, 2002). These interfaces use
metrics and qualitative affordances, such as "likes," "upvotes," and other
descriptions of user-to-user attention, to connect users to content and
other users. These spaces are designed to be networked intentionally,
often via algorithms and other computational means.

Conclusion: Sansdisciplinarity

My efforts in this chapter have conceived of digital case study
research through the lens of *sansdisciplinarity*. *Sansdisciplinarity*, as I
understand it, does not deny the existence of disciplines. Rather,
sansdisciplinarity sees disciplinary knowledge as incomplete when
used with respect to any digital—or non-digital—case study research.
Case study research, in general, must do away with disciplinary
boundaries and silos. As James Wertsch (2009) writes, "the way out of
the quandaries associated with disciplinary fragmentation is a funda-
mentally different type of unit of analysis, one that cuts across, or,
better yet, ignores existing disciplinary lines" (p. 121). Digital case
study research does not fit into neat, coordinated boxes. This chapter
has built on this argument by framing the term *digital* to describe our
everyday experiences, actions, and activities. Digital, as a term, is
useful precisely because it is ubiquitous.

To underscore *sansdisciplinarity*, it's useful to remember that disciplines are a relatively new endeavor. Disciplines arose in response to, centrally, the historical development of research universities that sought to coordinate, corral, and demarcate knowledge. Walls of disciplinary knowledge, though, are built with the *sansdisciplinary* mortar of problems. These walls serve to keep people inside as much as outside. They limit researchers' practices and, crucially, the very conception of a research problem or project—including my own. The shortcomings of these boundaries are rapidly becoming clear across academic and political life. Groundbreaking engineering work, for example, draws on mechanical engineering, material science, computer science, physics, chemical engineering, and other fields. It's useful here to quote again from Wertsch (2009):

the key to such an explication is the use of the notion of mediated action as a unit of analysis and the person(s)-acting-with-mediational-means as the relevant description of the agent of this action. From this perspective, any tendency to focus exclusively on the action, the person(s), or the mediational means in isolation is misleading. Yet the tendency to isolate various dimensions of a phenomenon is precisely what is encouraged by the disciplinary fragmentation that characterizes so much of the contemporary scholarship in the social sciences and humanities.

(p. 119)

My use of entity is an attempt to avoid the isolation of various dimensions mentioned above. In fact, the inordinate flexibility of case study research, with its insistence on multiple realities of a case, is what drove me to reconceptualize the traditional term "case" and "unit of analysis" and to receive them into an "entity" in the second half of this chapter. But to study a social media campaign, an influencer, a content moderation policy, artificial intelligence, a set of algorithms, or a platform—just to name a few—requires a panoply of knowledges, a variety of rich methods, and sound case design. It is to these issues, and design specifically, that I now turn.

Notes

- 1 "We suggest in our proposed definition of case study that it is a transparadigmatic heuristic that enables the circumscription of the unit of analysis. The circumscription of the unit of analysis is accomplished by (a) providing detailed descriptions obtained from immersion in the context of the case, (b) bounding the case temporally and spatially, and (c) frequent engagement between the case itself and the unit of analysis" (VanWynsberghe & Khan, 2016, p. 90). This definition is a fairly similar definition that seeks to avoid labeling the case study as a method, methodology, or research design. This book argues the case study can be a full fledged methodology.

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2 Swanborn offers the following lengthy definition:

- a case study is "carried out within the boundaries of one social system (the case), or within the boundaries of a few social systems (the cases), such as people, organisations, groups, individuals, local communities or nation-states, in which the phenomenon to be studied enrolls
 - in the case's natural context
 - by monitoring the phenomenon during a certain period or, alternatively, by collecting information afterwards with respect to the development of the phenomenon during a certain period
 - in which the researcher focuses on process-tracing: the description and explanation of social processes that unfold between persons participating in the process, people with their values, expectations, opinions, perceptions, resources, controversies, decisions, mutual relations and behaviour, or the description and explanation of processes within and between social institutions
 - where the researcher, guided by an initially broad research question, explores the data and only after some time formulates more precise research questions, keeping an open eye to unexpected aspects of the process by abstaining from pre-arranged procedures and operationalisations using several data sources, the main ones being (in this order) available documents, interviews with informants and (participatory) observation
 - in which (optionally), in the final stage of an applied research case study project, the investigator invites the studied persons and stakeholders to a debate on their subjective perspectives, to confront them with preliminary research conclusions, in order not only to attain a more solid base for the final research report, but sometimes also to clear up misunderstandings, ameliorate internal social relations and 'point everyone in the same direction'" (p. 13).
- 3 The flaws in Yin's (2009) conceptualization of case study research include the following: (1) prioritization of current events over the past, (2) understanding context as a container, (3) seeing a case as a single data point, (4) *a priori* efforts to bound a case before study, (5) positivist claims about a case's validity, and (6) underestimating the importance of case study work in social science (Bartlett & Vavrus, 2017, pp. 29–32). Much of the tensions between Yin's (2009) perspectives and Bartlett and Vavrus's (2017) arguments are due to disciplinary differences: the former is a social scientist who excludes teaching cases from his scope of analysis (pp. 4–5) whereas the latter are educational researchers specializing in multilingual, migration-based literacy practices.
- 4 See Spinuzzi (2023).
- 5 Whitehead even recognizes this inequality by referencing degrees of separation (1979, p. 50).

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