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VITAL DATA: WRITING AND CIRCULATING DATA IN NON-PROFITS

By

Patrick Danner
B.A., Rutgers University, 2011
M.A., Rutgers University – Camden, 2013

A Dissertation
Submitted to the Faculty of the
College of Arts and Sciences of the University of Louisville
in Partial Fulfillment of the Requirements
for the Degree of

Doctor of Philosophy
in English/Rhetoric and Composition

Department of English
University of Louisville
Louisville, Kentucky

May 2019

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A Dissertation Approved on

April 16, 2019

by the following Dissertation Committee

Dr. Stephen Schneider

Dr. Karen Kopelson

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DEDICATION

This dissertation is dedicated to my wife

Kathryn Lafferty Danner

my biggest supporter, who moved mountains to make this work possible.

ACKNOWLEDGEMENTS

No dissertation is written in isolation, and the realization of this project speaks volumes to that. My advisor and mentor, Dr. Stephen Schneider, has championed this project and all of my work for years. My committee, Drs. Karen Kopelson, Frances McDonald, and Joanna Wolfe, have been thoughtful, incisive, and effective readers of this and other projects. Drs. Kristen Lucas, Tim Johnson, Joe Turner, and Mary P. Sheridan gave me time in their offices and in hallways to talk through ideas. I always walked away from those chats re-energized. My graduate student colleagues past and present shaped this project in small and big ways. Chris Scheidler and Rick Wysocki, in particular, provided supportive feedback to early chapters of this work.

I must also acknowledge my research subjects and those “Metro Data Coalition” employees who are not represented in this work. They gave their time week-in and week-out, opening literal and figurative doors into the inner-workings of the organizations I write about in these pages.

My parents, Mark and Theresa, and my sisters, Tori and Tina, cheered me on even when they were not entirely clear on what I was writing and why. My grandmother, Loretta, always offered me coffee and groceries when I visited. My late grandfather, Herb, will always be the biggest supporter of my work—referring to me a “professor” long before this project even began. My cats, Iggy and Leopold, distracted me from much of my writing.

And finally, my wife and academic partner, Kate, who has cheered me on for years: You kept me on this project and were a permanent reminder of why I should keep going. You listened to each half-baked idea, pushed me to hone each and every one, and then still offered to hear them once more. There's no one I'd rather read my work, and no one's work I'd rather read. This would not have been finished without you, and this remains for you.

ABSTRACT

VITAL DATA: WRITING AND CIRCULATING DATA IN NON-PROFITS

Patrick Danner

April 16, 2019

This dissertation presents the results of an ethnographically-informed workplace observation study of a single non-profit referred to throughout as “the Metro Data Coalition” (MDC). It begins with an overview of the organization, its institutional history, the technical and technological scenes of composing, and the demands placed on the writing process by each of these variables. It considers usability studies, activity theory, and rhetorical ecologies in coming to terms with how MDC writers shape the numerical data they work with daily. The latter half of the dissertation considers how MDC writers approach their work as “storytellers,” a self-concept that is threaded throughout their writing process, and the ways in which MDC team members and those of their parent non-profit—the City-Community Partnership—shape a circulation process in a bid to measure the MDC’s rhetorical “impact.”

The dissertation is divided into six parts. The introduction and Chapter 1 serve to set the scene of the MDC, their organization, their purpose, and their writing processes. I argue here that their organizational *ethos* is imposed by a range of structural and historical forces, and ultimately runs into conflict with their mission statement. In Chapter 2, I zoom in on the technologically-mediated data visual composing process and make a case for a vision of distributed creativity that suits technical writing scholarship.

In Chapter 3, I focus on the organization's and individual team members' approaches to "story" and "storytelling," and argue that "storytelling" is itself an action that is distributed across a perceived ecology of MDC work and circulation, and that the goal is a sense of "stickiness" that is ultimately fraught in our present, hyper-digitized and ecological age. Chapter 4 takes up the issue of "mission impact," and the ways in which ecologies of work are shaped and re-shaped in a bid to prove rhetorical success of MDC work. Here, I argue that a story's "stickiness" cannot be read by one-to-one uptake of arguments, but instead by evidence of re-telling in other organizations. In the conclusion, I emphasize external organizations and the way MDC data has been approached, ultimately suggesting that the technical, quantitative writing the organization engages with is unsuited to the rapidity with which quantitative information can be shaped and re-shaped to align with previously-held, culturally infused "stories."

Ultimately, this project is designed to provide a set of workable heuristics for understanding how quantitative information can be shaped and deployed in technical and professional writing scenarios. It is a study of the "life" of data and the many mutations that happen within that "lifecycle." To get there, however, it is necessary to engage with real-world writers doing heavily quantitatively-informed work, and to come to terms with the non-numerical, "subjective" forces that shape how we approach "data" in the 21st Century.

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INTRODUCTION

SEEING STORYTELLERS IN ACTION

Sitting in on Metro Data Coalition (MDC) meetings, it strikes me as an observer how often the group returns to questioning, as they call it, “the purpose of the MDC.” On the surface, the MDC describes their purpose as one of “catalyzing” community action, bringing non-profit, for-profit, and civic bodies together around MDC research and publications. Yet, there is a gulf between such a succinct mission and the work that underlies it. True, research and report writing are central to what the MDC does in public. Privately, however, there is a lengthy (and at times, contentious) research and drafting process that precedes grander moments of bringing organizations together. In one telling moment, for example, two team members—Becca and Sam, both researchers with backgrounds in public health, social work, and public policy—are brainstorming possibilities for how to “humanize” the data that sits in front of them, data that shows overlap between signifiers of poverty. They see in the compiled research that one-in-seven residents of the city of Gateway live in what they call “concentrated poverty.” They see that the life expectancy gap between the richest and poorest Gateway residents is twelve years. They see that growing up in the poorest Gateway neighborhoods makes these residents twelve-times as likely to drop out of high school. They see that there is a direct correlation between growing up in an impoverished household and being born at a low birth weight (itself a predictor of longer-term health issues). In short, they see that, at least by the numbers, these multiple indicators of poverty build atop one another, making

the experience of poverty quite severe. A low birth weight can lead to long-term health issues, which redirects household income toward medical bills rather than, say, transportation, rent, or educational opportunities. Lacking transportation can increase the precarity of one's employment, or the ability to procure healthy foods, compounding these pre-existing issues.

Becca and Sam see the complicated nature of this data. Statistically, the numbers paint an abstract picture of the conditions of poverty in Gateway. We can locate a geographic region where pluralities of impoverished residents live. We can say those who live in these impoverished areas are less likely to have health insurance, access to public transit, or an associate degree. We can say they are more likely to live in cost-burdened housing, or to have a shorter life expectancy than the city average. But what we cannot say is that these are causal, and that experiencing one burden of poverty makes one x-times more likely to experience another. So Becca and Sam jointly propose something new for MDC report writing: interviewing those who live in these conditions. "When we talk about 'humanizing' the report," Sam says, "we think this is the best way to do it."

The reaction from Andy, the team leader, is swift: "That's not our job." Instead, he suggests, the way to "humanize" the data is to frame it about the potential of *all Gateway residents*—to frame it as, in his words, "We need an educated, capable workforce with access to the things that make life worth living." In other words, Andy wants to take the data and make it about a hypothetical *what can be*, a story about a possible future. Sam and Becca, though, understand the "humanizing" drive to be about painting a full picture, putting a real, human face to the numbers to show that these aren't simply data points but instead the conditions under which Gateway residents live now.

Ultimately, Andy wins out. In part, Andy wins out because of his appeal to institutional *ethos*, an understanding that the MDC was fundamentally “about data.” In part, he wins out because he appeals directly to the bureaucratic arm above him, the MDC’s “policy board,” who regularly intervene on Metro Data Coalition projects in a bid to remain relevant, and to speak to the needs and interests of their own funders. And in part, Andy wins out because the team as a whole came to agree that his was a more compelling “story” for their regular audience.

The chapters that follow here are about these and other choices the Metro Data Coalition regularly has to make in order to create usable and rhetorically effective reports. It is about the organization itself, their writing practices, the ways in which they package and deliver quantitative information, and how they determine whether or not their writing has “impact.” Ultimately, this manuscript reports on a single case study that uses the MDC to answer some questions about the nature of quantitative data as a tool or subject of writing within the workplace. How do writers suit their institutional and bureaucratic *ethos* to writing about or with quantitative information? How do technical writers construct scenes of work for packaging and deploying quantitative information in effective visual and/or linguistic forms? What discursive tools do organizations bring to the table to provide rhetorical force to quantitative information?

These questions evolved alongside the project itself. As an “outsider” and neutral observer, I entered the organization with a particular interest in understanding the rhetorical nature of “data.” In observing the ways data was mined, circulated, packaged, revised, visualized, and delivered, however, I determined over time that there is no way to consider the life cycle of a data point without contending with the real-world

institutional, technological, statistical, and discursive limitations on what an organization can or cannot do with the data at hand.

Additionally, this introduction is designed to provide a way into reading this project: as a narration of a single case study and, implicitly, a call for more case studies of its kind—in depth, longitudinal studies of single, technically-minded workspaces in the vein of Jim Henry’s *Writing Workplace Cultures* (2000), Clay Spinuzzi’s *Network* (2008), and past and forthcoming work by Ann Shivers-McNair (2019). While many have theorized the status of “data” and “statistics” in technical communication and elsewhere (e.g., Gitelman 2013, Drucker 2014, Welhausen 2015, Wolfe 2015, Gries 2017), little has been done to study its rhetorical use by real organizations in real time. How is it, exactly, that organizations approach and manipulate numerical information to specific rhetorical ends? Given the ubiquity of all things “data” in our current cultural moment, it would behoove scholars of technical communication, professional writing, rhetoric, and writing studies more broadly, to seek out and study these mundane practices more closely.

The Metro Data Coalition

The Metro Data Coalition is, at its roots, a data-driven, non-profit research organization. They are a small organization with a small budget, and meet in an office space within the headquarters of their parent organization, the City-Community Partnership (CCP), a non-profit that specializes in the management of philanthropic giving. These weekly meetings—often held in a small conference room in the center of CCP activity—were where I most frequently interacted with the team and my interview

subjects. Such a location makes the presence of the CCP a commonplace before, after, and even during meetings. The lines between the organizations regularly blur. And, as future chapters will demonstrate more clearly, this relationship regularly and directly informs MDC output: their most frequent and primary audience is a group they refer to as “the policy board,” which includes CCP executives and others with close working relationships to the organization.

The presence of the CCP also speaks to a fragmented, recursive, and iterative writing process. Several of my subjects are open about this fragmentation, particularly those who self-identify as “data scientists.” “I focus on the numbers,” one subject, Nick, once said. “The story the MDC tells with them in someone else’s job.” Given the scene of this quote (a gathering of data scientists and other users of the data visualization and coding platform *RStudio*), it is unsurprising that Nick would characterize himself as a numbers person only. However, the reality is much more complex. The MDC writing process is largely circular. The core MDC team negotiates possible research topics (e.g., arts access, healthcare after the ACA, drugs and violent crime) and puts together brief, informal proposals for their “policy board.” The policy board then recommends paths forward, providing some specifics for the MDC to pursue. Nick and other MDC data scientists then turn to their databases while others turn to broader research questions, and negotiations between “storytellers” and data scientists begin in earnest, often with the data (and the early drafts of visuals) driving the trajectory of a report.

The precedence given to the shape of the available data, however, can cause friction in meetings. To quote another data scientist, Tom,

I mean you can put stuff together of course—statistics are statistics—but a good, strong literature search is going to inform—is going to give you

perspective on what you're looking for, especially if someone's already done it, because then there's no need to reinvent the wheel. It's going to give you insight on failings that you may have to accept or adjust for or just acknowledge because you may not be able to do something different about it. You know?

Tom points to the balancing act between gathering “raw data” and what the literature on a certain issue already tells us. In the above quote, for instance, he's pointing to multiple specific tensions among the team. One is around the use of U.S. Census data. According to Tom, the MDC's use of Census data is—on its face—fine. However, because they lack a clearly defined metric (i.e., what would later be termed “multidimensional poverty”) their use of the data sits outside research norms as he knows them. A second tension, and perhaps a more felt one, is around a team request for Tom to research correlations between poverty and drug use, something he called “bullshit.” Implicit in these tense negotiations is a dance that both “story” and “data” are involved in. When Tom points to previous research in the literature, he's pointing to accepted disciplinary stories about issues of public health and policy. He pushes against quantitative findings on the relative wealth of those who use drugs because of what he describes as known methodological problems in sources that would suggest correlation there. Moreover, he pushes back for legitimate ethical reasons: “the issue there was not only somewhat racist, and somewhat classist and elitist, it's also just blatantly false.”

Tom's issues with MDC writing processes paint it as sprawling and dispersed. There are a range of considerations the MDC must take into account throughout: statistical realities and data collection realities, technical limitations brought upon by digital interfaces, institutional bodies making recommendations and prodding the organization in different directions, acceptable conversations across disciplines and in the

broader sociopolitical discourse, and, ultimately, a question of where and how the report drafts and final publications will be circulated. Each piece of that process—research, brokering with institutional bodies, drafting, visualizing, finalizing, and circulating—brings in new subjects, characters, and tensions. Some of these tensions are predicted by the MDC team, but others are discovered only as they work through the process in weekly meetings.

This writing process is recreated across MDC media as well. They run a rich website and, periodically, match it with a strong social media presence where they mostly circulate research findings and announce upcoming publications and MDC events. By all accounts, their organization’s charter calls on them to publish one “Greater Metro Report” each year. Historically, these reports have clustered around one of their four “Deep Drivers,” broad categories of civic life that the organization studies to find change in individual metrics over a prior set of years: Jobs, Education, Health, and Quality of Place. For example, a 2009 report focusing on education metrics highlights what they call a “broken education pipeline.” In this report the MDC (then under different leadership) studied the rates at which Gateway children and adults entered an exited school at different levels. If 100 Gateway children enter kindergarten, they find, only 68 finish high school; of that original 100, only 54 enter college, and 13 of those 54 exit after the first year.

The education pipeline report is widely touted as a beacon of the Metro Data Coalition’s effectiveness across Gateway’s non-profit and civic sectors. Gathering some oral history about it through interviews with current employees and in conversation with those familiar with the organization’s history, I discovered that this high regard is largely

due to what happened after its publication. In the wake of the “Education Pipeline Report” (as it’s colloquially known), the school district and city officials undertook a larger scale investigation of Gateway’s educational attainment. Two organizations—one focusing on pre-K education and another on job preparedness within public schools—were launched as a result. Such “wins” are critical to MDC organizational *ethos*. Sitting beneath a parent non-profit, the City-Community Partnership, they are regularly called on to produce evidence of their value in order to justify funding or extended deadlines. Similarly, they appeal to these “wins” as a way to remain relevant in local media—public radio, public television, mainstream newspapers, and alt-weeklies.

As later chapters—particularly chapter 4—will unpack more fully, the question of “effectiveness” is a complex one, and remaining rhetorically effective as a non-profit research group is a tall order for the MDC. They are perennially understaffed, and no one in the organization works there full-time. When I first observed the organization in 2016, there were five team members: Andy, the project manager; Amy, the chief of operations; Nick, the resident data scientist; Becca, who divided her time between research and functioning as Andy’s assistant; and Sam, who was contracted out from another, national non-profit. It became clear quite quickly (as the cast of characters in this manuscript will confirm) that turnover within the organization was regular and rapid. In some ways the group shares affinity with what Clay Spinuzzi (2015) identifies as “all edge adhocracies.” They hire on short-term contracts—sometime project-specific contracts—in order to meet demands at given moments. In my time with the organization they have put noticeable pressure on themselves to only hire people with backgrounds in data science, reflecting the growing complexity of their report topics.

Joining the group as a silent observer in 2016, I entered at a time of rapid change in the Metro Data Coalition. They quickly brought in a new team member, Loretta, who restructured her contract with the CCP to spend ten hours per week on MDC projects. Andy and Amy were new to the organization, having been there less than a year, and the report this project largely focuses on was their first. To that end, there were also clear internal mandates to strike a new direction in MDC research. While previous reports had either focused on a single “deep driver” or presented a bland comparison of Gateway and nearby cities, Andy and Amy decided to capitalize on the interconnected nature of things like health, employment, education, and neighborhood safety, building out new themes—and therefore new styles—for the MDC to brand themselves with. Ultimately these changes are felt throughout the MDC writing process, as this project attests. They are reflected when I uncover competing understandings of, say, “storytelling.” They present difficulty for the organization (and their parent body) in determining what “effectiveness” looks like after MDC reports are released. They amplify the creativity of new hires charting new paths for new types of data visuals in the reports themselves.

This project highlights some, but not all, of the MDC team members’ voices. Sam and Becca were briefly, vocally involved in shaping reports. Sam left within months of my introduction for graduate school in the EU. Becca has moved to working more closely with another one of Andy’s projects—a technology start-up headquartered in Gateway. Andy and Amy are the two longest-serving voices and the only two who were entirely present during my time at the MDC. As of this writing, however, Amy has recently moved to work full-time for a larger non-profit. Loretta remains at the CCP, periodically (though less and less frequently) joining in on MDC meetings. Nick left the organization

in 2017, going on to work as a data scientist at a large private company, but continues to work remotely, fine-tuning MDC data. Other data scientists have cycled through as well, and some of their voices will be present in the coming chapters.

Methods and Methodology

The case study that follows is a result of a mixed-methods, ethnographically-informed approach to the Metro Data Coalition and my individual subjects.¹ I embedded myself in the organization starting in June, 2016. I observed weekly team meetings, individual data scientists working off-site, and a series of events the organization took part in to promote their published reports. Following Shirley Brice Heath and Brian Street (2008), I entered with a sense of what I was looking for: complexities within the processes data scientists undertook in order to develop quantitative information for other writers. Quickly, I determined that such questions were fundamentally tied up in broader questions about the writing processes (from research to drafting to distribution) of the group.

Moreover, these become questions of institutional *ethos*, technical and technological realities, and interpersonal negotiation and choices. I was called upon regularly to re-acquaint myself with my subjects and the activities they undertook as researchers, writers, and (periodically) public figures, to embrace my position “as

¹ I refer to this research as “ethnographically-informed” rather than “ethnography” for a few reasons. First, in contrast to the traditional, intensive ethnographic methods designed by anthropologists and other social scientists, my observations took place at predetermined moments agreed-upon by subjects; that is, my presence was regular, but not constant. Second, though I immersed myself in MDC workplace culture and learned how to speak to their work in their technical discourse, I did so with a particular eye toward only a slice of their workplace practice. This perspective expanded throughout my time there, but I did enter with specific questions about their research and writing practices.

constant learner—ever curious and open to what’s happening” (Heath and Street, 30). I was called upon to recognize what Jim Henry (2000) recognizes as the “always contingent” nature of ethnographic work in the postmodern academy, fine-tuning my own stance in a bid for elusive “objectivity” (1). As a constant learner, I came to learn elements of coding with R and javascript, basic statistical terms, and learned the lay of the land of federally-maintained databases from the U.S. Census to the Bureau of Labor Statistics and beyond. Such topics came up through MDC writers telling stories of their own experiences working with a range of data and alongside a rich institutional and technical history.

As I fine-tuned my observational stance throughout this project, I benefitted from Patricia Sullivan’s (2017) “encountering” approach to experience architecture studies, which shares an affinity with the “postmodern” as Henry understands it and the “learner” stance of Heath and Street. Experience architecture grows out of usability and human-computer interaction (HCI) studies, and centers the experiences and activities of human subjects working with tools unimpeded by researchers or artificial use environments. That is, instead of inviting my subjects to a conference room of my own making, I met them where they work: MDC offices, coffee shops, their home offices, the local college campus. In observations and interviews, I ceded control and embraced the absence of structure or preconceived knowledge. The subjects taught me statistical terms as they worked through them. They taught me about Gateway’s non-profit sector when introducing me to heads of other non-profits at collaborative events. In other words, the way I describe their work in this project is as close to their words as possible. The themes

that arise in the subsequent chapters—storytelling, bureaucracy, hypothetical use cases, and so on—are theirs as well.

Wanting to function as an observer in this way, I chose to employ extremely open-ended and impromptu interview methods. Rather than enter with a set of defined questions, I instead opened the floor for subjects to discuss how they thought projects were progressing. For reference, in my first interview, 55 of my 90 utterances were filler: some form of “yeah,” “OK,” “mmhm,” or “got it.” More substantive contributions were largely points of clarification, the dialogic process of repeating back terms for subjects to expand upon or clarify. I of course cede that there is virtually no way for interview scenarios to be completely neutral. As Gesa Kirch (2005) has suggested, all the advance trust-building in the world cannot stop interviews from, at times, falling to expected power dynamics. The most frequent interview subjects—those whose voices populate the coming chapters—were Andy, Amy, Loretta, Nick, and another data scientist, Tom, who was present with the organization for just under a year. I interviewed these five subjects a total of fifteen times, leaving ample time between interviews (at times nearly a year) in order to avoid repetition of questions or interviewee language.

Such sprawling observation and interview methods allowed me to slowly gain insider knowledge, sketch workable activity networks (see chapters 2 and 4, in particular, for these), and gain deep understanding of the key themes of MDC research and production. I was able to briefly interview members of partner non-profits—including the president of Gateway’s local branch of the Urban League and a researcher for a local food bank—who most vocally and directly responded to MDC research. Each of these methodological turns is designed explicitly to engage in questions of writing practice,

rhetorical effectiveness, usability, and rich production activity. As an answer to traditional understandings of “usability,” I broaden the scope to illustrate morphing tool-ecologies in chapters 1 and 2. As an answer to concerns of “scope” in the way we understand activity networks and ecologies, I turn at times to the extreme local (e.g., packaging one coding language within another to accomplish a specific task) and elsewhere to the broadest, global understanding of the ecology the MDC operates within (e.g., hypothesizing social-cultural turns at the root of a turn in CCP grant funding focus). Individual chapters dip in and out of these levels of focus, and highlight admittedly isolated slices of MDC practice. These slices and this particular case study, however, make a case for the ways in which we can understand quantitative data within specific, writerly confines: confines that are rife with limitations on what can or should—or cannot or should not—be said with regard to the numerical information we get our hands on as technical and professional writers.

Outline of Chapters

Chapter one overviews the organizational concerns Metro Data Coalition writers deal with in developing what they determine to be “usable” or “effective” annual reports. I focus on one particular report here (and largely do so throughout most of this study), colloquially known as “the multidimensional poverty report.” Primarily, I consider the ways in which MDC writers account for their bureaucratic position (i.e., underneath a parent organization and working for partner organizations) and institutional *ethos* in their writing practice around this report. MDC writers internalize the iterative development of their own—as I call it—policy-avoidant *ethos* as they navigate multiple writerly

ecologies, and hypothesize future use-cases in designing annual reports. Such an *ethos* limits what MDC writers and researchers can and cannot do with their numerical data. Moreover, within these intertwining considerations, MDC writers become users themselves. Databases, language, tropes, and components of organizational history become the tools of their trade, and the positions they find themselves in as researchers and writers present a series of self-identified limitations that shape their writerly output.

Chapter two moves more locally, focusing largely on one MDC data scientist, Nick, and his at-home practice of gathering data and transforming that data into usable visuals for MDC reports. I focus primarily on the development of neighborhood maps, a newly-introduced visual type in MDC reporting. Tracing the development of these visuals, we start in the rich ecology of public and private databases MDC team members have access to: American Community Survey, American Fact Finder, GeoFRED, and a range of data sets loaned to them by partner organizations. MDC data scientists have to align the content to a range organizational goals (including adherence to a particular *ethos* and the goals of anticipated circulation to known partner organizations), and employ specific statistical-analytical and technical moves to do so. They build small-scale and large-scale tool ecologies in the interest of achieving these goals, learning and deploying new technical tools as well as creating a path for draft circulation. The central interest here is in the internalized creativity of MDC writers, and their ability to surround themselves with new ecological nodes, and new tools-of-use, in order to accomplish the goals of a given report. Such creativity necessarily moves us beyond the realm of usability studies and usability laboratories and into theories of distributed use and activity.

Chapter three focuses on the MDC's understanding of their work as "storytelling." The discourse of "storytelling" is wide-ranging, and evident in the range of definitions provided by interview subjects. "Storytelling" is often, I suggest, understood in professional writing literature as a discursive form. However, this chapter demonstrates that the *telling*—the action of the thing—is the best way to understand what it is the MDC does in packaging their research as what they call "a story." Informed by their understood position within a network of non-profit and civic actors, broader cultural concerns, and the technical/statistical considerations of the databases themselves, MDC "stories" are carefully crafted to be "sticky," memorable or actionable, and therefore designed to make the data itself more actionable. I illustrate what this "stickiness" looks like through a close study of report language and visuals, as well as my own observations of reactions to the report during a large report release event.

Chapter four looks beyond MDC report release and into its effects in the non-profit community. I focus on CCP grant funding practice to illustrate how activity networks are modified and, at times, created anew in order to accommodate broader organizational goals. I focus on the CCP's desire to measure "mission impact," or the material effect of MDC publications in the community. I unpack multiple approaches to the question of "impact" brought out through interview transcripts, each bringing out real questions about how measurable something as malleable as "impact" could be. In the act of building a new route of circulation activity, CCP grant funders evoke questions of planned futurity for MDC reports. If "stickiness" is a central MDC goal, effectiveness or "impact" is a result of such "stickiness." As the MDC tracks the impact of their reporting,

then, they get close to shaping new rhetorical methods for increasing those exact, abstract variables.

In the conclusion, I move to more recent MDC publications to take stock of how the iterative activity of creating usable reports has evolved. As previously noted, I first met with the organization during a time of transition, when individual team members were looking to make their mark on MDC content and style. I revisit a central vignette from chapter 3, that of the of Urban League’s public responses to MDC writing over multiple years. By extending this outward into 2019, I consider how a more recent focus on racial disparities is an expected—if overdue—result of the ways in which the MDC interacts with the broader ecologies they work within. Language in their most recent (as of this writing) report drafts come close to directly contending with the shortcomings of data science (and the language used by organizations like the U.S. Census Bureau) in understanding these disparities, a shortcoming seen elsewhere in MDC work as well.

In short, these chapters move across micro- and macro-perspectives on MDC writing practice, forward and backward in time, and trace the range of influences on their process of transforming data into packaged, usable, effective, “sticky” “stories.” As an isolated case study, it stretches what is understood as MDC organizational practice, often looking beyond the singular office they meet in and considering new questions, new locations, and new influences on their writing and circulation practices. And though this is a single, longitudinal, isolated case study, by unpacking the MDC writing practice I argue for the consequentiality of what are often “invisible” processes of technical and professional writing (Read and Swarts 2015) and the invisible institutional, technical, and

organizational concerns that make them so consequential across the networks
professional organizations operate within.

CHAPTER 1

ORGANIZATIONAL ECOLOGIES AND USE LIMITATIONS

Andy, the Metro Data Coalition’s “Project Director,” provides much of the energy and excitement around the MDC’s work. He’s a Gateway native—later leaving for higher education but returning to his home city, where he felt “he [could] make a clear contribution”—and a champion of data-driven assessments of Gateway’s civic life and social well-being. He speaks to these things publicly and passionately, and often takes the lead speaking role on behalf of the MDC in their public events. His role of “project director” is largely a communicative one. He is the buffer between the work and the public, between the MDC’s policy board and the MDC team, and between other non-profits and his own organization. MDC meetings often begin with Andy relaying an executive board member’s reaction to a project idea, or a draft, or a report’s success. During open critiques of drafts, he references individuals external to the MDC, describing their personal feedback for him and the team. Andy is adept at packaging ideas for different audiences, whether it’s the executive board, a contracted design team, or a partner organization the MDC seeks help from. And this communicative ability transferred over into the report writing process, too, as he often thought out loud about how to balance the multiple audiences the reports ultimately have—audiences with different concerns, stakes, values, and expectations.

For these reasons, Andy was the first subject I sought to interview. As the most vocal proponent of the MDC’s project and a key player in team negotiations, Andy’s take

on what the MDC *should be* doing often takes precedent over other team members' takes. My early interviews with Andy focused on his thought processes as he and the team drafted and edited report content. At one point, I ask specifically about the effect he believes a set of maps in the 2015 annual report will have. He says,

Andy: Well the neighborhood map is the *what we're gonna do*. It's really about the call-to-arms, right? So there's the *why does this matter*—so *What is it?* It's multidimensional poverty. *Why does it matter?* Because it impacts the way that—that people live their lives. And then *where does it impact those people?* Particularly in these neighborhoods in this way. So, this is the problem, this is the impact of the problem, here's where the problem is being impacted. Now, we're also a little bit leading the horse to water in the sense that we can't then say "So fucking put your money into these two census tracts, these four neighborhood areas, and, by the way, do it in this way," but we are actually saying that. Hopefully, if the report is effective, people will—will follow that path.

Patrick: Yeah.

A: Well—and then who has to see that and get bought in? Well, you know, it's gonna start with the—from our perspective, it's someone else's job to be circulating this up through the grassroots. What I hope happens is that we help people articulate the experiences and needs that they have in a language that our civic leaders can understand. We are prepping very clear linguistic paths: "deep drivers." That's the way that you talk if you want access to the halls of power in Gateway. Uh, so that's what we're trying to do from the top down. As soon as the foundation community [alluding to the community of non-profit organizations] starts saying, "Well tell me how this impacts *this*," they go back to their boards and they say "We need to prioritize this neighborhood for the next 5 years."

P: So long-term—

A: —well, hold on, let me finish that. If we can do that with the foundation community, man, everyone who wants money from the foundation community will stick their finger up in the air, figure out which way the wind is blowing and be like "Great! I want money from them, and by the way it's mission-aligned, so I will now be talking about it in this way and focused in this way."

MDC reports become usable when data is put into context: visual context, spatial context, political context, and linguistic context. On the one hand, that context can be read as fulfilling the demands of a particular analytical genre. On the other, from a perspective that considers MDC writers *and* the users of their reports, that context is the

product of both language and data serving as particular tools to be put to use in report writing. MDC data and the visuals and language that accompany it, once packaged as “a report,” act as a bundle of tools for their readers to enact future efforts toward change. Andy’s explanation of the report’s *actionability*, then, refers to the power of report writing as the act of “prepping . . . linguistic paths,” which is a bit like “leading a horse to water.” These goals are clear enough, but they do lead us to wonder the extent to which MDC writing reflects an imagined ecology or attempts to shape a real one, or to what extent the ecology the MDC communicates within is partially already-known or unknown, partially material and partially perceived. Do MDC writers seek new audiences as they introduce new concepts to their data? Do they risk alienating long-time readers? What happens if the language they introduce is untenable in other organizations? Or, in short, what do they know about those they write in service to and what are they imagining is there?

Andy’s interview suggests that a major marker of success—for him and for a report—would be informing the discourse of this messy ecology by creating a situation in which “gain[ing] access to the halls of power in Gateway” is achievable when an organization adopts the language of the MDC. In the case of the 2015 Greater Metro Report, that means witnessing the adoption of the language of “Multidimensional Poverty.” However, the process of “prepping linguistic paths” to “lead a horse to water” is not spelled out in any mission statement or any single place in MDC writing. The closest version of this language, which appeared on a now defunct version of their website, explains that the MDC provides “research and data to catalyze civic action,” and “engages the community in a shared agenda for long-term progress.” Parsing these out,

we can paint a picture of the type of organization the MDC considers itself to be: they provide support materials in the form of data to assist other organizations in implementing programs, and in doing so they contribute to and influence the “shared agenda” of a community. This last part is more nuanced than the straightforward language of their pieced-together mission suggests, however.

The “shared agenda” sentiment belies a writing process explicitly informed by ecological thinking. The MDC imagines successful report writing in terms of optimizing usability, and evidence of optimization is seen when reports are adopted by those within their civic community, when a “shared agenda” is formed or informed, and when report adoption can be tied to “action.” Jim Henry (2000) imagines such ecologies as transactional because audiences themselves can act as authors, either directly through feedback or indirectly by operating through the broader culture. Echoing Louise Wetherbee Phelps, Henry develops a model around the transactionality of writing that is “more fully contextualized, polyphonic, [and] contentious” (148). Such a model emphasizes authorship and places a document within an organizational culture. This organizational culture constructs a throughway of representation: “real authors” produce a document by adopting the *ethos* of an “implied author” (i.e., the organization) and writing with regard to “implied readers.” A broader culture encompasses this schematic, including the relationship between the author(s) and the “real readers.”

The ecology the MDC conceives of as they write includes these dimensions. There are real authors, of course, present, including figures like Andy, Amy, Nick, and other team members. Their organizational culture is composed by the elements of their implicit and explicit mission and shaped by organizational structure: provide data to

engage other non-profits and civically-minded organizations and individuals; “sign-post” to influence this work, but do not make explicit recommendations; provide this data annually (if possible); act as a communication arm for their parent organization and other major influencers; and make the data “actionable.” As outlined previously, arguably the largest-looming figure in the organization is the “policy board.” The board, made up by high-ranking employees of other corporate and non-profit entities, becomes a “real reader” that provides feedback to the “real authors.” Moreover, the board molds broader organizational culture, thereby informing the *ethos* of the implied author of the report. In addition to these local components, the MDC explicitly recognizes elements of a “broader culture” that comprise their perceived ecology, too. This is where Henry’s model perhaps falls short. For Henry, the practice of writing in the position of “implied author”—and the discursive and rhetorical shapes that writing takes—constitutes organizational *ethos*. Such *ethos*, then, can be understood as the perceived character of the organization, its culture, and its position within a broader culture that includes real and implied readers. However, MDC writers do not adopt an organizational posture *per se*, but instead respond to real and perceived forces within and outside of their office building. There is a “stance” the MDC has adopted in the past, but it is not a result of a set model. The MDC *ethos* is malleable, constantly changing in response to a complex, real or perceived set of ecologies they see themselves operating within. Though the MDC may reference their past writerly habits in meetings, the “implied author” here is an author that is keenly aware of the circumstances they write from.

Report Topic Selection in MDC Ecologies

The simple question of how report topics are chosen illustrates both the looming figure of “the board” as well as the influence of organizational structure on how MDC team members write. From interviewee to interviewee, the story of how “multidimensional poverty” becomes the topic of the 2015 varies, at least in emphasis. It is clear that the board of directors has extensive influence on which projects are and are not taken up. They act as a quality control mechanism and a steering committee that approves and at times directs specific projects. At the beginning of each report cycle the team runs a proposed topic by the board. Andy refers to this in interviews as “sweet talking” the board into approving an initial focus; elsewhere he refers to these conversations as “the pitch.” After this initial “pitch,” however, the board continues to hold sway on the direction of a given project. Team leadership meets with board members monthly to update them on progress. They share drafts and developments and receive incremental feedback. At times, that feedback is relatively minor (e.g., a suggestion to present figures as percentages rather than raw numbers) and at other times it is more major (e.g., directing the group to abandon a project topic in favor of another).

Multiple interviewees point to an early moment in early 2016 where the board influenced a decision to forego a report on access to the arts in favor of a discussion of race and poverty. The reported degree of their influence on the team, however, is unclear. In one telling, this was a direct—and surprising—request. According to Andy,

[T]here was a substantial portion where I was like “Why don’t we talk about the arts?” . . . And then, you know, um, the board was like “nope. We’re gonna do race and poverty.” And I was like “oh, shit. Ok.”

In other tellings, however, the report topic arose from a “negotiation.” Regardless of which characterization is more accurate, though, it is clear that the board holds incredible influence over the MDC’s writing process: they fund and recruit further funding for team projects; they serve as oversight to the large conglomerate of organizations that the Metro Data Coalition is a part of—the City Community Partnership (CCP); and they are themselves invested in this work, too, serving central roles in Gateway’s broader philanthropic community.

The only universal across the multiple tellings of this story—the story of how the 2015 report topic, “multidimensional poverty,” was chosen—is that the board played a role. But that role is nuanced in some renditions of this history. Subjects at times point to a field of abstract influences on this decision. One version, from Amy, the MDC’s Chief of Operations, uncovers a range of intangibles that influenced the decision:

By charter, a report a year is kind of what we’re supposed to be producing[.] And, um, just in the way that things work and the rooms that we’re invited to be a part of, we were aware that the [local arts non-profit] was kind of kicking off this arts master plan[.] And knowing that, that is a clear—if we just take that for what it is—that is a clear way that a group is working to advance [the community] competitively. . . . There was also an appeal there because we don’t have clearly defined arts metrics, and so a report would have been an opportunity to work that in, not necessarily for our benefit—like it’s not like I’m dying to have, you know, an arts index on the website, however it would be helpful for the arts community to have something to convene around. . . . And so, if you’re looking at vetting it against opportunity, it had a lot of the things that we would have been looking for. The real question, when it came down to that was, yeah, but does it matter in the context of MDC’s efforts? Would it happen—is this action gonna happen anyway, if we don’t insert ourselves into this situation? And that’s an extreme way to say it, but I’m just trying to put it out there. You know what I mean? If we don’t—if we don’t create this platform for this issue among our followers, you know, and put it in front of them, will the action still happen and will it still be as impactful? And, I mean, in conversations with our board chair, in conversations among the team, yeah, it will still happen[.]

Here, Amy describes some of the less material and tangible, but perhaps more direct and practical, influences that ultimately determine the track taken by the MDC. While Andy understands the board's decision to be a directive to move away from one topic in favor of another, Amy sees contextual forces that took precedent and created a mutually understood need to abandon the "arts access" project. The arts access project has already had its moment; or, more precisely, the arts project "will still happen." There is already traction and funding behind it from organizations that the MDC works with regularly. In other words, there is little perceived value added for the MDC and for the communities they serve more broadly by doubling-down on this topic.

As Amy says explicitly, there was *little to be gained* in further researching and promoting the cause of arts access in that particular moment. Yet, the gains as they are spelled out in this exchange feel integral to the central goals of non-profit organizations like the MDC. A report on arts access would surely "advance the community competitively" and help the MDC develop their own internal "arts metrics" to use later in future work; "it would be helpful for the arts community to have something"—like approved MDC data-driven metrics—"to convene around." These seem like easy "wins" for the MDC. So, if such intangibles are taken into account at the base level of choosing a report topic—and in this case are seen as potential missed gains when the arts access topic is *not* taken up—how do they fit into the discussion of the ways in which internal users approach data for research and end-users take up the report in assisting new action?

Questions like this become viable usability questions when we imagine usability as an ecological phenomenon. After all, the MDC is considering future *user engagement* with their research and reporting as they negotiate project topics. The history of usability

studies is one of rapidly approaching such questions, too. Donald Norman's (1988) *The Design of Everyday Things* approaches future use through a set of design heuristics: visibility, clues, and feedback (8-9). Joseph Dumas and Janice Redish (1993) define usability through similar future-oriented design concerns: "Usability means that *people who use the product* can do so *quickly and easily* to accomplish *their own tasks*" (4). In each of these earlier depictions of what "usability" is, we see a rapid shift from concerns of the artifact alone (Norman's heuristics), to a question of how real world users take up the artifact to "accomplish *their own tasks*." Carol Barnum (2000) echoes this quick jump in her own historical view on usability studies:

A product's usability is determined by the user's *perception* of the quality of the product, based on the user's ease of use, ease of learning and relearning, the product's intuitiveness for the user, and the user's appreciation for the usefulness of a product. Usefulness is defined in terms of the user's *need* for the product in the context of the user's *goals*. (6)

Like Dumas and Redish, Barnum asks fundamental questions about users' needs, goals, and the contexts in which they work. For Heather Christiansen and Tharon Howard (2017), however, the growing attentiveness to user goals and experiences is not without risks. At the turn of the 21st Century, they note a "constructivist" tendency among usability researchers and specialists that sought to "'interpolate' users into a subject position that provides users with an interpretative framework that allows them to successfully experience the interface" (124). That is, even as usability specialists spoke of "context," they more often sought to push real world users into the contexts that suited a particular tool or interface design.

The questions we ask of MDC report readers, then, are informed by this push to understand usability—both the end usability of the report and MDC writers and

researchers themselves as users of tools—in the active, sprawling contexts both parties work within. The distribution of usability across an ecology of organizational bodies (the MDC, CCP, and others), material tools, and individual expectations (from MDC report writers *and* the reports' ultimate users) cannot just take into account the different tools that precede, follow, or exist concurrently with the sight of human-tool interaction.

Report users are themselves, as Robert Johnson (1998) would suggest, “integral” to the MDC report design process. We conceptually shift our focus “by concentrating on the user, and . . . *the user's situation*” (31). For Johnson, developing a heuristic for “user-centered design,” “The user's situation also takes into account the *tasks* and *actions* he or she will be performing as a result of a particular situation of activity,” meaning we must consider questions like

What tasks will the user be performing within the given situation? How would the user represent these tasks within that situation? Are these tasks user tasks, or are they couched within the terminology or construct of system features? Are the tasks visible in the situation of use? Can the users, in other words, see what they are doing, or are the tasks and actions hidden behind an opaque or a clumsy interface?

User tasks, the representation of those tasks, and the visibility of those tasks contribute to what we consider “context.” However, as the MDC and their network of users and organizations demonstrate, it is not sufficient to simply match a “task” with a “tool.” We need to consider how MDC users navigate their own organizational ecology and how they perceive their situatedness in their research and writing tasks—an ecology that imposes demands of work on them. We should consider them “Symbolic-Analytic Workers” who “possess the abilities to identify, rearrange, circulate, abstract, and broker information” (Johnson-Eilola 2004, 182), using specific tools (language, data, visuals) and their knowledge of that organizational ecology for leverage as they achieve the

specific instrumental goal outlined in their implied mission statement: informing the civic engagement work happening in the Gateway metropolitan area. Organizational motives, limits, and demands are part of the project of understanding usability in this setting, especially as it comes to define the user-work that goes into the production of the report *and* the use of that report once it circulates among prospective users.

With our present site of study rapidly sprawling, it becomes difficult to see where usability diagnoses could actually have effect. Instead, following the lead of Clay Spinuzzi (2003), I suggest that usability studies abandon the designer-as-savior model and instead consider the creative and *ad hoc* ways in which MDC writers and report end-users take advantage of the tools at their disposal—that is, the material and symbolic reality of their given *kairotic* situation—to reshape “ecologies that collectively mediate their complex activities” (222). Such a view leads us to, as Geri Gay and Helene Hembrooke describe it, “an emphasis on understanding the activities and the meaning of those activities in social and networked contexts” (xviii). Part of the work to be done in coming to terms with the MDC, then, as they operate within multiple distributed-use-ecologies, is parsing out some of the central forces, objects, bodies, and motives that typify a given scene at a given point. In other words, as usability heuristics grow (e.g., Geisler’s [2014] goals of “making a sense of place” and “supporting interactions among users” in the context of Web 2.0 interfaces), they still fall short of accommodating the sprawl the MDC researches, writes, designs, and circulates their work within, let alone the range of hypothetical end-use cases that inform the tasks they undertake.

The MDC sits at this position between professional writer and information designer. They toggle between these roles as they consider in meetings both how the

report will be taken up and how to craft appeals to organizations to get “buy-in.” In the past few decades, the literature on the roles of writers in professional organizations has taken up these and other questions. It has tackled the complexities of contingency, circulation, coordination, writerly background, and client variation (e.g., Longo 2000; Allen et al. 2004; Johnson 2004; Spinuzzi 2013; Pigg 2014); explored the complexity of how writers conceive of their own roles in the organization and in individual projects, ranging from manager, teacher, diplomat, editor, translator, and monitor (Henry 2000); explored the connection between writers’ identities and their writing practices (Redish 1989); and expanded the role of the internal reader within a given organization (Mirel 2003). But I open with an exploration of the ecology within which the MDC researches, designs, uses design tools, and circulates artifacts because this background represents small pieces of the puzzle of understanding complex writerly work as usability within a broad, sprawling ecology of multiple organizations, tools, data, language, and action. By understanding writing within organizations as a particular problem of *usability*, but not just writing, or collaboration, or writer identity, we can further recast the organization of the MDC and the perceived ecology of forces the MDC writers find themselves within as presenting specific, overlapping, and (at times) contradicting technical limitations at multiple sites of different kinds of work.

Ethos as an Organizational, Writerly Limit

Key to the MDC *ethos* and its identification with a specific, conceived ecology of partner non-profits is the avoidance of making direct policy recommendations. This is not to say that implicit or indirect policy recommendations are forbidden, but instead that the

language that surrounds the data in the report—language designed to contextualize it within sociological, economic, and broader “civic life” ideas—has to be crafted in such a way as to avoid the appearance of valuating present public policy or suggesting new policy. In other words, while the “linguistic paths” can be charted in a way to organize users of the report on a specific conceptual map, an *ethos* of objectivity is gained through the avoidance of language that explicitly directs such organization. Around the report drafting process, this and similar concerns arose regularly: how do we discuss needed changes or needed actions without directly recommending a policy or declaring an existing policy deficient? For the most part, the group circumvents this potentiality by foregrounding rhetoric of collaboration and cross-organizational work. By speaking broadly about the need for everyone to pitch in and work together, the thinking goes, they can avoid the user perception that they are advocating for or otherwise valuating specific policy. And for the most part, this rang true in the drafting process of the report itself.

Take, for example, the 2015 report’s conclusion on taking action against poverty:

Community members and organizations have individually made substantial progress in making Gateway a more competitive city. Poverty is the next big step in being the most competitive city we can be. It crosses industries from education to health to jobs and is a space where we can come together. It is concentrated in few places and has a population with enormous, untapped potential.

The MDC uses a layered editing and revision method, and this particular paragraph was added by Jon, a data scientist that was briefly contracted by the MDC to assist in finalizing the 2015 report. We see Jon walking a fine line, attempting to be concrete and specific without directly invoking a specific policy and thereby ostracizing a potential user group. He uses the non-specific “community members and organizations,” emphasizes poverty over actions to combat poverty, and alludes to “a population with

enormous, untapped potential,” highlighting the potential return-on-investment by more fully combatting poverty rather than the causes of poverty. In a subsequent revision, Nick adds to this discussion of “untapped potential.” I italicize the additions here:

Community members and organizations have individually made substantial progress in making Gateway a more competitive city. Poverty is the next big step in being the most competitive city we can be. It crosses industries from education to health to jobs and is a space where we can come together. It is concentrated in few places and has a population with enormous, untapped potential. *By lifting these neighborhoods together we create more change [than] we have been able to apart.*

The syntactic obscurity in this added sentence—it’s not abundantly clear whether “together” or “apart” is meant to qualify “neighborhoods” or “we,” nor is it terribly clear who the “we” necessarily is—is a telling symptom of the motive to avoid policy declarations while asserting the MDC’s imagined role in providing the tools for real-world, material change. By pinpointing specific neighborhoods that are underserved, the team runs dangerously close to alienating neighborhood associations. By implying that organizations haven’t been collaborating or cooperating with each other, they run the risk of sowing discontent in and between those very organizations. After all, MDC writing regularly takes up the task of imposing its concept of reality on the work of existing partner organizations. The non-descript “we” and the primacy of descriptors like “together” and “apart” over their referents, however, signals a shift toward a version of this conclusion that emphasizes *interconnectedness* and *togetherness* over any singular object.

Early drafts of this statement at times read as indictments of specific policies or organization. Such implications were most severe at the midpoint of the report’s composing process—drafts six and seven of a total of fourteen. By the final version, the

team drops language of “together” and “apart” and, instead, employs tropes created by the theme of “multidimensional poverty.” It reads almost like the report’s instructions for use:

Our hope for this report is twofold. First, by identifying concentrations of poverty beyond income, this data will facilitate investment in the neighborhoods and communities that can benefit most from reducing barriers to success. Second, we hope to spark meaningful collaborations across sectors that address the interconnected nature of the barriers to living one’s fullest life. The multiple dimensions of poverty do not exist in isolation and cannot be addressed in isolation.

Taking several steps back from the risk of alienating any potential user or partner group, MDC writers evoke the question of *what we do now* through the themes of “interconnectedness” and “isolation.” The MDC effectively sets this up as a key linguistic marker, a particular discursive path, for report users to frame their future activity with. Poverty is a series of interconnected data points that, aggregated, paint a broad picture of the myriad ways an individual can be impacted by socioeconomic standing. Therefore, addressing just one data point at a time is not as effective as holistically tackling several at a time with the help of collaborators. Following this logic, the MDC suggests that it is not the job of any single organization or individual to encourage collaboration. As often as the MDC cites “spark[ing] meaningful collaboration” around their data as an explicit goal, here it is simply the nature of multidimensional poverty—the communicative force of the concept—that necessitates cooperation across the ecology of non-profits and partner organizations.

The interplay among these ideas—avoiding policy recommendations, a self-concept of a position in an identified ecology of work, the turn toward the “linguistic path” of multidimensional poverty as an organizing principle in the writing—

demonstrates how pervasive these interconnected, organizational and conceptual limits are in the use of data, language, and other technologies within the report writing process. The notion of this particular self-concept or *ethos* as a limit on the writing process then reveals a series of other, nested and more discrete limitations defined by a range of conceptual, linguistic, or organizational influences (see table 1.1, below, for examples of this phenomenon). Moreover, these sub-limits inform one another and work together. The need to avoid policy recommendations (i.e., a limit imposed by the organization's own understanding of mission, role) is complemented by the need to steer the conversation with linguistic cues (i.e., a limit imposed by the need to use the language of multidimensional poverty compounded by the limit of the accepted understanding of how this particular non-profit ecology works). This is a messy web of considerations to parse out, to be sure, but they typify the context for MDC writers-as-users of particular "tools" (i.e., numerical, verbal, visual, and rhetorical tools). By unraveling these situational limitations and requirements we can begin to see how other forces and their corresponding limits converge to alter and frame each part of the MDC's research and writing processes.

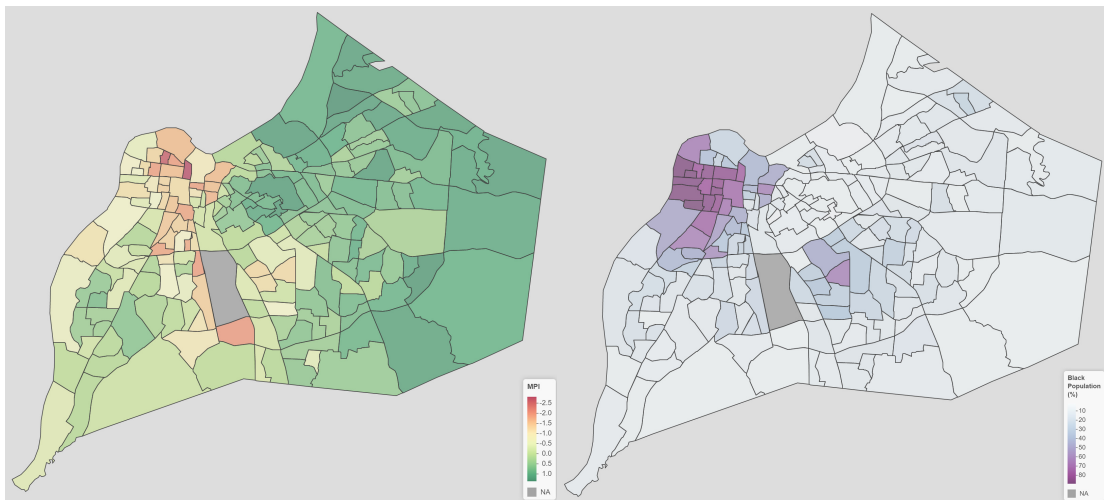
Types	Manifestations	Examples
Organizational Requirements	Peer City Comparisons; Trendlines; Policy Avoidance; Ecological Vision; The “2 x 4”	<i>“Of all 3,228 tracts in all of our peer cities, the poorest tract in [neighborhood] is the 3rd poorest overall.”</i>
Conceptual Requirements	Data-drivenness; Humanizing the Data; Actionability	<i>“What is the difference between growing up in one of Gateway’s most impoverished neighborhoods and one of its least impoverished neighborhoods?”</i>
Discursive/Linguistic Requirements	Multidimensional Poverty or Multidimensionality	<i>“Poverty is experienced as more than just a lack of income.”</i> <i>“The multiple dimensions of poverty do not exist in isolation and cannot be addressed in isolation.”</i>

Table 1.1. The three domains of imposed requirements evident in the MDC 2015 report writing process, defined by need or necessity and their manifestations in the report. All examples from the 2015 report.

These demands and the corresponding limits they impose affect multiple users at multiple points on the life cycle of this organizational writing process. Figures 1.1 and 1.2, below, for example, illustrate two maps that show up on the center page of the report, referred to internally as the “poster-side” during design discussions. The first is a neighborhood “heat map” demonstrating the concentration of multidimensional poverty. Areas in the red are the most multidimensionally poor; areas in green are the least. The second map, using the same shape file and visual concept, is a demographic map measuring, specifically, the percentage of black residents in a given area.² Areas in purple

² The city of Gateway is not solely made up of black and white residents, of course. Though I’ll say more on the affordances of databases in future chapters, it is worth noting here that of the racial groups quantified in the census, other minority populations—including the Latino/a population, Asian American populations, and indigenous populations—become statistical outliers when measuring demographics geographically.

have the highest concentration of black residents; areas in light blue have the lowest. Nick referred to the collocation of the two maps on a single page as appealing to the “ocular test” axiom. By this he means putting two similar-looking maps on the same page and allowing the viewer to look from one to the next. The takeaway is then perfectly clear: neighborhoods in the city of the Gateway that are higher-density black are also higher-density multidimensionally poor.



Figures 1.1 & 1.2: Multidimensional poverty (left) and race demographic (right) heat maps, recreated based on MDC 2015 Report.

These visuals and the accompanying design process presented a recommendation-avoidance problem unlike those that the group ran up against elsewhere. In this instance, far from seeking to avoid conflict with local civic groups, neighborhood organizations, or other local non-profits, allowing viewers to see these maps side-by-side runs the risk of indicting the city as a whole, particularly in a time when pressure to address racial inequity is climbing. In other words, this particular constraint on MDC writing is evoked, but in an unfamiliar context. Instead of it being simply imposed by an external force like the executive board, their parent group, or (as we will explore in future chapters) specific technical limitations, MDC writers impose this constraint based on imagined audience

reaction. They imply an end-user that will have a specific view of the data presentation and, as a result, mold that user's hypothetical, potential use by avoiding any clear policy position. The MDC's articulation of their organizational *ethos*, that is, can be read as reflecting a user-centered design model. But such articulation cannot be separated from these compounded real and imagined ecological situations, themselves evoking writerly requirements based on organizational history, structure, and perceived placement within a broader ecology of partner organizations, end-users, and technical tools. In short, even as the MDC deploys a policy-recommendation-avoidant *ethos* as a move to maximize usability across audiences, the way they do so can, at the same time, restrict that same usability.

Over several weeks, the team was able to meet their recommendation-avoidant imperative, freeing any individual or organization from guilt, by couching the visualizations in similarly abstracted statistical language. It was a painstaking process to arrive there, however. In an early version of the report, the language around the racial demographic map read,

Poverty in Gateway and its peer cities is inextricably linked to racial segregation. Income segregation is a driver of poverty, but poverty in Gateway cannot be fully explained without discussing the role of race. The map below shows a clear overlap between neighborhoods with high percentages of black citizens and high levels of multidimensional poverty. This was not an accident. It is the result of systemic racism. Its history traces back to an era of legal segregation and continues through systems of discrimination. While this report highlights the extent of the disparity, it does not discuss the mechanisms behind this discrimination. It is clear, however, that those mechanisms are the cause of racial disparity in poverty in Gateway.

This was draft three, and the first full-paragraph version of this language. It was largely attributed to Nick in the layered editing process, and this iteration of the discussion of

race and poverty went untouched through six subsequent drafts. In the interim, however, much of the weekly meeting time was dedicated to what can and cannot be said about the role of race in this report more broadly.

For a brief moment, an entirely new data visualization, a scatterplot demonstrating the correlation between demographics and the experience of poverty in a given geographic area, was included to accommodate the discussion (see Fig. 1.3, below). This scatterplot, the reasoning went, would assist the “ocular test” with a strong 0.64 correlation between the likelihood of being black in the city of Gateway and the likelihood of experiencing multidimensional poverty. Not only would we see two maps side-by-side, but we would also provide users of the report a visual of a line creeping upward that would presumably solidify understanding. Nick included language around the scatterplot to contextualize this number: the correlation, visualized in these dots, is described as “quite clear when comparing Gateway’s census tracts in terms of the percent of their population that is black and their overall poverty index scores. The correlation is high (0.64) and unlikely to have happened by chance ($p < .0001$).” Translated, this means that the relationship between being black and experiencing multidimensional poverty in Gateway is a strong one, and that there’s a 1-in-10,000 chance that this correlation is by happenstance and not in some way by design. For perspective, the relationship between oil prices and airfare is correlated only a bit more strongly (0.8) than that of race and poverty in Gateway.

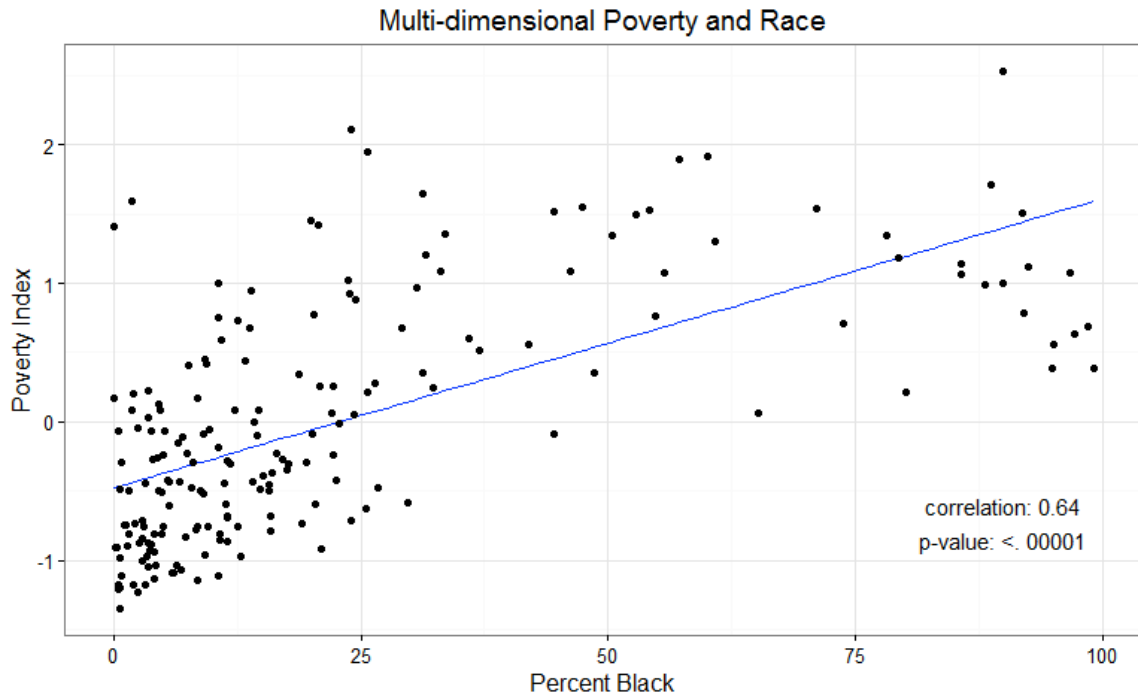


Fig. 1.3. Race/MPI scatterplot from MDC 2015 Report draft.

For several more weeks, this section of the report sat in stasis. Meanwhile, the team made a demonstrable move away from race as a centerpiece of the report, including reducing its prominence on the center, the “poster-side.” The scatterplot was a casualty of this move, but as illustrated below, the language of correlation would strengthen and stick. I emphasize the changes between drafts three and nine for effect:

Poverty in Gateway and its peer cities in inextricably linked to racial segregation. Income segregation is a driver of poverty, but poverty in Gateway cannot be fully explained without discussing the role of race. The map below shows a clear overlap between neighborhoods with high percentages of black citizens and high levels of multidimensional poverty. *High levels of poverty are directly correlated with having a high percentage of black citizens. This is due to systemic racism and its history traces back to an era of legal segregation and continues through systems of discrimination.* While this report highlights the extent of the disparity, it does not discuss the mechanisms behind this discrimination. It is clear, however, that those mechanisms are the cause of racial disparity in poverty in Gateway.

Barely a third of the paragraph is changed, but the impact is quite clear. No longer is there a “clear overlap”; instead race and poverty are “directly correlated.” This language shift was designed to evoke a differentiation common in statistical circles between correlation and causation. And this move away from causality continues through the final version of the report, where it reads,

Gateway’s history of institutional racism and segregation has had—and continues to have—a significant impact on its multidimensionally poor neighborhoods and the populations concentrated within them. While this report highlights the extent of the disparities across factors like income, health insurance, and educational attainment, it does not discuss the mechanisms behind these disparities. It is clear, however, that these systemic problems significantly contribute to the distribution of poverty across racial lines in Gateway.

Between versions three and nine, and further to the final, version fourteen, we move from segregation and poverty “overlapping” to “correlating” and, finally, to segregation having “a significant impact on . . . poor neighborhoods and the populations concentrated within them.” While none of these versions have a clear policy actor—no one policy or action or inaction is ever directly called out for the resulting systemic inequity—that unnamed actor shifts. In the first instance, policies of segregation cause inequity; in the second, segregation is characterized by a statistical correlation; in the third, it is specifically a *history of* segregation that acts in any way, and even then it’s only by having “significant impact” on specific populations.

And while correlational (i.e., statistical) language remained in the report, what is largely unseen are the forces—the perceived organizational, rhetorical, and historical realities of the situation the MDC writes from—that served to afford what could and could not be said about race in this report. They negotiated ways to honor the conceptual affordance of poverty’s “multidimensionality” without naming “race” or “segregation”

one of those dimensions. They did so by appealing to organizational history and tropes: race and segregation sit outside MDC “deep drivers” (i.e., health, employment, education, and quality of place), themselves a rhetorical imperative by organizational charter. They explored segregation without making a policy recommendation of *desegregation* because making such a move would sit outside their organizational *ethos*. They dove into connections between segregation and poverty without measuring segregation against other cities because the databases—part of a technical ecology they are bound to work from—would not support that work. A call-to-action on the issue of segregation was a casualty of organizational and conceptual constraints on their writing. The moment where the most work was put into avoiding policy valuation, judgment, or recommendation was also, arguably, the moment where refusal to do so would prove most consequential. Midway through the paragraph, the MDC states explicitly, “[this report] does not discuss the mechanisms behind these disparities.” They grant that the disparities are systemic, but the report does not say how that systemic force works; they grant that these disparities a product of history, but that history is not tied to the present through any particular actor. After the report is published, another team member, Tom, who does a sizeable portion of data work and research, suggested that this language of policy avoidance is evidence of race being “an add on” to the report itself. By tucking the discussion away at the bottom of a page and toward the end of the report, it is easy to point to a correlation—and to “feel good about” doing so, in his words—without having to say that race and systemic racism is itself a dimension of the conversation being had. Even later, Tom referred to this in an interview as a result of the report’s “cross-sectional” approach. For him, the poverty report could avoid making policy

recommendations precisely because it avoids making claims of causality—and when it comes close, as in this case, to saying that a specific set of policies created a specific problem, the report wears on its sleeve that its avoiding doing so. Segregation and racial inequity are real; but out of fear of alienation the MDC stops short of saying what they look like in any real way.

I do not intend to pass judgment on the final MDC product. It is clear through observation notes and interviews about the topic that there was real concern and hesitation around how to most effectively and usefully present the data on race. It is also clear, however, that self-imposed demands—be they a result of mission statements, perceptions of the efficacy of data work on policy, or the perception of the entire non-profit sector as the greater ecology surrounding them—caused the group to stop short of addressing the correlation between racial demographics and poverty in specific neighborhoods even to the extent that team members such as Tom would have liked. This section of the report will come up elsewhere in this study. Represented here is only a piece of the story of how this data was developed, written, and circulated—and the limitations that shape each of those pieces of course inevitably inform how that data is taken up and used by end-users.

MDC Tropes as Tools of Use

The same organizational *ethos* that leads to stances and a discourse of policy avoidance also prompts recourse to a set of defined discursive, rhetorical, and narrativistic tropes that we find across Metro Data Coalition writing. Effectively, these become the tools of MDC user-writers that allow them to contend with or avoid the

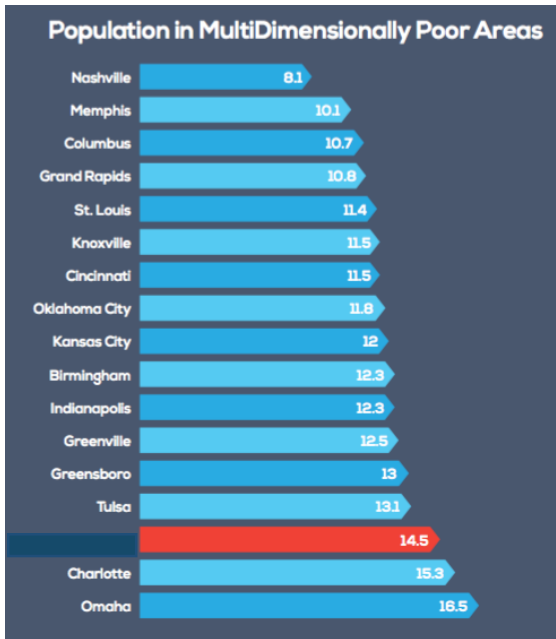


Fig. 1.4. Peer City Comparison Graph, MDC 2015 Report.

glitches that arise within their ecologies of work. As is borne out in meeting observations and the drafting process, the executive board is often cited as the entity most explicitly looking for such tropes. One is the “peer city comparison” (see Fig. 1.4, left), a feature of MDC writing since their founding. “Peer city comparisons” rank Gateway against its “peers,” a group of cities determined by a local University based on economic, demographic, geographic, and

population data, weighting economic data the most. MDC writers then collect data from Gateway’s peers and rank Gateway among the group on a given metric. These “peer rankings” provide Gateway and their report users a way of tracking the progress of the city in a tangible way. Additionally, MDC writing emphasizes its four identified “deep drivers,” four categories of quantifiable metrics with some overlap: “health,” “quality of place,” “education,” and “jobs.” These features provide an air of objectivity, asserting their stance of policy avoidance by focusing on the development of rhetorical *stasis*, tools for defining a benchmark against which the city would be able to track its progress over time. Moreover, the peer city comparison hints at the expansive, imaginary piece of the ecology the MDC writes from: hypothetical future users and a range of hypothetical future uses of the report. The peer city comparison, the MDC and their oversight board suggest, can later be used by end-users of the report to justify their own actions in

response, looking, for example, toward cities like Omaha, Nebraska, or Greenville, North Carolina, to develop new housing, health, or employment initiatives for Gateway. Over the course of three report cycles, the need for “peer city stuff” came up regularly. At times the peer city comparison is used to anchor the report, as in the first observed writing cycle (see again Fig. 1.4). Elsewhere it is seen as a convenient data visual type to have on hand in filling out report sections, as in the 2016 report (see Fig. 1.5, below). In my time with the MDC, each peer city comparison graph was either in direct response to or in anticipation of executive board members’ expectations of its presence. Although it is easy to imagine Metro Data Coalition reports without such visuals—particularly given that such comparisons stop at the level of description, leading to no in depth study of a “peer city”—they remain tied up in a sense of the organization’s rhetorical identity.

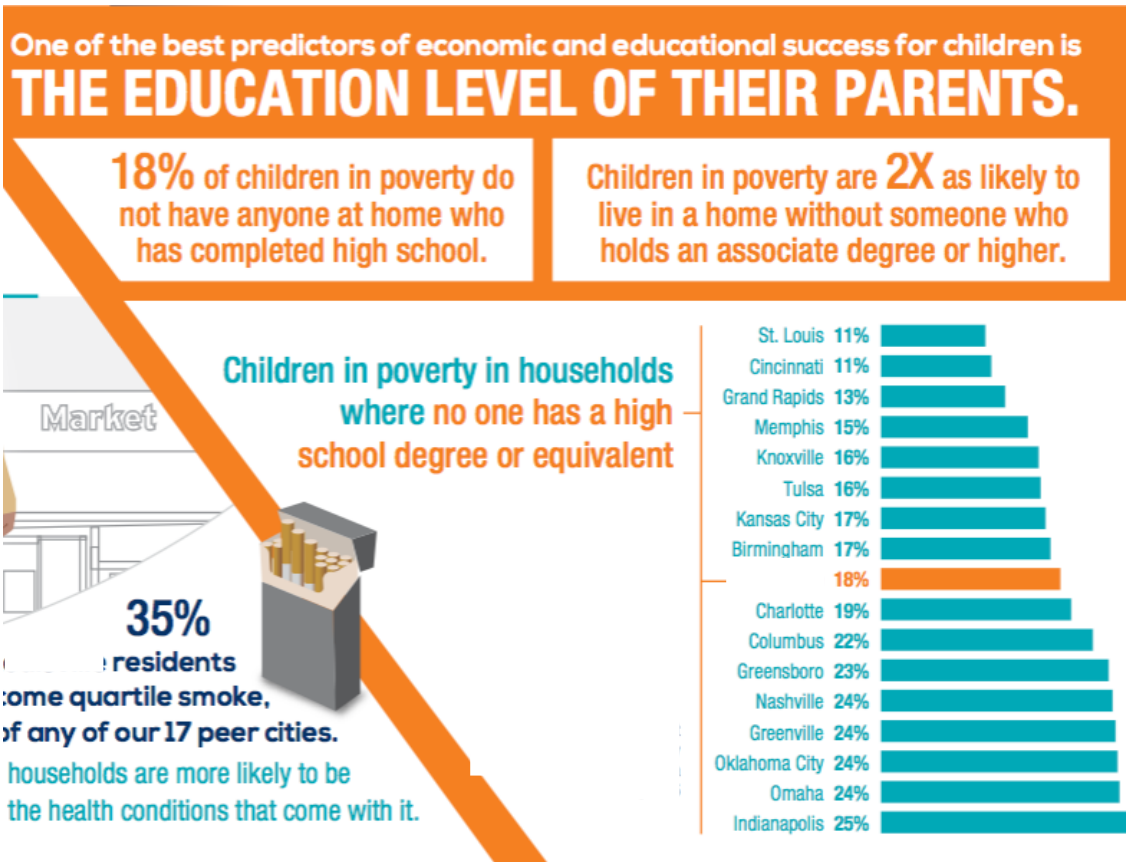


Fig. 1.5. Blinded screenshot of MDC 2017 report. Here, the “peer city stuff” does less rhetorical work. Whereas earlier reports grounded analysis in the peer city comparison itself, the MDC begins in 2017 to use peer city comparisons to round out discussions of a particular metric. In this instance, the peer city comparison is an addendum to a claim about correlations between poverty and household income.

Another trope common to MDC writing is the “2-by-4” (or “2 x 4”), so-named by Andy. The “2 x 4” is a versatile tool that can be put to use in multiple contexts and communicative genres: press releases, conversations, presentations, digital contexts and social media, and in the report itself. The “2 x 4” is also a metaphor regularly used in MDC meetings. It is a versatile building block of a larger communicative structure, and a tool that can serve several purposes for the MDC’s mission. But in meetings, Andy highlights a second reason the “2 x 4” works: it is a single statement—often a statistic—that the MDC can “hit a reader over the head with” and “hold their attention.” The “2 x 4” statistic may reach an audience via Twitter, accompanied by an invitation to a report

release date; it may show up on local public radio via a press release; or it may reach an audience at a local public health-related event, delivered by an MDC team member. This was, at least, the case in the wake of the 2015 report, where the “2 x 4” figure was “1 in 7 Gateway residents lives in multidimensional poverty.” The “2 x 4” functions because it is designed to carry with it an implicit call-to-action. It is not simply that “1 in 7 residents” live in poverty, but “1 in 7 Gateway residents lives in multidimensional poverty” (so let’s do something about it).

Scholars who have reconsidered the role of audience(s) in the work of writing within organizations (see Selzer 1993, Johnson 2004), largely do so with a vocabulary of creating social worlds through professional writing. Such an idea has deep roots in the field’s post-modern turn (see, for example, Faigley 1985; Doheny-Farina 1986). Yet, the MDC as users go beyond this norm. They name the intention of the report, and do so in a context that simultaneously names their role within a larger, MDC-defined network of civically-minded organizations. They act as writers, as Symbolic-Analytic Workers, by defining a social world through their language, but act as *users* when their writing practices turn self-aware. In this turn, they recognize their organizational tropes as tools in a context that presents specific use limitations.

The limitations placed on MDC writers-as-users explored in this chapter are largely organizationally-imposed, and based on organizational *ethos* and history. For example, not only is the “1 in 7” figure above a result of a needed “2 x 4” to promote the report (and become repeated across other MDC literature and events), but it is further the result of a drive toward a “shock factor” that will lead to greater end-use, evident in the move from an original figure of “14.5%,” which was understood to sound “not severe

enough” to function as an effective “2 x 4.” A similar issue arose in a subsequent report cycle with the board’s response to a figure of “\$10,000,” the amount of money an individual household would see in additional, annual household income if the poorest areas of Gateway were lifted to the city-wide average. Organizational *practice* and rhetorical necessity prompted the change from “14.5%” to “1 in 7”; organizational *structure* (here, the influence of the board) imposed itself on the “\$10,000” figure, leading the MDC to drop it entirely. Beyond simply navigating real organizational context, the MDC conceives of itself within an ecology of actors and organizations, imposing this idea on Gateway’s entire civic engagement and non-profit sector and the work those networks do. They are not simply beholden to Henry’s (2000) mapped “domain” of professional authorship (148), but actively construct that domain through the discursive tools granted to them by their organizational ecology or developed by them as a response to that ecology’s demands. By coming to terms with the dispersed nature of their work and their specific role in it, the MDC creates an image of how Gateway’s non-profit and civic sectors work. They then deploy this image for use by the very people who work within it.

These tropes illustrate the ways in which rhetorical topics (what Aristotle would consider “special topics”) function as tools for MDC users to put to work. In many respects, they are the ways in which “linguistic paths,” to refer to the opening scene with Andy, “lead a horse to water.” That is, if the motivated activity of MDC users is indeed to “lead a horse to water,” then the discrete user action of working in peer city comparisons, “2 x 4s,” and other tropes (like humanizing data and “storytelling,” the latter of which being explored fully in chapter 3), give a glimpse of an ecologically-oriented self-

concept, an imagined place for the organization within a broader civic engagement landscape, and a resulting *ethos* or “stance” from which this work is done. As the organizational ecology they concretely find themselves within becomes the spoken reason for using these tools, the tools then reinforce an image of the organization for itself.

Use and Usability in Real/Imagined Ecologies

In the examples above, the self-concept of the organization informs the usable features of its published report through the different dimensions of that self-concept: imagined roles, missions, and images of the network of non-profit work itself. In the case of MDC writing about race, we can see how that self-concept directly influenced the way users of this data on the front end—the researchers, composers, writers—take up and manipulate the data they mine. The very same organizational forces that limit the way the report looks and is expected to be used are ones that called for visualizations to be cut from the report, minimized, positioned in a certain way, and couched in specific language. The ultimate result of this language manipulation is that end-users of the report are in a position to accept enthymeme-like constructions: they see two variables and a recognizable correlation or black-boxed middle. These end-users supply that middle term, whatever connects x to y in a usable way, by pulling from their own experiences of what would likely fit that gap.

By and large, viewing the MDC writers as users turns those things—whatever data, language, and components of organizational history they have knowledge of—into tools. Viewing MDC report activity in this way thus presents a small but important

addition to the scholarship on usability and use ecologies. While abstractions like user motives, past knowledge, and the like are considered within such scholarship, little has been done to study how an organization's identification of (or with) its own network influences the multiple use cases that appear in a given trajectory. A rich history of usability scholarship unpacks numerous perspectives on user-audiences, but perhaps does so at the expense of understanding the relational positionality of the designer-user ecological nodes, the way limitations on designers (themselves users of previously-occurring tools in the creation of new ones) come upon limitations that inform the usability of the thing being designed. Organizational *ethos* becomes one such requirement and limitation that drastically curtails the range of use for things like MDC reports, a limitation that is salient in the rhetorical choices made. Barbara Mirel's (2003) "bounded interactivity for complex inquiry" (BICI) model of understanding usability comes close to what we talk about when we talk about such organizational identities. Like Linda Driskill (1989) and Linda Flower (1989) before her, Mirel takes into account the non-tangibles that inform how work gets done in organizations. Such organizational context, for Mirel, makes the problem-solving process more "complex"; she looks beyond networks of users, tools, and organizations to other considerations of users-in-action: "domain expertise, professional practices and conventions, situational knowledge, and decision-making criteria that *users* bring to their . . . interactions" (234). She continues: "People's actual approaches to complex tasks and problems . . . are contextually conditioned, emergent, opportunistic, and contingent" (237). Spinuzzi (2003) takes up a similar effort, pushing against the model of user-victimhood popular in usability studies, particularly user-centered design. Understanding contextual and criteria-driven

conditioning, the contextual and opportunistic emergence of user activity, and the reliance on context and opportunity to provide and explain tool use or action all provide us with ways to make sense of the present ecologically-oriented trends we see in MDC work. However, I propose that they can also provide us with a set of limitations or constraints to contend with—specifically, a set of limitations that exist beyond the object-oriented, designer-contingent understanding of usability failures as such. Instead of MDC writers-as-users becoming “victims” when tools-at-hand are unable to operate in useful, end-directed ways, they tap into expertise, knowledge, and personally held decision-making criteria to tackle discrete tasks within report-writing activity. Where these MDC users go, or what knowledge and beliefs they tap into, in order to accomplish individual tasks within broader report-writing activity, is the very stuff of a mappable use ecology.

Importantly, MDC users rarely distinguish between “real” and “imagined” ecologies. That is, they take their understanding of their position among other non-profits as inherently true, and rarely question the understood ways in which end-users *will* take up their research and “put it to work.” The limits imposed on them by the simple unavailability of data and the imagined way the county school system will build on top of their poverty data to ensure expanded free lunch are both equal in their ability to afford different rhetorical or statistical moves for MDC researchers and writers. They give equal weight to dictates from the board or organizational history as they do an implicit, sometimes spoken, sense of what future work the report can or should do. Given equal weight, all of the pieces of their ecology of work—real or imagined, organizational or technical, brought about by domain expertise or past experience—hold comparable sway when they collide and create complex user limits to which MDC team members must

respond. In order to understand how usability limits collide and alter the uptake of tools and the trajectory of designing those tools, we will have to expand our understanding of the MDC ecology beyond its own self-concept. Moreover, we may need to at least conceptually wade into the space of what has come to be known as “experience architecture,” taking the site(s) of such work at face value and entering them ourselves to understand how “use,” or interaction with tools and limits on the available uses of those tools, happens in real time (see, for example, Salvo 2016 and Geisler 2017). When themes from organizational history (i.e., policy avoidance) collide with an imagined sense of what the report can do (i.e., address poverty via racial disparity), we can observe the work done to write around two maps and trace the result of that collision into actual use cases. As we will see in the next chapter, as demands are made based on imagined future use of a website and organizational structure (i.e., the hypothetical use and board preference for interactive features) collide with a technical ecology that doesn’t provide the tools to obtain it (i.e., the inability to code interactivity into a map), we witness MDC writers turn elsewhere to accommodate both real and imagined ecologically-driven needs.

Having observed this researching, brokering, translating, mediating, and composing activity (to pull Henry’s and others’ terms of how organizational and technical writers see themselves) for multiple years, at the core is a sense that MDC team members fully internalize a version of Henry’s model of writing in professional contexts. MDC team members understand themselves clearly within multiple ecologies, involving dictates to write as the “voice” of an organization for a range of readers both internal and external to the MDC. Andy’s suggestion that the MDC constructs “clear linguistic paths” is a recognition that this voice has to carry a particular register that can appeal to each of

these audiences simultaneously. Some of these readers, they imagine, become users, drawing out a need to make the report “actionable” in the hypothetical future. These imagined futures and imagined ecologies help recast rhetorical realities (of situation, persuasion, and circulation) as components of user activity itself. Organizations, as features of writerly activity, become ontologically complex in this way. The MDC is not simply a body of individuals, but an abstract, living force that implies a history and carries a range of demands. As Andy suggests in the opening, MDC activity is ultimately deemed successful when other organizations realign their missions and their work around MDC research and publications—a phenomenon the MDC cannot truly predict or, as we will see later, measure. I begin here, then, because such a complex of abstractions, hypotheticals, and colliding forces reaffirms that no singular statistic, data point, or idea can ever be presented as “raw.” As the MDC shows, all presentation of ideas is wrapped up in circumstances that are unseen but later felt elsewhere within these compounding ecologies of use.

CHAPTER 2

TECHNICAL USE ECOLOGIES AND MDC CREATIVITY

Nick is a Ph.D. candidate at a state University and a part-time data scientist for the Metro Data Coalition. He's an expert researcher, a thoughtful interviewee, and has particular expertise in economic data and policy. His unofficial title around the meeting table was "Data Wizard." From my earliest observations of the group, it became apparent that he held significant sway over the trajectory of the writing process. In planning future reports, the MDC ideation process regularly looked like this: Andy would develop a big idea (e.g., "How cool would it be if we could track bus routes and work commute times?"), which would then be ruminated over by other team members, who pointed to "stakeholder" and "partner" organizations that would be interested in that particular research, and then eyes would fall on Nick, implicitly asking whether or not such research would be possible with the available databases. (In this particular instance, the local bus service did not make that data publicly available.) Nick brokers the data-driven end of MDC research and writing. It is primarily his responsibility to gather and compress the quantitative information that underlies the MDC's claims. Moreover, it is his responsibility to communicate this work to the rest of the MDC team; not only does he tell the team what is available and what is not, but he provides the initial analysis of the data in MDC meetings. To do this communicative work, Nick is also the lead creator of data visuals. And given the brief terms that other data scientists serve with the MDC

(often a year or less), Nick is the primary in charge of teaching them how to create matching visuals through the MDC's chosen platforms.

It is in the middle of this visual composing work that I meet Nick at his home to record our second interview. I was keen on observing the physical and digital spaces he works in given that he spends as little as two hours per week working in MDC offices. At his standing desk, on a large, wall-mounted monitor, I see he is revising maps.

Specifically, these are maps like those described in chapter one (i.e., Figs. 1.1 and 1.2) that would come to typify that MDC's 2015 output. He's revising the boundary lines and I ask why. He says,

During the first sort-of public presentation of [our data] to the civic group lunch we had maps that were of those neighborhood areas but it didn't show the tract boundaries inside them. So each neighborhood area was its own color, had its own rating, and you can still see those charts in the appendix. It's the weighted average of the census tracts that are inside that neighborhood area. So we decided though, you know, in response to one of the criticisms there was that the aggregate skews too high.

What Nick describes here is a tension within a data set that plays out in the drafting process. Specifically, it is a tension between a particular rhetorical question of how to create a visual presentation that has readily-recognizable details for a public audience, and a statistical presentation that faithfully represents that data in a granular enough, or information-rich enough, form to prompt targeted community action. In other words, the statistical paradigm of "weighting data" has combined with a rhetorical paradigm of identification—whether or not the audience can identify themselves, or their community, in the map.

It is possible to understand this dilemma by casting Nick as a designer in a user-centered design (UCD) model. UCD is largely a social constructionist approach that

emphasizes the presence of “destabilizations” in its methodological approach (Spinuzzi 2003). In Nick’s telling, he encountered a field of hypothetical future users of the MDC maps and noticed a particular destabilization of representation, what Spinuzzi would perhaps refer to as a “contradiction” (55). End-users wanted more micro-level geographic breakdowns in the data, and Nick—as the designer—was then tasked with figuring out how to do this work. Yet, it is here that Nick recurses to the role of “user” himself: a user of databases, of digital interfaces, of coding languages, and an often unseen ecology of digital tools that this chapter focuses on. That is, what I suggest here is that the mediated activity of designers is largely not taken into account by previous UCD scholarship, and to do so, we have to focus on the Nicks of the world who do this messy, iterative, and responsive work.

Switching our focus to a particular digital tool ecology, this chapter zooms in on the types of tensions represented in that digital space. Specifically, here I unpack the tensions inherent to statistical-visual representation, or data visualization composing, to enact community-wide efforts toward positive change. Largely, I focus on the interplay between the macro-level forces found through group observation and micro-level operations undertaken to respond to them. These macro-level tensions highlight constraints that are found in technical spaces: limits of database content and form, limits of programming and digital technology, and the interplay among these and others. By unpacking the activity that MDC writers take up when usability limits are encountered in technical spaces, we uncover a picture of a highly creative and improvisational writer operating within an imperfect system.

Writers who encounter technical “glitches” largely suit the image of the user put forward by those who advocate user-centered design. UCD is built on the idea that “[w]e are not our users, and users will always surprise you” (Redish 2010, 193). That is, UCD thinking—with its attendant iterative design processes and usability labs—presupposes that while the tool under observation can be largely known, the potential improvisations of the user cannot. By valuing these improvised actions, then, we democratize the idea of “expert knowledge” in the scene of action itself. No one has more expertise over the MDC’s map mapping processes than the MDC map makers themselves because they know how their tools, databases, readers, and organizational culture is best navigated when tensions arise.

This level of creative improvisation in technical and digital contexts demonstrates the level of complexity that such contexts bring to the writing process. Geographic representation of data must follow specific design principles *and* respond effectively to different levels of constraints in order to be rhetorically successful. Data visualization is both a question of aesthetics and one of navigating multiple ecologies. Writers like Nick have to navigate such terrain in a reflexive way, internalizing new knowledge and reflexively building and re-building an ecology of tools to complete found or imposed tasks.

An Ecology of Databases

The MDC gathers most of its data from publicly-accessible databases. The most frequented database is compiled by the American Community Survey (ACS) and accessed through American Fact Finder (AFF). Each of these rely on hierarchical

database structures.³ The ACS database privileges geography in its search functionality, as it operates under the U.S. Census Bureau. Other common sources for MDC data are the Bureau of Labor Statistics (BLS), which provides a plurality of MDC employment and business data, the Geographic Federal Reserve Database (GeoFRED), which provides further business data, the local school system (GPS), and the local health department. Combined, these data sources provide a wealth of information on the city of Gateway and the greater metro area: income data, health insurances rates, employment, business growth and decline, life expectancy, diabetes rates, education levels, and so on. A bulk of MDC work, then, is the work of arranging these databases and their digital interfaces as a network of tools. Doing so, MDC writers learn what each provides and when to return to for new or updated data such as when the ACS adds new educational-attainment metrics or the local health department disaggregates its data in new ways.

Prior to the 2015 report, MDC data was almost exclusively measured at the county level or the level of the metropolitan statistical area (MSA), meaning it accounted for Gateway city and the recognized counties that made up the greater metro area.⁴ Erring toward MSA-level measurement speaks to an era of MDC work that was primarily dedicated to comparative analysis of metrics among Gateway and its “peer cities.” In

³ Hierarchical databases are those that nest information inside specific domains. For example, the U.S. Census Bureau in 2010 broke “HOUSEHOLD TYPE” down into “Family households” and “Nonfamily households.” Under both are subcategories for “Male householder” and “Female householder.” Within these gendered categories of “Nonfamily households” there was another designation for “Living alone.”

⁴ A Metropolitan Statistical Area (MSA) is a geographical designation defined by the Census Bureau and the Office of Management and Budget. MSAs are defined by measures of population density, economy, and labor force exchange—a measure of the number of people who commute among counties for work. For our purposes, MSAs can be considered a measure of the reach of a city’s economy on the surrounding area. For example, as of this writing, Pittsburgh’s MSA contains the city itself as well as 6 counties, which are included largely due to the percentage of residents that commute between the city and their homes for work. Conversely, Atlantic City, NJ, is self-contained, with only its home county (Atlantic County) comprising the MSA. Despite its large population and sizeable economy, it does not have the commuter exchange that would include nearby counties in its MSA.

fact, for the several years’ worth of reports prior to my observation, only three levels of measurement were public-facing: zip code (for education and health only), county, and MSA. If other measures were taken, they were present in “back rooms” only. Yet this methodological stasis could not last for long, especially as new audiences encountered MDC data and technical realities changed through evolving tools and databases.

The table below represents a snapshot of each of the MDC’s preferred databases:

Database or Source	Sample Metrics	Disaggregation Level
ACS/AFF	Income data	MSA / census tract / zip code
	Health insurance data	MSA / census tract / zip code
BLS	Employment data	MSA / zip code
	Business growth	MSA / incorporated city / zip code
GeoFRED	Business growth	MSA / zip code / county
Local school system	Various measures in education, household wealth	Zip code
Local health department	Various health measures	Neighborhoods

Table 2.1. MDC preferred databases, sample metrics, and levels of disaggregation.

Evident here is that the databases are largely flexible. For the most part, each provides multiple metrics and multiple levels of disaggregation. And moreover, if one slice of data is not available (say, the free and reduced lunch population by county) MDC writers are quickly able to combine areas to make up for that lack (by adding zip code totals).

However, a few circumstances in the 2015 report made these operational traditions untenable.

For example, the addition of Tulsa to the list of Gateway’s “peer cities” created a statistical problem, as Tulsa data is not available through traditional channels at the MSA level. Nick therefore created a work-around, finding data through external sources for

Tulsa at the level of Public Utility Microdata Area (PUMAs).⁵ As Nick explained in a meeting, PUMAs could function as a stand-in for an MSA if the PUMA (or an aggregation of PUMAs) match the defined MSA lines by 90% or more. Nick would later describe this as fitting “University of Minnesota standards.” In this moment, a material, technical limitation presented an opportunity for Nick to turn into the broader *technical* ecology to find a solution, a way to work around or overcome that given limitation. That is, Nick, as designer, is bound to seek out a way to work Tulsa into the MDC report, especially its peer city comparisons, and, as a user, bound to turn toward the statistical tools he knows—like the database of PUMAs, iPUMS—to develop that workaround. In the end, the created Tulsa database becomes one more among the ACS, GeoFRED, and the rest: these databases do not mirror each other perfectly in form or function, but fill discrete gaps well enough for experienced data analysts to stitch them together into a whole.

Such activity typifies the *early* technical work that underlies MDC data presentation. It is work that requires movement between databases to construct the proper rhetorical tools for data presentation. In other words, even in the planning process certain technical limitations, imposed by databases and by accepted geographical measures for cities like Tulsa, infringe upon the writing process in a way that calls for increased writerly creativity. In these and other instances, as we will see, that creativity is demonstrated in the reconfiguration of the technical ecology Nick finds himself within. By identifying a database with Tulsa’s PUMA-level measures and compiling those

⁵ According to the Census Bureau: “Public use microdata areas (PUMAs) are geographic areas defined to be used with public use microdata sample (PUMS) files. PUMAs are a collection of counties or tracts within counties with more than 100,000 people, based on the decennial census population counts.”

PUMAs to approximate Tulsa itself, Nick becomes a user functioning by improvisational “nesting.” Future work with Tulsa data—and future users who encounter that data—can benefit from the ecology Nick-as-user built.

The type of work documented here, occurring within, through, and around databases, has been seen as the fruit of much digital humanities scholarship. Yet, Nick encounters this technical terrain knowing that the data is not “raw” (Gitelman 2013) and that the symbolic form it takes on is a result of underlying human choices. Instead of accepting the limitations of a singular database, Nick and other MDC team members construct an ecology of databases that allow them to re-impose a narrative or persuasive form of their own, a “paradigm,” to use Lev Manovich’s (1999, 2002) term. That is, MDC work short-circuits Manovich’s dictum of the database’s symbolic form—that databases foreground individual items rather than the logics that tie them together—because Nick enters his particular tool and task environment with rhetorical, institutional, and design paradigms already imposed. In other words, and as I’ll explore more thoroughly in the next chapter, a foundational piece of the MDC’s writing process is gathering enough data to impose a range of possible narrative or rhetorical forms on it.

Constructing Tool Ecologies, Constructing Glitches

Early on, my observations of MDC work uncovered a phenomenon of new limits, new glitches, attending newly-built ecologies of use. These “limits” or “glitches” are at times akin to what Spinuzzi (2013) refers to as “disruptions,” “mistakes” or “difficulties” MDC researchers and writers run up against as they navigate the multiple ecologies of their work and manipulate a range of linguistic and technical tools (165-66). That is,

many of the tools Nick and other MDC members become accustomed to using—and, in fact, develop habits of use for—aren't designed to predict the turns the organization will take (see Ceraso 2013 for more on habits and the difficulty of planning for future use). And moreover, as new factors are added to the MDC work ecology, whether they be new databases, programs, or organizational partnerships, new limits to what the MDC can and cannot do with their data are introduced alongside them. To return to the opening scenario, the geographic presentation of data was presumed to be zip-code-level for several months during the project's composing process. Zip code maps were able to illustrate general directional trends, as in Figure 2.1, below. Here, darker areas illustrate

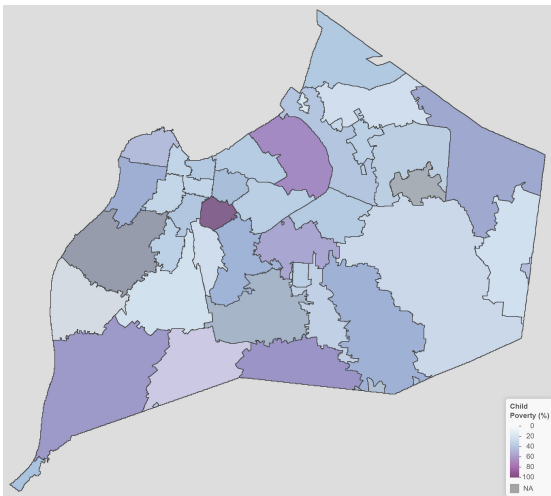


Fig. 2.1. MDC map draft: Childhood poverty disaggregated by zip code.

higher rates of childhood poverty. (Gray areas indicate data unavailable at the time of this particular draft.) Those familiar with the general directional geography of the region could, perhaps, recognize areas around specific landmarks. However, zip codes are relatively meaningless geographical markers

for the general public. There is no need to create a recognizable pattern of disaggregation from a statistical level, of course; it may in fact make great technical sense to use certain non-recognizable geographical units. However, this methodological tradition quickly ran Nick into conflict with end-user needs and rhetorical needs. The meanings carried by ideas like neighborhoods, cities, and regions would need to be leveraged for optimal rhetorical effect and thus optimal,

actionable use. By recognizing the audience and future actions as part of the larger end-user ecology, the MDC was able to determine that change was needed.

Shifting from zip codes to an alternative was not a linear move. None of the databases carried neighborhood-level data, and, in fact, Gateway's neighborhoods were loosely defined in some places. In short, locating reliable, consistent maps that outline Gateway's neighborhood boundaries was not terribly easy. Neighborhoods are not included as levels of geographic disaggregation metrics for entities like the Federal Reserve or the Census Bureau. In private discussions with other non-profit and for-profit entities that have done this neighborhood-level work, he found no consistent boundaries or neighborhood names. In short, Nick found himself running into a severe technical- and statistical-level limitation on the work he could do with the data on hand. Yet, Nick had a mandate to present granular data, and neighborhoods needed to be more localized than zip codes. Moreover, the underlying rhetorical problem—the difficulty of representing data with recognizable neighborhood names—loomed large in the minds of MDC team members who were imagining a particular future use of these maps for policy discussions. Nick's responses to these demands were not rhetorical ones but technical ones. He operated at a material, technical level to solve a discrete problem: the inability to draw recognizable neighborhood lines with the given databases. Nick-as-user is once again prompted to explore the possible locations of leverage within the broader ecology in order to address both simultaneously.

Nick's first move was to leverage an existing organizational relationship with a local health initiative, the Gateway Health Justice Center (GHJC). The GHJC had, a year prior, developed a map of Gateway with demarcated "neighborhood areas" as opposed to

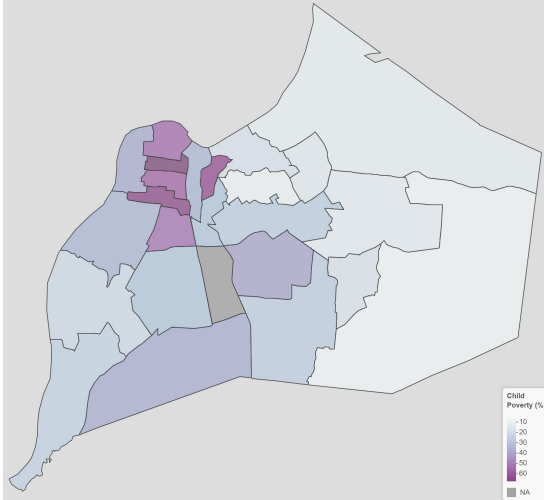


Fig. 2.2. MDC map draft: Childhood poverty disaggregated by GHJC “neighborhood areas.”

neighborhoods alone. They had clustered neighborhoods together (hyphenating the neighborhood names, too) in order to create recognizable and statistically useful areas of measure. This led Nick to a larger technical process of, then, of retrofitting other data sets to fit “neighborhood areas.” In order to do so, Nick composed a series of comma-separated value sheets⁶ that functioned to

automatically re-configure a series of census tracts into the newly-arranged “neighborhood areas” (see figure 2.2, left), an easy-enough process for an experienced data analyst.

Yet, if we reflect on the scene that played out at the top of this chapter, these maps fail to meet a central need for MDC report users, one that is technical and statistical in nature. Though the newly-drawn geographical boundaries are ultimately (slightly) more recognizable and rhetorically-effective, a newer voice from a different part of the writers’ use-ecology had already evoked a concern of statistical weighting. That is, as the census tracts are combined to add-up to the value of a given area, a group affectionately called the “Civic Data Nerds” introduced a new user-demand on MDC data presentation: more granular data is better representative. That is, in the maps above, aggregate measures of neighborhood areas or zip codes naturally skew high or low, weighted down

⁶ In computing and technical work, “comma-separated value sheets” (or “.csv’s”) refer to documents that represent figures in table-like form, much like a standard Excel table, yet often without the table borders and lines.

or raised up by individual census tracts. No matter how Nick cut the data, then, a certain subset of user found it most valuable to have the most granular data presentation available to them: census tracts. Thus, in the final version of these maps (see Fig. 2.3 below, right), census tracts are weighted individually, a moderated compromise brought on, first, by an imagined end-user in a policy context and, second, by an outside group that brought statistical concerns to the fore. This compromise represents a technical quirk in MDC documentation. More pivotally, though, it represents a technical quirk in the imagined and constructed use-ecology that those like Nick work within. Though semi-recognizable “neighborhood areas” are overlaid on the map, the measurements are tract-level alone, reflecting the demands of different actors or tools within the use-ecology itself. Neighborhood area lines carry some rhetorical weight; census tracts carry technical, statistical significance.

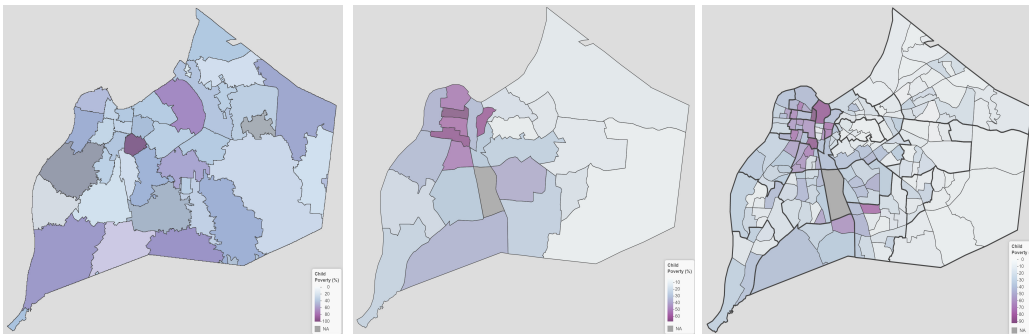


Fig. 2.1-3. MDC map drafts: Childhood poverty disaggregated by (1) zip code, (2) GHJC “neighborhood areas,” and (3) the final version, with census tract disaggregation and “neighborhood area” lines overlaid.

The production of these maps represent one of many times that forces present in a broader organizational ecology shoot through the technical ecology those like Nick specialize in, a phenomena mapped below (Fig. 2.4). The result of these forces coming to bear is competition among them and ultimately a level of creative activity that seeks to incorporate and honor these forces. Mapping this one snapshot of ecological navigation

by MDC writers, the board imposes a task on MDC writers like Nick, who then take to their home technical ecologies to accomplish it in a way that is aligned with previous writerly experience. From there, the writers receive feedback from other team members and return to that original technical ecology again in order to mediate the demands placed on their activities (as users) and those goals imposed on them (as report designers) by future end-users, deploying new technical tools to meet team recommendations. Having returned to chosen digital interfaces and their databases, however, MDC writers meet limits imposed by the databases, ones that are answered by turning outward, to an external organization, for example, to obtain a .shp (“shape”) file that can be added to the technical, tool-based ecology MDC data scientists operate within. In Nick’s particular case, he then brings the new maps to the “data nerds,” who provide further recommendations, sending him once more to the micro-level technical ecology of his personal computer to deploy a different set of tools and create a new draft of the maps.

Knowledge of this process provides us evidence that, as expounded upon by those like Lev Manovich (1999, 2002), Lisa Gitelman (2013), Orit Halpern (2014), and Johanna Drucker (2014), data is never raw but rather the result of specific social and material circumstances, technical means, and human choices. For Halpern and Drucker, interested in the idea of encountering data visualizations or presentations, data only exists in relationship to its technology and observer, a “cybernetic” relationship (Halpern 78) found in “spaces where representation, practice, technology accumulate—to show things in the world” (37). For Drucker, those who contextualize and represent data in visual ways must “visualize interpretation” while viewers make connections based on spatial cues, “interpreting [the] visualization” (57-59, 135-37). That is, in all cases, the

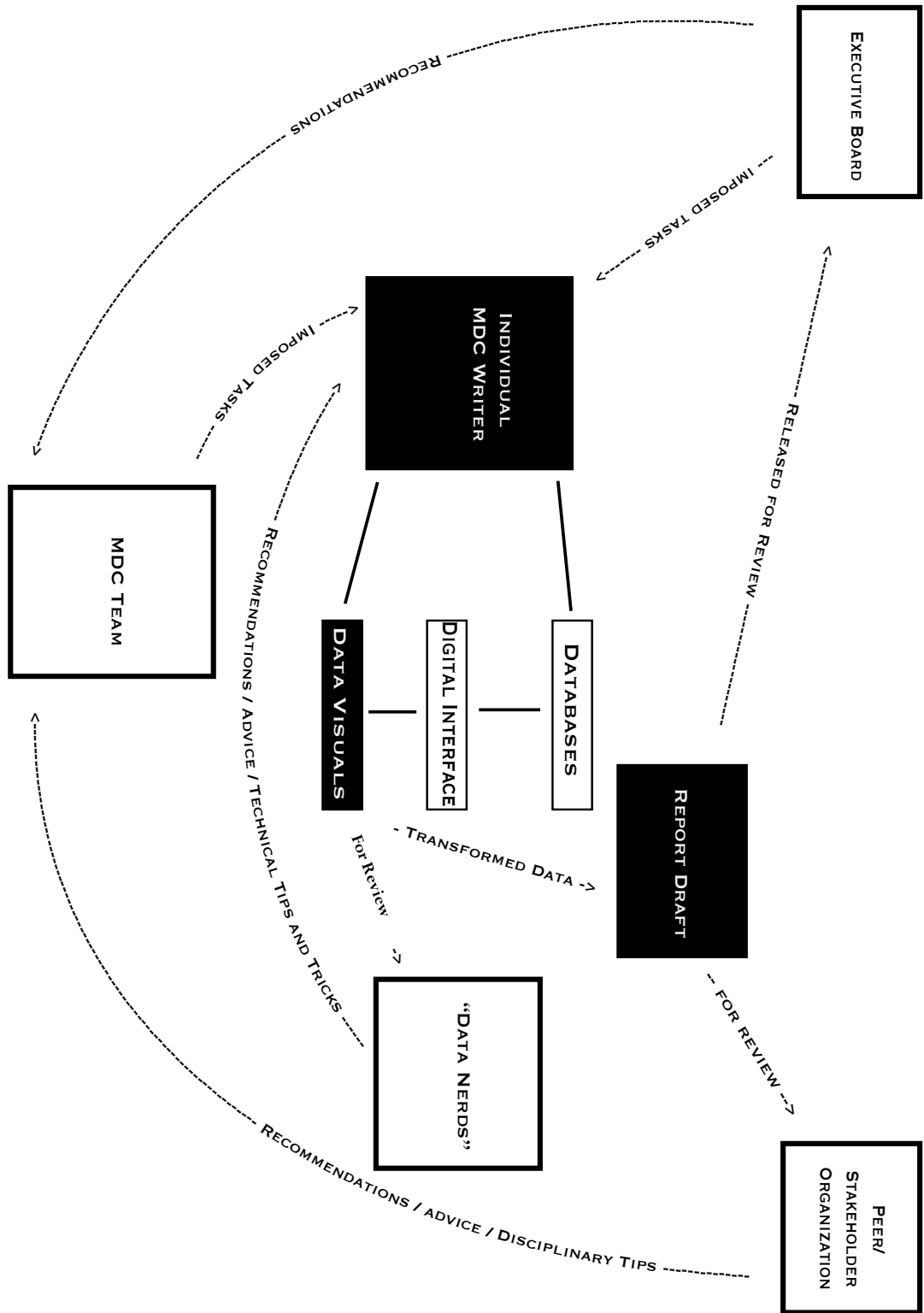


Fig. 2.4. Activity map of Nick and the MDC map-making. Shown here (center) is the micro-level technical scene that Nick primarily operates within. Tasks are imposed on him by the MDC team, the Executive Board, the “Data Nerds,” and elsewhere. This is an iterative process, with each cycle producing new drafts of new visuals.

presentation of data is necessarily understood to be mediated by institutional, end-user, and technological circumstances. And those like Nick—the communicators who navigate those circumstances—do so based on their best understanding of them at the time. What often read as problems for these scholars—namely, the inability to encounter or “know” data objectively—are not really problems for the MDC, though. The problems they counter with data are much more organizational and ecological: problems of how to account for differences between databases, how to appease the executive board, and how to incorporate the feedback they receive from internal and external entities. So, for our purposes, the above scholars demonstrate a few truths of the MDC writing process, but only if we recognize how MDC writers embrace their cybernetic position among multiple, intersecting ecologies of tools and influence. Those like Nick are not necessarily building tool/use-ecologies for only practical or technical purposes, but to craft a specific future encounter for an individual in a given context. This is why those imagined and constructed ecologies range from open-source data to partner non-profits. Nick crafts the very ecology that gives data visualization its ultimate cybernetic form for the end-user to confront.

Manovich and Gitelman, in discussing the non-“raw,” or “cooked,” ontology of data, implicitly reference action like that which Nick undertakes in gathering, contextualizing, visualizing, and presenting data. Manovich’s database may exist without narrative or argumentative structure, but technical writers such as Nick and his MDC team members apply new rhetorical force a range of technical means. Those technical means, though, are limited and afforded by the very ecologies they construct. Ultimately, such knowingness when entering these technical ecologies presents a problem for a user-

centered design heuristic. Far from being the “victim,” MDC writers are able to manipulate their technical ecologies to their own ends. Moreover, that manipulation occurs as a result of MDC technical writers *leaving* their home, technical ecology and entering into broader organizational ecologies and industrial ecologies, imagining future uses of their writing and alternative representations of that writing.

R Studio and MDC Technical Workarounds

Applying form to data through writing is an act of technical creativity. Observing Nick undertaking this work makes visible a recursive, largely backroom process of user learning and adaptability. The work done within *RStudio* testifies to the amount of *ad hoc* and creative movement across sources and tools. Nick’s writing process begins on-line as he identifies datasets to be used. He then moves this data to his personal computer, storing it in comma-separated value sheets. From here, he engages *RStudio* itself. At this point Nick pulls from past learning and a number of other resources (from Google and the popular *Comprehensive R Archive Network* to hard copy books, contacts from a local R user group, and *RStudio*’s own “Help” panel), and he works to morph the original “raw” data into several intermediary products before settling on the final data visual for local (i.e., MDC) or broader public consumption.

R is its own coding language, broken down into discrete commands. For Nick, this makes R function “like a giant calculator,” even as he crafts pieces of code by pulling from a large technical ecology—at times learning as he goes, pulling new commands into the code as he learns them. In brief, the first command run in an R script is the function that tells the system what file to pull from. The function will direct R to a folder on

Nick’s desktop, have it read every .csv file in that folder, and pull the requested columns or rows from that file. Tinkering with it can expand or limit the amount it pulls. Running a short script from this function (e.g. “view(x_data)”) prompts R to make a table out of the requested data. Running a script to produce household income graphics, for example, starts with a line of code that signals what columns R reads across the documents it was prompted to mine: columns for year, city, and specific measures that Nick wants to call up. From there, Nick chooses the next function to run, which will direct the program to organize the data as a map, a bar graph, a scatterplot, etc. For the bar graph, the type most often created by the MDC for both internal and public consumption, Nick writes a function that includes a data frame, a variable, an order (ascending or descending), a command to include and exclude certain cities from a specific “peer city list,” a title, a y-axis title, and a caption. The function includes “if statements” that direct ascending or descending order, comparisons to baseline or peers, and the like. He further includes an algorithm within the function written by someone else, a “classinterval” function (“style=jenks”) that chooses dividing lines along the same lines as the Jenks algorithm.⁷

While the meat of R is a series of statistical commands, much of what Nick does with R is aesthetic, too. Beyond things like orientation and font, Nick uses a set of functions written in a downloadable package called “ggplot.” “Ggplot’s a framework,” Nick says, “a series of functions that make it easier to tell R what kind of plot you want to produce.” Nick directs the ggplot framework to a specific data set; “geom_bar” is the

⁷ Jenks algorithm applies the concept of “natural breaks” to any ranked statistics. The purpose is to find items within a list that are most similar to cluster together, creating maximum similarity within groups and maximum space between groups. Using Jenks algorithm allows the MDC to create reasonably defined top, middle, and lower tiers within their peer city lists. Further, it helps ensure that basic statistical error doesn’t exclude one from a specific group for having, say, a median household income \$10 lower than the lowest ranking city in the “top tier.”

function that runs that transforms the data into a bar graph; “`coord_flip`” tells R to run the plot vertically rather than horizontally; “`theme_tufte . . .`” tells it I want a minimalist background, so getting rid of all the bars.” By having a comma-separated value sheet ready to go and directing the program to choose that particular sheet, then, Nick simply hits the enter key to input the data into the script he has crafted and produce the bar graph he wants.

Ggplot is arguably the most visible manifestation of the influence downloaded code packages have on MDC writing. While there are other methods (and indeed other programs) that would provide rich data visuals, ggplot gives MDC writing a standardized visual feel based on a few discrete functions Nick manipulates within the package. The function starts in “raw” form, without defaults. For example:

```
ggplot(data, aes(x, y)) + geom_a(aes(color = b)) + geom_c(method = d) +  
coord_e() + scale_color_gradient() + theme_f8
```

In the above hypothetical, everything in italics is variable. The user starts by invoking the package to run data through, “`ggplot`,” signals a data set from a chosen comma-separated value sheet, and then commands the function to choose a specific aesthetic (“`aes`”) that signals what the axes on the graph will represent. Beyond that, the plus signs add on layers of aesthetic choices. Each mention of “`geom`” signals that the function will add a spatial or graphical layer. “`geom_bar`,” for example, will start by translating the data into a bar graph. Continuing with “`+ coord_flip`” will then run the bars horizontally rather than vertically. “`scale_fill_manual(values=c(“royalblue”, “blue”, “navy”))`” will then prompt the program to use those named colors in this horizontal bar graph. Only the

⁸ This is the basic way to invoke ggplot on R Studio. Once users customize their own interface (i.e., coupling functions together under a master function) this changes rapidly. Nick, for example, customizes things like “`rank_and_nb_group`” to signal pre-set functions that produce horizontal bar graphs.

original data set filtered through this script and, in some instances, the fonts and colors the user wants to include in the graph's construction exist beyond the scope of the "ggplot" package itself. Beyond this, ggplot includes a predetermined scope of functionality the moment it is invoked by the script.

The *RStudio* interface demonstrates the construction of use-ecologies clearly and concretely. The interface is a series of panels that Nick moves among (see Fig. 2.5, below), to accomplish the construction of discrete visuals. All work starts in the script panel, top left; results of running a script show up in the console, top right; the bottom left panel contains files Nick works from or commands *RStudio* to read; the bottom right panel can be flipped from "viewer" to "help," having the capacity show finished visuals and act as a portal to on-line resources for R users. From the viewer, Nick accesses packages and pre-written functions, something he also often turns outside *RStudio* for, turning to "books, on-line courses," Google, the "Comprehensive R Archive Network," or his R user group, a network of acquaintances and colleagues who code in R for a range of civic, private sector, and non-profit work. The pieces of Nick's work ecology that sit beyond *RStudio* paint a picture of a rich ecology of technical resources, tools, tips, and know-how. Nick even informs me that not only are there ample books about *R* and *RStudio*, but also a rich mini-industry dedicated to publishing guides to and updates on individual packages developed in R, like "ggplot." In short, the ecology Nick builds here seems nearly limitless, particularly as it grows through practice and necessity.

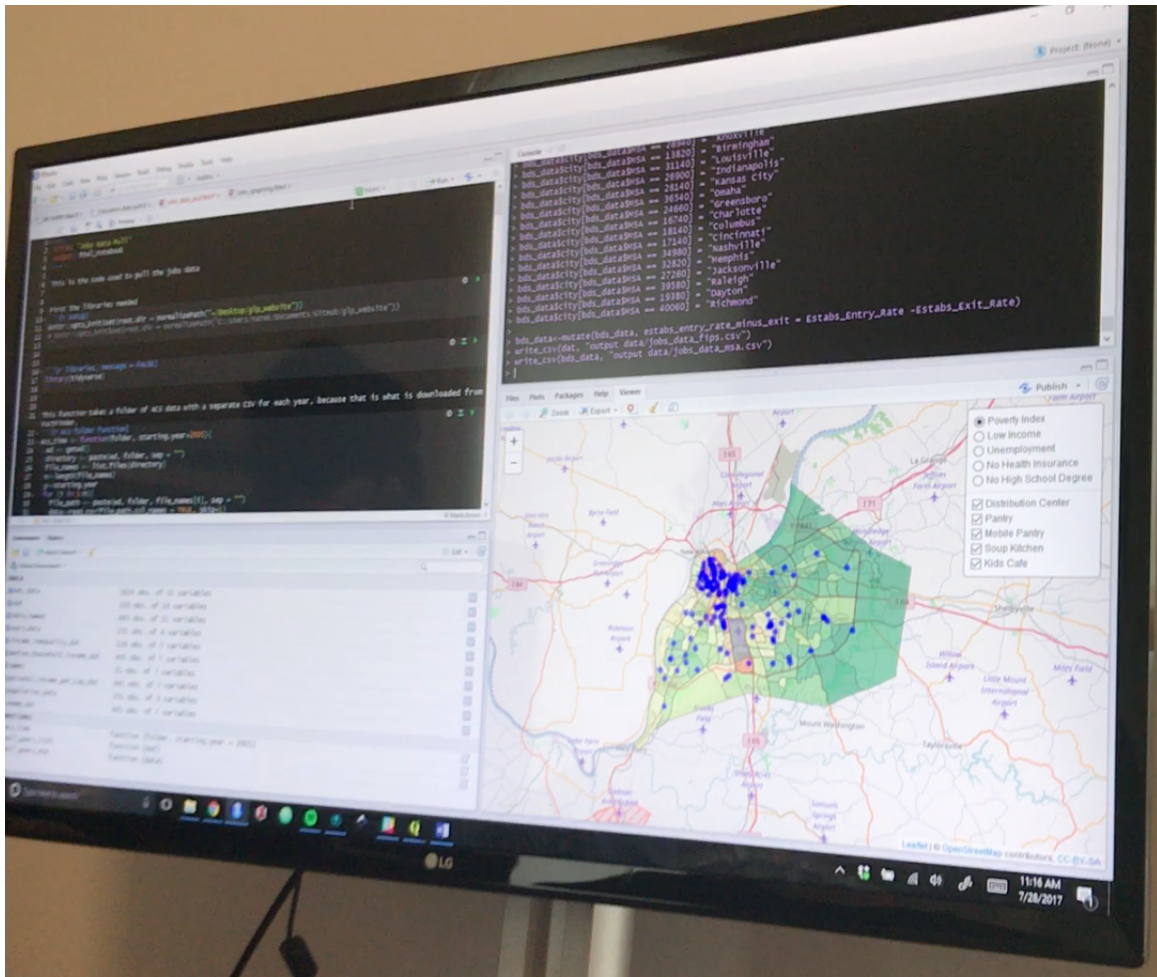


Fig. 2.5. Nick’s *RStudio* interface as he builds an interactive map for the MDC website.

One clear example of the role necessity plays in Nick’s remodeling of his work ecology is found in the work he performed as part of an MDC website overhaul. Nick was tasked with re-making some of the static maps found in the reports and on older versions of the site as interactive widgets. Nick jokes that he felt he had to go to “web design school” to solve the problem, but, more realistically, he simply turned toward an on-line message board, a virtual R User Forum. The R coding language is best suited for data visualization. Interactivity, though, could only be created through the adoption of javascript code into the mapping script. Beyond this small patch, Nick tells me, javascript is largely useless for visualizing data. The R User Forum provided Nick with a leaflet

package, which he describes as a middle ground between R and javascript and incorporates both coding languages. R brings the data visualization to the table while java makes it “pretty” and “interactive.” Importantly, this is just one of several java-infused packages available on the user website.

The final script Nick produces, then, has evidence of Nick’s navigation of a large and complex digital and technical ecology written into it. The moves he makes across panels causes him to write multiple functions separately, a trick he picked up from other users that allows him to easily diagnose broken code later. More visible, though, is the existence of javascript within the R script, evidence of the adoption of a new tool in order to meet a situational demand for interactivity on-line. These are just two small places where we can see evidence of a constructed ecology in MDC products. Whether these are technical traces like lines of code or quirks like producing maps with weighted census tracts and statistically meaningless but rhetorically effective neighborhood lines, the ecology appears to grow with more and more observation of Nick’s work activity. And, importantly, the study here is heavily weighted toward the seen and acknowledged pieces of such use-ecologies. Much more in fact can be read as unseen.

After Nick walks me through his map building work, I ask him what percentage of the scripts he writes are original and what percentage is borrowed from other sources. By way of answering, he pulls up the sources code for “read.table()” and dozens of lines of code appear on his screen. It’s humbling to see how much behind-the-scenes work goes into each function, and Nick tells me that read.table is likely one of the shortest, simplest pieces of code R users. Underlying this simple function is a long history of functions building on top of each other, becoming hidden to lay users who do not wish to

alter fundamentals like “read” and running out of sight of most who engage these tools.

Nick pauses for a while and chuckles. Ultimately, he doesn’t want, or is not sure how, to answer my question:

The reason it’s hard to estimate a percentage is because every line of code I write is calling upon a bunch of other lines of code. So it depends on what you mean. I mean I assume when I write a leaflet map like this, this is thousands of lines of javascript that are eventually getting used, even if I only write 20 or 25 lines for it. So in that sense a very small percentage. But if you want to go farther back I’m also using the code that people who built Windows wrote to run all this...

Regarding how to understand the MDC use ecology, Nick’s answer leaves me of two minds. On the one hand, he alludes to the importance of the things we don’t see silently providing both technical limits and opportunities for technical creativity as Nick moves between those demands and affordances imposed by different pieces of his ecological context of work. Of course old Windows code would be important to his work—it is much of the very fabric of his coding worksite. On the other hand, however, it’s unclear how vital these unseen pieces of the ecology are to questions of a writer’s adaptation to organizational, technical, or rhetorical limitations and the creativity they demonstrate in doing so. Nick does not need to manipulate foundational Windows code at any point of his composing process. He does not manipulate the code that underlies `read.table()`. Instead, Nick works on data in his personal *RStudio* mini-ecology while willfully allowing certain tools within it—certain functions and packages—to black box themselves, in a sense. When a specific “fix” is needed, he can (and does) turn beyond the ecology at hand—to other forums, other people, other sites and texts. He builds a stronger ecology of tools through addition, not re-creation.

Distributed Creativity in Ecological Gaps

Nick and his MDC teammates—as *RStudio* users and report designers both—go to great lengths to shape the data at hand. By imagining solutions to limits they encounter and re-structuring their tool-ecologies to provide those solutions, MDC data writers move to a number of sites of greater or lesser technical specificity. The system those like Nick encounter is not necessarily unable to accommodate the work of the MDC, however; rather, the users within such systems mold and add to them as a means of contending with new, at times unexpected, demands and difficulties. The need for the interactive maps described above, for example, was prompted by organizational mission (i.e., the mandate to update data regularly), organizational desire (i.e., the board’s desire to have a more robust on-line presence), and the perception that audiences would want to interact with this data for particular use cases. These forces, from these different pieces of the MDC work ecology, then lead Nick into the ACS, BLS, and Federal Reserve databases, into conversations with partner organizations to obtain specific shape files, and into *RStudio* itself. *RStudio* then branches Nick off into different forums and new contexts in order to cobble together the appropriate script and different coding languages that produce, in the end, a single interactive map. In this instance, I suggest, Nick’s movements and actions can be read as creative: he expands his use-ecology to include new tools, and new sites to find future tools, in order to solve a problem. The level of creativity discussed here includes the entire use ecology implied by richer description of the scenario: the forces imposed by organizational mission and organizational structure are decidedly non-technical, but by navigating away from those and toward technical means of solving a problem we witness creativity.

Not only is Nick's use of tools distributed across this ecology, then, but so is his creativity. Katptelinin and Nardi (2006) would describe this through a lens of distributed cognition that aligns itself quite closely with activity theory. In brief, activity theory distinguishes "activity" (a macro-, motive-oriented level) from "action" (the meso-, goal-oriented level) and "operation" (the micro-, condition-oriented level). For example, the activity of building a house would involve transporting bricks by truck, an action that requires the operation of shifting gears (Kuutti 1996, 27-33). Or for Nick's purposes, we can say that the activity of map-making involves the actions of seeking out .shp files from external organizations, identifying appropriate java code in an on-line database, and collecting demographic data from various sources. And underlying each of these activities are the operations within *RStudio*: selecting commands, inputting new code, directing the program to new .shp files, and so on.

However, activity theory doesn't fully capture the intricacies of the technical and organizational ecologies Nick and the other MDC writers operate within. When we consider the database limits, coding limits, and considerations of future report use that come to define much of the MDC's writing activity, we see ample creative problem solving occurring in the gaps in MDC work ecologies that team members may not have anticipated. Much scholarship on creativity in technical and professional communication already exists, as early as John Clothier's (1967) "Creativity in Technical Writing." Clothier turns to fiction writers—namely Ray Bradbury—to consider readers' and end-users' "re-creative attention" (26) brought to a given document. "Re-creative attention," for Clothier, or for Bradbury, is the ability of a document's readers or users to put it to work in meaningful ways. Nearly half a century later, such an understanding of creativity

still provides a baseline for many in technical communication circles. Brian Ballentine (2015) refers to a “domain-specific” (pulling from scholarship in psychology) creativity needed by technical communicators as they move from working for one user to the next, a view of creativity that allows writers to anticipate the needs of a given audience or a particular cultural context (293). Yeujiào Zhang and Karla Saari Kitalong (2015), echo such understandings too. In their article, “Influences on Creativity in Technical Communication: Invention, Motivation, and Constraints,” they name as their first exigency for creative invention in technical spaces “thinking like a user.” For Zhang and Kitalong, as for Clothier, creativity is akin to something like rhetorical invention, determining the best way to respond to the needs of known audiences by making use of one’s available rhetorical tools.

However, Zhang and Kitalong introduce another way of understanding creativity in technical communication contexts—that of shifting between “heuristic and algorithmic processes” in their daily work (207-08). The “heuristic,” for the authors, are those processes that are case-, context-, or client-specific. “Algorithmic” processes are those that technical communicators take as rote steps. We see such modulating between the two in Nick’s work, too, as he solidifies and runs standard scripts, re-uses pieces of code (particularly those R functions that relate to the “aesthetics” of a given visual), and reproduces visuals over time, simply updating data. Yet we also see Nick recourse to the “heuristic” based on demands placed on him from different pieces of his work ecology. It is ultimately the “Data Nerds” that led him to particular shape files, the “board” that led him to javascript coding packages, organizational history that calls up certain aesthetic demands, and so on. In these moments, Nick turns to what those like Ben Shneiderman

(2007) have referred to as “creativity support tools,” such as blogs, wikis, and human networks, the external spaces where Nick has found support before and newly discovered spaces that he will return to for support later as he designs visuals for MDC reports and webpages.

As Nick relies on such a wide-ranging set of tools (some previously-known, some newly discovered) in his technical composing work, we need to start blurring lines between human- and motive-oriented activity theory and the more ecologically-minded underpinnings of distributed cognition theory. Like activity theory, distributed cognition theory outlines the process of an intentional user within a network of tools. Some of these tools are readily accessible, others perhaps not. However, distributed cognition theory, rooted in the desire to break from traditional understandings of human cognition, tends to de-emphasize the role of an autonomous user contending with the limits of the system they find themselves part of. Going beyond Zhang and Kitalong’s vision of a creativity recognized in relation to various rhetorical situations, a distributed understanding of Nick’s creativity speaks to what David Kirsh (2005) considers rich, situated, human action: “richly imbued with cues, constraints, and indicators that reduce the complexity of . . . problems” (153). A distributed cognitive model of MDC creativity considers Nick’s actions directly in relation to his constraints. Moreover, these constraints aren’t entirely rhetorical but rather material and technological.

By eliding activity theory and distributed cognition in this model of creativity we can gain a richer view of the MDC’s mapping and writing activity. In particular, this perspective allows us to appreciate the richness of creativity that occurs in backrooms and invisible spaces, as Nick and those like him move between and across spheres of

work in order to build spaces that afford needed actions. Nick, as a user of *RStudio*, his computer, and the other tools available to him, is constantly adding to his own technological ecology in order to obtain a specific (and at times imposed) end. To be sure, activity theorists like Kaptelinin and Nardi (2006) get us partially there, recognizing the “potential for movement and change” afforded by activity theory as workers move across “different levels of coordination, cooperation, and co-construction” (222). But as we move forward with MDC team members in mind, we begin to see that their creativity begins to rise above the operational level and impinge on particular actions and activities. The MDC activity network can and does evolve without changing the overarching goals of MDC writers. But this is precisely because the evolution of that activity network is almost always additive and in response to discrete, recognizable disruptions. Nick will seek out new tools (e.g., coding languages, databases), and the MDC as a whole will at times seek out new discourses and language for the report, to accommodate the demands of their broader ecology of influences. As Kaptelinin and Nardi tell us, “[I]ndividuals may continue to make use of other people and tools. That does not mean that developmental transformations are not occurring or that a different kind of distributed cognition takes place in parallel with individual cognition” (204). The processes of looking outward, to new venues and new tools, is not a separate activity, but a productive, additive, creative one.

Distributed cognition is thus a sound fit for understanding the needed creativity in our present moment. Activity theorists in professional and technical communication have previously understood the shifting, evolving nature of the systems workers operate between and among, and the way objects and tools shift as users navigate these systems

(Nardi, Whittaker, and Schwartz 2002; Swarts 2007; Spinuzzi 2007; Swarts 2010). Such a model has been honed to place users and their tools on equal footing. Acting, knowing, and creating happens in contexts where technologies, organizations, motives, and users combine to produce a thing for a reason. “The measuring cup, the cutting board, and the dieter would be considered symmetrical nodes,” Kaptelinin and Nardi write, even though the human is the only one of the three nodes capable of things like creativity and active resistance (2006; 211). It is the dieter that assembles a network of measuring cup and cutting board to perform the acts that constitute dieting—and the act would not look the same without the building of this use-ecology. In the act, the only thing that separates the user from the ecology they built is their ability to build it, to look beyond it, and to, if they want, upend it by changing the act they perform with the available tools.

However, to push beyond this in the context of understanding the MDC and organizations like it, it is necessary to look to the ways users of data, in or outside of programs like RStudio, operate in task environments situated at the boundaries of individual ecologies, or, in the words of Gay and Hembrooke (2004), at the “meso-” level where cultural/organizational forces impinge on users (8, 23). As MDC writers encounter situations in which the organizational ecology demands something new of the current technical ecology, users look into new contexts for new tools (thus new influences and new limitations) to make their own representation of data optimally actionable and usable. The process of selectively choosing contexts, tools, and limits that meet the technical, conceptual, and organizational needs of a situation constitute a form of “creativity” that would not be too foreign to those like Kaptelinin and Nardi or Zhang and Kitalong. Nick finds ways to align his multiple contexts—the digital interface that is

RStudio, his perception of his relationship to partner organizations, the range of web resources he can access—to create a tool-and-limit-based ecology that meets the organizational demands encountered at the meso-level.

Importantly, this conception of creativity jettisons us beyond the heuristics developed in usability labs and user-centered design. While user-centered design gets us to the point of valuing user operation and action in user-tool contexts, it remains indebted to imposed, static scenarios playing out in usability labs (Barnum 2002) and to the trope of user-as-victim (Norman 1988, Spinuzzi 2003). That is, flexibility is granted to the tool (Nielsen 2017), but human users are largely seen as rigid, if surprising or unknowable, beings, depending on designers to create tools that suit them. Conversely, the image of creative, constructive, and productive user activity I want to push here is one that grants flexibility in both directions. Users, tools, and the ecologies constructed by users as they gather tools, are all flexible and, in fact, surprisingly so. The terms of user experience in this model will be largely unknowable, and only partially traceable through auditing the ecologies users build. Such a model pushes beyond a more ethical model of designing *with* users (Salvo 2001) and even beyond the notion of human users closing the technology gap and turning tools invisible (Johnson-Eilola 2010). I propose instead a model that is not just distributed but also *recursive*, placing agency in the hands of users to add to and re-shape their tool ecologies and their tools, and a model that sees traces of this creative, *kairotic* action in the product of those activities.

We can find such ecologies and activities by asking what tools are present, and how and why were they added to the ecology and how and to what ends they were used. What underlying pieces of the ecology prompted such gathering and use, and what does

the act of gathering tell us about the past and future shape of the ecology of use? In these specific contexts, how do those to navigate them mesh “heuristic” and “algorithmic” modes of work to accommodate specific tasks? If user experience methods require us to place a given tool at the center of its use-context (Salvo 2001; Barnum 2002; Mirel 2003; Kim 2005; Krug 2006), the MDC data-writing experience appears to defy such methodology. A distributed cognitive approach to understanding the creativity underlying the MDC’s data-writing process comes together at singular moments where we observe the activity of users, blurring the lines between activity theory and distributed cognition in a way that foregrounds MDC-as-users’ agencies not only mold their immediate tool based context but to leverage other social contexts in ways that predict workable, rhetorically-effective results. As such, we no longer have to declare a single tool central to the activity that underlies the observed work. To ask which of these things—the board of directors, the coding language of R, or the civic data group—were most vital to the process of making maps is to miss the creativity Nick demonstrates as he leverages technical means to address organizational concerns, and allows organizational *ethos* to influence the work he does within that technical mini-ecology. Such an understanding moves us beyond the idea of “technological knowledge” (Johnson 2004) and toward something more like contextual or opportunistic knowledge. Nick is certainly opportunistic and inventive when contacting external groups for files that can be manipulated within RStudio, but such opportunism occurs imperceptibly to most, within the confines of known and discovered limits. Nick builds his writing process at the same time he builds the data visuals that create the MDC report.

Among the MDC team and during my observations, Nick's creative activity was the locus of much of this technical work. He, more than any other MDC writers, exemplified the biopolitical notion of "technology of the self," training himself to learn from, work within, and hone heuristic composing techniques aligned with the context presented by particular tasks. As the previous and subsequent chapters show, however, computer programs and highly technical ecologies are not the only places where such self-directed, recursive work takes place. Just as organizational ecologies call on the MDC to change course and deploy new tools, so do organizationally-held dictums of persuasive narrative, or, in the MDC's words "story." The subsequent chapter will take up what happens when these limits on the composing process come from the abstract, and how the MDC is able to mold those abstractions according to held beliefs of what makes a good "story," what "story" is good for, and what visual and written tropes can be seen as "persuasive." Importantly, these limits compound with others—the organizational, the technical, and ultimately the future-use—prompting more complex adaptation from the users and their ecological contexts.

CHAPTER 3

STICKY STORYTELLING AND DISTRIBUTED ACTION IN THE MDC

Amy is a Louisville native with a social work and leadership background. Her official title in the organization is “Chief of Operations.” Day-to-day, this takes the shape of a lot of project management work. She’s extremely well-suited for the role. She is personable, open, casual, and can direct MDC members productively through a meeting agenda (mostly) on-time. She develops meeting agendas, tracks project progress over time, reports on progress to stakeholders, and is the primary contact for everyone involved in that workflow, including me. My earliest contacts with the MDC were phone conversations with Amy, and in one of these conversations, prior to me observing the group in person, she described the work of the MDC as “telling stories with data.” For her, these were stories “about the people” of Gateway, and stories that were vetted against a range of stakeholder organizations throughout the MDC’s research and drafting processes. When asked what made for a “good story” she presented three criteria: good stories are “focused,” “clear,” and “actionable.” As the glue that held the MDC together during much of my time with the organization, I thought it safe to assume early on that her vision of “storytelling” would win out. However, the shape of these “stories” proved over time to be a central tension in MDC meetings.

The ideas of “story” and “storytelling” are frequently evoked in MDC meetings. In fact, one of my earliest observation of the group bore witness to a ranging discussion

of how to create a story around the concept of multidimensional poverty. “Story,” in these early, observable instances, felt like a shorthand for concepts of memorability or actionability. MDC “stories” don’t adhere to recognizable approaches to narrative (e.g., narratology⁹) or even “storytelling” (e.g., Aristotle’s “three acts” or the burgeoning study of “story theory”¹⁰). Instead, the MDC uses the terms “story” and “storytelling” to signal a range of possible rhetorical approaches to their data and the packaging of it: humanization, contextualization, actionability, memorability, and so on. The earliest mention of “story” I observed was in reference to a statistical measure, whether it would be a “better story” to compare the “bottom 5th” of neighborhoods to “the mean” or the “top 5th.” This “bottom 5th” language was considered a “better story” than, say, the “bottom 7 neighborhoods.” “Bottom 5th” is more memorable and is more dramatic as we compare it to a “top 5th.” “Bottom 5th,” in other words, was believed to carry a stronger rhetorical punch—mainly, to be more memorable—and thus carry a greater chance of moving report audiences to action. Over time and through interviews with team members, however, no single formulation of “story” would hold. The way MDC writers approached the idea of “storytelling” would only become more complex—and more multidimensional—itsself. Their at times competing visions of what “story” can do sparked conflict, creating moments where one feature of the report’s “story,” or one rhetorical design feature, would win out over others.

⁹ My understanding of narratology here is a study rooted in formalist thought and brought more widely to academic work by works like Barthes’ *The Dialogic Imagination* (1975). In particular, I am interested in distinguishing MDC work from those formalists and others like Seymour Chatman (1990), who place “narrative” in the realm of chronology and connected events.

¹⁰ See Aristotle’s *Poetics* for the “three-act” structure. For “story theory,” I consider most recently the uptake of the term in medical contexts, the training of practitioners to derive patients’ stories in pieces through attentive listening *en route* to diagnosis and treatment prescription (see, for example, Smith and Liehr 2005). Not only are the contexts for our case different, but the motivation is quite different as well.

Across interviews and through multiple report cycles, “storytelling” revealed itself to be a large component of a broader rhetorical toolbox MDC users put to use in all stages of the writing process. It was variously evoked as an imperative to reach when choosing data points and a guide for arranging data points in ways that are rhetorically effective: memorable, persuasive, and, at times, ripe with *pathos* (see Wolfe 2010 for more on *pathos* and numerical data). MDC writers, that is, internalize and invert Manovich’s (2002) dictum, that “database and narrative are natural ‘enemies,’” and move beyond the notion that narrative orders data (for Manovich, “events”) via “cause-and-effect.” Narrative, for the MDC, does a lot:

[We use story] to get them to be engaged in our traditionally disinvested communities. We have an agenda, we have data to support why that’s our agenda, and, you know part of what we struggle with is how to we tell that story so that people will absorb that data and bring it into their lives and act on it. (Andy)

There’s definitely a need for us to stay rooted in both sides of the table . . . with data being the charge for making the case for anything that we say and, you know, humans being the reason. . . . I would guess that for any report we tried to take on—we’re always gonna have that regulation period because in an ideal world if we can allude to the connection between people living here and the data that represents their lived experience then other organizations, other entities should be able to pick it up from there and make the case and tell the story in a very holistic, human way. (Amy)

So in the case of—so say I have poverty, I have race, I say “Hey these are correlated.” The point at which I’m telling a story is when I’m saying “Well z, historical systems of discrimination, redlining, *et cetera*, led to both poverty and to both concentration of people of color, by which in this case we mean black people, in certain neighborhoods, right? (Nick)

Statistics isn’t algebra—statistics tells a story. So statistics is something that without context doesn’t have any good meaning . . . and that’s something that’s very consistently reflected in what I’m looking for. So what’s the question, and how does the question fit in the construct or structure of what you’re trying to create or answer or whatever the case may be? (Tom)

Each team member brings their own, slightly different understanding of “storytelling,” its affordances and constraints, to the report-writing process. Such understandings are sometimes in conflict, and sometimes build upon each other in constructive ways to create a full, rhetorically effective sense of “the story” constructed with or atop the underlying statistical data. Parsing these out, we see three dominant approaches to the concept of “storytelling with data.” The first of which, Andy’s, emphasizes starting from the personal and connecting it to action. The second, Amy’s, centers the people being talked about and engaging on a level of *pathos*. The third, represented by Nick and Tom, is driven by statistics itself, and the power of statistics—rather than mathematics—to tell a story.

Andy’s understanding of story is influenced heavily by Marshall Ganz, the organizer, scholar, and political consultant who was a staple in movement organizing through the civil rights era, later working with both Cesar Chavez and the 2008 Barack Obama campaign. Ganz’s organizing model preaches a “story of self, story of us, story of now,” where individuals seeking change begin from a point of the “self,” using personal stories to connect with potential allies (see also Martelle 2008, “Net Routes” 2008, Porter 2009). Starting from this point of personal story, Andy explains to me, an individual can build connections and thus trust with their community partners. Through those connections, the “storyteller” then inspires others to action. “Story,” for Andy, is thus highly rhetorical. It hinges on concepts of personal and organizational *ethos*, and builds from that *ethos* to an instrumental call to action.

Amy’s conception of story, conversely, pulls away from a call-to-action and instead emphasizes the ability of story to control the *pathos* of data presentation, calling

on end-users to react to the numbers in the context of lived, human experience. It's a position similar to that of Joanna Wolfe (2010), who reads invention into quantitative expression and notes the ways in which, to use her example, the expression of depression statistics (i.e., "21.3 percent of women and 12.7 percent of men have experienced depression in their lifetime") "can emphasize or de-emphasize the extent to which depression is a woman's problem—or even a problem at all" (460-61). Like Andy, Amy relies on outwardly rhetorical conceptions of what "storytelling" should be. She emphasizes the importance of the data itself, but sees "humans" as "the reason," the audience or users that can enact change as well as those change is enacted on behalf of.

Nick and Tom, presenting a third wrinkle, place "story" squarely in statistical and mathematical contexts. This makes sense, given their roles as data scientists in the MDC. For Nick, that statistical context is simple: data points are correlated or they are not, and correlation prompts the report user to imagine *why* correlation exists. And for Tom, context is more about finding the balance between the question asked and what the data *can* say. Tom's conception of context resembles Wolfe's discussion of invention in quantitative presentation, particularly where she calls on Perelman and Olbrechts-Tyteca. For Wolfe, a statistician chooses among

the literally hundreds of other ways this data could be represented [and] weighs rhetorical concerns, such as whether the claim is *interesting*, whether it can be *articulated* in a way that the audience can understand, and whether it is *credible*. Such rhetorical considerations allow the writer to weigh what of interest can be said about the data against the counter-claims or rebuttals that a critical audience might pose. These audience considerations are central to the statistician's choice of interpretive level. (465)

“Context,” then, might be best translated as “interpretive level.” Context is what is given to “raw” data *by choice*, a set of relationships to other data points, within statistically-acceptable confines. Nick nuances the power of this choice, though:

. . . obviously correlation is not causation. This is sort of true but incomplete. When you see a correlation, assuming you weren’t just like data mining and it happened, because if you run twenty sets of variables on twenty other sets you’ll get some correlation. So assuming for a moment that it’s not statistical noise, it means one of three things, or some combination of them: x caused y, y caused x, or z caused x and y.

Nick reviews a few of the statistical-rhetorical moves that a storytelling imperative provides MDC writers. By distinguishing correlation from causation and running through a list of what the correlation *could* mean (“x caused y, y caused x, or z caused x and y”), the MDC writers are given a jumping-off point for crafting story around or on top of the underlying data points that they obtain through other, technical means. Such moves provide the groundwork, for example, for the discussion of race at the close of the MDC 2015 report outlined in the previous chapters: multidimensional poverty does not cause people to become minorities, minority status does not cause people to become multidimensionally poor. Instead, variable “z,” ultimately described as the “mechanisms” that underlie “Gateway’s history of institutional racism and segregation,” is cast in the active role of creating the circumstances where statistical representation points to the correlation between racial and economic demographics.

Admittedly, these few quotes present a broad-stroke view of how the MDC conceptualizes “storytelling” and the ways in which that definition splinters into different interpretations. But what we can begin to see form from these definitions is a sense of what a story, for the group, must do: it must begin from a place of “us” (i.e., a story of Gateway, the MDC, and the web of civic actors who are meant to read themselves into

the report) before calling users to action, it must appeal on an emotional level to the experiences of the end-user, and it must present an interpretive context that is both statistically true and interesting.

Employing grounded theory and proximal coding methods—that is, coding transcripts for iterations of “story” and “storytelling” in terms of the concepts they appear closest to and thus the concepts they appear to represent—allows us a more substantive picture. The transcripts hold 38 distinct discussions of “story” or “storytelling” across 13 one-on-one team-member interviews. Further, I coded these discussions against their proximity to a range of concepts such as those alluded to in the samples above: how story *interacts* with quantitative data, how story *provides statistical context* for data, how story *humanizes* data, how story crafts a *call-to-action* from statistical data, how story is *interpreted* by end-users, and how story *creates a hurdle* in the report-writing process.

The data follows:

- **36** instances of data story/data interaction¹¹
- **13** instances of story providing statistical context
- **12** instances of story “humanizing” the data
- **12** instances of tying story to a “call-to-action” with data
- **5** instances of story referred to as interpreted by end-users
- **5** instances of story referred to in terms of memorability of data/context
- **5** instances of story creating a hurdle in the writing process

¹¹ The two iterations of “story” that did not appear in proximity to discussions of data involved (1) “story” used to describe the story of GLP’s report writing progress, as told to funders, and (2) “story” as a promotional tool in pitching the report in person. This latter instance does not elaborate on the content of that story, so is unable to be coded definitively.

To nuance the data further, though, I should note briefly that the frequency with which “storytelling” was evoked—and how it was conceived by the organization—changed over time. Having coded twice (after each of the first two rounds of interviews), I found that 26 of the 36 instances occurred during the first “report cycle” witnessed. This makes sense, as the MDC’s executive board pushed back against their framing of the “story” and the theme of “multi-dimensional poverty” as being “too confusing.” Thus, more meetings were turned over to developing “a story” during this report cycle than others, where the “story” is determined to be much clearer from the outset. The other 10 iterations of “story” occurred in interviews scheduled during the second report cycle. Those 10 contained 4 of the 5 occasions where “story” was invoked as a hurdle in the writing process—likely a result of anxieties held over from the previous report cycle—as well as 4 instances of story providing statistical context.

We should understand “storytelling,” then, as a response to rhetorical demands that give rise to a range of available moves while restricting access to moves in the name of statistical integrity, organizational and bureaucratic needs, and the available data. According to my observation notes and a range of interview transcripts, the MDC’s story form can humanize data, contextualize data, prompt report readers and users to action, clarify connections between data points, appeal to audience emotions, make arguments memorable, and limit the range of interpretations users can have of the data. These are the moves available to the MDC writers *as designers*. *As users of data*, however, MDC writers come up against a range of statistical limitations bound by a single question. What is permissible to say about this data within the range of statistical accuracy?

This chapter seeks to unpack those limitations and the responses to them, to understand the discrete elements and motivations underlying the “storytelling” imperative for MDC writers, the limitations that “storytelling” carries as a discursive tool, and the demands “statistical accuracy” places on the writing process as a whole. “Story” is a multifaceted tool, that is, with the expectation of specific use-cases and specific user needs, as well as a knowledge of technical, statistical, and organizational limits, rounding out how the story can, exactly, be “told.” To explore the implications of the MDC’s understanding of “storytelling”—its ability to humanize and make data actionable, its limitations brought on by statistical accuracy, etc.—I will explore two case studies. The first illustrates the “humanizing” motive for storytelling in the context of the 2015, multidimensional poverty report. Speaking to Manovich’s (2002) data/narrative divide, the humanizing piece of the storytelling toolbox becomes problematic in 2015, particularly when perceived as diminishing the statistical context that story can bring to the table. Observations and interviews speak to a process of MDC writers self-consciously negotiating these two motives for storytelling, ultimately demonstrating how “story” is not a singular register MDC writers break into but the application and channeling of several distinct moves that answer demands made of the writing process. The second case returns us to the MDC’s discussion of race, overviewed in previous chapters. I return us here to dive deep into the tenuous relationship between “story” and the MDC’s *ethos* of policy avoidance. Though focusing on discrete cases necessarily limits the representation of the “storytelling toolbox,” the cases here—focusing on story’s ability to humanize and make actionable a set of data points—dredge up hints of other affordances and limits brought on by the MDC’s storytelling imperative. In both of these

instances, “storytelling” becomes a complex piece of the MDC’s activity of composing. Like the organizational limits and technical limits discussed earlier, “storytelling” creates its own mandates. As designers of a report desiring to make their data usable, actionable, and persuasive, “story” becomes a creative means to a usable end.

Usability Features and the Story Form

To recent textbooks for professional and technical communication practitioners—Stephanie D.H. Evergreen’s *Effective Data Visualization* (2017) and Cole Knaflic’s *Storytelling with Data* (2015)—speak to a multi-pronged understanding of story as driven by certain visual and discursive features but, above all, concerned with making information “stick,” or become memorable through its emotional and/or actionable context. Evergreen’s text is driven by different types of graphs, charts, and other visuals, orbiting questions of motivation: to highlight a single number, to show change over time, and so on. Motivation, in many ways, becomes a shorthand for how the MDC discusses “context” in their own writing. According to Evergreen, by making context explicit in the lead up to design—that is, by making “the point” “stickier” by choosing one type of presentation over another—designers of data presentations learn how visual features like shape, color, white space, and organization facilitate specific interpretation. And interpretation, Evergreen tells us, is an important prerequisite to action. In an anecdote toward the end of Evergreen’s book, she explicitly draws that connection: “he was excited, not that the data pointed in the wrong direction, but that the graphs clearly showed performance. Geoff could anticipate results and take immediate action” (229). Knaflic’s *Storytelling with Data* addresses ties between quantifiable data and the

memorability of narrative forms more directly. She places design questions immediately in a rhetorical context, asking what mechanisms are available for presenting information and what actions the designer or rhetor wants the audience or user to take. That is, she starts with what the MDC would call a “call-to-action.” Further, she dedicates a chapter to brief overviews and mash-ups of different approaches to narrative, shifting from theater to film to the written word, invoking ideas of “plot,” “character,” and “storyboarding.” She even mentions Aristotelian dramatic arcs. In short, for Knafllic, data-driven presentations contain a beginning, middle, and end. They introduce and solve tensions and follow a cast of characters, and in this way, information is made to “stick.”

Following Knafllic and Evergreen would lead us to ask about specific “parts” of a “story,” to ask about its discursive, visual, and narrative features directly. Are the characters in MDC writing defined? Is the use of space conducive to their motivation? These are worthwhile questions, to be sure, especially for practitioners looking to glean some type of actionable takeaway from Knafllic’s and Evergreen’s work. However, for the MDC, stories are not crafted piece-by-piece. Rather, they grow from interactions with their own scenes of design, their own network of influences on their design, with regard for hypothetical end-use. As seen, this limits the range of “features” that can be added: when data must be “peer city comparable” the team by necessity favors a particular visual display; when the MDC *ethos* limits their ability to evoke specific policy problems the “call-to-action” is necessarily short and broad. They may not be able to control the range of pieces or structural features applied at any given moment or in any given “part” of the story. Ultimately, their goal as “storytellers” is this: to cast themselves within a community of non-profit workers and civic actors, and therefore by design recast that

network by directing focus through data points in a memorable, contextualized, and affect-rich way. The MDC's process of crafting story, then, responds to a complex sense of "stickiness."

If we approach "storytelling" as signaling a discursive form, ripe with identifiable "features," then these features should be created and deployed by the MDC writers themselves. To an extent, this is what those like Knafllic and Evergreen attempt to do: teach "storytelling" to practitioners via its identifiable verbal, visual, and structural forms. The MDC seems to understand a potential pitfall in such a segmented approach, however, internalizing what Donald Norman's (1988) critique of "creeping featurism," or the indiscriminate, overwhelming addition of features in a design (173). "Each new feature adds yet another control, or display, or button, or instruction," Norman writes, "double the number of features, quadruple the complexity" (173-74). It is no doubt this view of designers that leads Spinuzzi to critique of view of "user as victim" fifteen years later. And the MDC are, primarily, designers of these reports. Additional features in a design, if deployed in a user-centered fashion, should not muddy the waters of a user's interaction. That is, successful additions may make a tool more complex, but should not sacrifice the navigability of the interface or interaction. This is largely the case when approaching story forms as feature-rich. The MDC should seek to combine all the necessary features outlined in interviews—humanizing elements, elements that contextualize the numerical data, elements that aid memorability and future action—without causing confusion for the end-user. In this way, the composed "story" form functions as an interface for those seeking to do work with the data underlying it.

The decontextualized nature of “raw” data contributes to this sense of “creeping featurism” that we see in the MDC writing process. Yet, for better or ill, such data are necessary to fulfill the MDC’s motive of shaping public policy and non-profit conversations, charting “linguistic paths” as outlined in chapter 1. Part of the motivation for crafting story may be found in what Sarah Ahmed (2004) described in her own version of “stickiness”: the human ability to infuse an object (e.g., MDC statistics and data) with emotion such that it moves with the object (e.g., an MDC report) as it circulates from user to user. In this interpretation, the MDC would couch data in appeals to readers’ emotions—particularly emotions about one’s home city—to produce further activity on behalf of that community. Timothy Morton (2013), has recently made similar claims about the mutability of emotions, suggesting that the affective residue of “hyperobjects” (e.g., concepts like “multidimensional poverty” or “big data”) can “stick” to localized events that signal the very existence of that object. This is not to say that MDC reports work on the depth or scale that Ahmed or Morton describe, necessarily, but MDC writers explicitly seek to transfer emotional and actionable context with the numbers to their readers. Another iteration of “stickiness” we can consider comes to us from Malcolm Gladwell and Richard Lanham via Kristen Seas (2012), who frames the “stickiness” of a message as one of structuring and restructuring attention via discursive cues. In brief, MDC writers do all of these things within the activity of telling a story: they imbue the numbers with emotions that “stick” to the data throughout a report’s circulation; they use story forms and visual cues to structure and focus the attention of end users. The “stickiness” of the story form thus becomes the answer to Norman’s “creeping featurism.” Similarly, it becomes the answer to the diversity of understandings

MDC writers bring to the concept of “story” in the first place. The range of things story *can* do, that is, takes a back seat to the *purpose* the story form serves. Memorability, focus, and the transfer of both from the data to the reader take precedent over questions of style or story arc. Largely, MDC writers simply want their report to prompt users to use their data for good. “Story” is a way to get them to the table.

More so than other MDC team members, Andy is perhaps the most invested in understanding different approaches to “story” as a set of formal and rhetorical moves. As noted, a bulk of his understanding of the power of “story” comes from Marshall Ganz, whom he speaks of as a mentor, staying,

. . . he’s got a really powerful framework for how you tell a story, particularly if you’re trying to influence a movement. So it’s *story of me, story of us, story of now*. Right? Those are the elements of a successful cause-oriented story has—and part of that is speaking from a place of authenticity and connection. So if I already know you, you’re much more likely to accept something that I give you at face value, *or* to defend me when other people say “listen, you know, that fuckin’ 6’6” Ivy-educated dude who represents the MDC doesn’t know shit about what’s going on in Parkside.”

This iteration of “story” is of course a bit of an outlier in the interview transcripts. It says little about data, and even less about the tension between statistical methods and discursive ones. But what is vital here is that Andy’s understanding of “story” is embedded in relationship-building, and ultimately the MDC’s *ethos*. He further explains that an organization is best able to inspire action “from a place of relationship, and acknowledging that . . . humans crave connection, and want to see themselves as part of that thing.” That is to say, “stickiness,” for someone like Andy, occurs at a level of identification with the people (visible or otherwise) represented by the data through MDC writing.

To get to the point of identification, the MDC plants itself as a character within the story. They position this “character” within the story because they are prompting end-users to buy in to their analysis of Gateway, to read it as credible and reliable. Underlying the process of crafting a story is the MDC’s desire to constantly recast themselves within a community of non-profit workers and civic actors; the story reinforces their *ethos*. On the one hand, *seeing themselves* in a narrative is akin to a “call-to-action,” the result of MDC language that typifies the closings of their reports: “We All Have A Stake.” On the other, however, Andy’s understanding of story speaks directly to the relational understanding of visual communication that digital media theorists have recently brought to the fore (see the discussion of Manovich, Drucker, Gitelman, and Halpern in the previous chapter). Not only is Andy’s “story” used to position the organization among its report-users, but it is also used to reinforce the relational and actionable capacity that MDC data visuals bring to their writing. By building up the “relational” capacity of the story form, “humanization” becomes a key feature of the MDC story form. As we will see in the subsequent section, however, the process of “humanizing” is fraught with limitations imposed across their activity network and dispersed across visual and verbal forms.

For the MDC, “story” is a usable term not because of a set of pre-determined or agreed-upon features. While, yes, there remains a lot of overlap in how they approach story—phrases like “emotion” and “humanizing” often express much of the same motivation, and “connections” and “linguistic paths” do the same—“storytelling” is universalized among MDC writers because it signals the same end goal. Moreover, the MDC does not appear to share the same sense of storytelling’s “tool box” as Knaflic and

Evergreen, whether visual, discursive, or structural. Yet, like Knaflic and Evergreen, they seek out the same “sticky” ends that will prompt users to take up a cause via the data they present. In short, regardless of how one approaches storytelling with data or the tools and features that implies, there cannot be a universal set of steps toward it. As we have seen in previous chapters and will see in subsequent sections, the range of bureaucratic, technical, and networked influences on a writer’s practice preclude them from doing the same thing twice. The motivation for storytelling activity may be undercut along the way, but success is determined in all cases by its “stickiness.”

Humanizing Poverty

The multidimensional poverty report turned toward questions of “humanizing the data” quite early on. After all, this report represented a large-scale undertaking of developing metrics original to the MDC, and the team felt they were running a risk of leaving the “human” element out of it. Quickly, the operative question was how to unpack the statistics to present something that says “this population looks like ours, too.” One team member described the maps—data visualizations that compare one geographical area to others—as intrinsically humanizing. Another echoed this sentiment, arguing that comparing specific zip codes to the city average humanized the data because such statistical and visual moves isolate specific populations with known boundaries. A third team member then added a temporal, hypothetical narrative, coupling it with an implicit call to action: “if we raise five zip codes to the city-wide average, this means people in those zip codes will experience . . .”

The MDC's perception of "story," how it functions and the power it has, is complex. In one brief discussion in a single meeting, the team contends with the relationships between data and narrative, probabilistic statistics and human experience, and leverages the rhetorical form of a call-to-action implicitly, suggesting that human experience can be understood via statistical averages but fundamentally exists beyond them. The team works through ways to build narrative with or around the data they have, but then must leverage that data to justify the story they craft. There is a recursive and reciprocal process. Far from Manovich's idea of narrative and data as "natural enemies," then, the MDC sees that relationship as tense but symbiotic, with data being brought to life by story and story then illuminating granular data points by digging into what they mean for the city and residents living in particular circumstances. And in that symbiosis, something resembling usability arises in the report.

In interviews, Andy is aware of the messiness of this relationship, too. He first references the policy-avoidant *ethos*, which itself muddles the call-to-action. When I ask about the difficulties of separating the data from the story, he hedges, then illustrates this point with the example of the "Welfare Queen" story popularized in American political rhetoric of the 1980s.

So, the data is at the root of what we are doing. It's the *why* of what—well, the humans are the *why* of what we are doing—but the data is the, like, "This is why we are trying to tell the story," but the story is what's gonna make the difference to people. My Christmases are miserable because of Ronald Reagan's "Welfare Queen." [My family] are still 100% convinced that that Welfare Queen is out there, and, you know, decades of scholarship to the contrary documenting that it's really less than 1% and the overall cost of entitlements *blah blah blah* it doesn't matter. "Welfare Queen."

The invocation of the “Welfare Queen,” itself little more than a trope of American dog-whistle politics beginning in the 1970s, is important in this context. The “Welfare Queen” idea has little, if any, relationship with the statistical reality around welfare assistance (and perhaps even less so today than at the term’s inception). Andy’s use of it to describe the power of story, then, and placing it in the context of the perceived reality of those who use it, speaks to the inherent divide between narrative and statistical forms, and the ways in which narrative gains power by affirming previously-held beliefs. Stories can affirm previously-held beliefs, whether representing statistical reality or not: *individuals take advantage of the American welfare system and I’m paying for it; the West End of Gateway is impoverished and therefore experiences more crime; minority populations have lower educational attainment*. Like the “Welfare Queen,” these stories—though statistically flawed and often deployed in bad faith—function by a particular “stickiness.” Stories such as these affirm beliefs without bolstering them or adding to them. There is no deliberative space within them once they are delivered. They can, at times, imply causation where causation is unproven or unfounded. The West End is statistically impoverished and experiences more crime, depending on how we measure those variables and what we define as “the West End.” Some minority populations do express lower educational outcomes, but this, too, is an incomplete truth: depending on how we weight certain factors (SAT/ACT scores, degrees held) these outcomes across minority groups are expressed differently. (We should consider underlying motives and assumptions in measuring “educational outcomes” in the first place, to be sure.) In short, the MDC’s use of “story” is within this rhetorical vein: it is not about the quality of the “story” the MDC evokes, but its ability to be deployed in the service of material action.

Or to put it in Andy's terms, the data prompts the need for a story, because the story is what pulls people into the arena of making change.

Elsewhere, however, Andy and other MDC members push against the notion that story and data exist independently. As alluded to in the introduction, the question of "humanizing" the multidimensionally impoverished at one point evolved into a proposal to represent the voices of those living in particularly multidimensionally poor areas: testimonials of living day-to-day with the compounding dimensions of poverty. Andy and others with longer tenure at the organization declared this outside the organization's purview and history. Instead, statistical averages were leveraged to create a fictional person, tracing them through a hypothetical "lifecycle" as they experience the deprivations brought on by poverty in areas of income, job quality, health, and education. This was pitched as an effort to "make [the data] more meaningful for people," to illustrate "what it means materially to live in these neighborhoods." What it "means" was initially illustrated, in an early sketch, as follows:

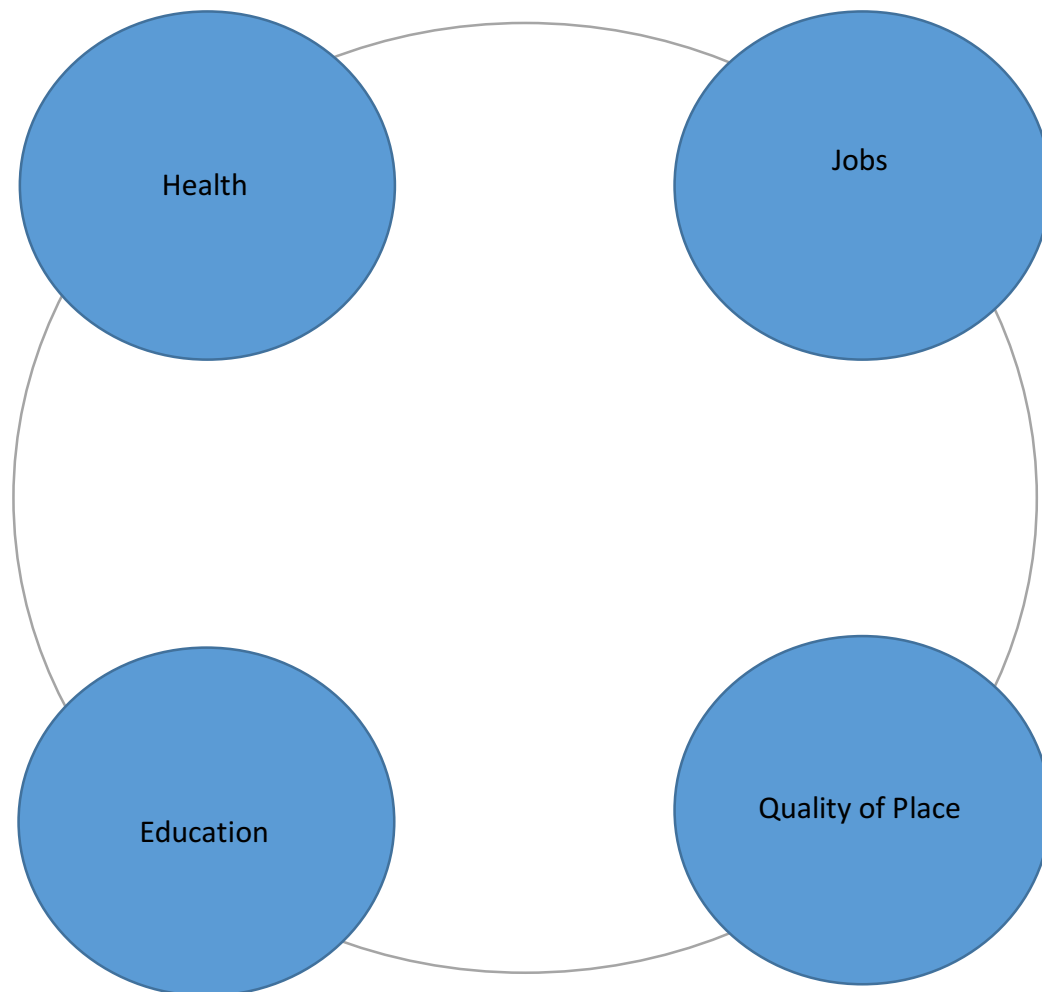


Fig. 3.1. Author's recreation of original draft sketch of the "humanizing" visual in the MDC multidimensional poverty report.

On first glance, it is difficult to see what is "humanizing" about this sketch. The influence of organizational *ethos* is clear, as the four small circles represent the MDC's "deep drivers of change," but there is no appeal to *pathos* inherent to the image. With the image in isolation, the viewer has to do the work of deriving something "human" from these four phrases and a handful of circles. The image does not move or imply movement (even as a later drawing of the image was given "motion" by adding arrows). There is little

recognizable as human activity. But the description underlying the image, at least in drafts, was to make it clear that an individual moves through these areas in their day-to-day lives, feeling the pressure of low-paying jobs, poor health, low educational attainment, and poor quality of place as the sum total of “multidimensional poverty.” That is, the “deep drivers” became building blocks for the MDC to overlay something “humanizing,” with a stronger pull on the report user to identify with the states of being within arenas of “health,” “jobs,” “education,” and “quality of place.”

As the MDC thus contended with how, exactly, to “humanize” this idea visually, they also faced the question of how to do so in a way would be statistically *true*. To do so, they first addressed demands of the MDC organization: they included measures that corresponded with their four “deep drivers” as institutional history called for. However, the data they were able to collect at the time and disaggregate at the necessary level of geographical granularity (i.e., census tracts and neighborhoods) precluded rich measurements of “quality of place.” In other words, things like “commute time” couldn’t be gathered (at the time) by census tract. A core quality of place measure, “Population Living in Core County,” naturally broke at the county level rather than the neighborhood. An argument was made that a geographical disaggregation of other metrics was *necessarily* a comparative measure of quality of place across neighborhoods. So, free of the burden of determining geographic differences of quality of place measures, the MDC settled on the following metrics to imagine a statistically likely life cycle of individuals in the poorest and least poor areas of the city: percentage of people in an area that are low income (“jobs”), percentage who lack a high school degree (“education”), percentage who hold a bachelor’s degree (“education”), unemployment rate of an area (“jobs”),

median earnings of an area (“jobs”), percentage of people in an area who lack health insurance (“health”), and average life expectancy in an area (“health”).

Later, MDC designers arranged these to represent a chronology of a given life: they would imagine the likelihood that a resident of Gateway would be born into a low income family, earn a high school degree, then a bachelor’s degree, the likelihood they would fall into unemployment, their anticipated (average) median earnings, their access to insurance, and, ultimately, their expected life expectancy. Statistically, however, the data would not allow numerous other variables that could, reasonably, produce a picture of a “statistically average life in neighborhood x.” No data exists to show movement within a city (i.e., the rate of movement from one neighborhood to the next). Nor does it show the rate at which people move at given ages (i.e., before or after college, before or after finding employment or because of employment). That is, the data they present are not predictive, but simply a snapshot of the demographics of a set of neighborhoods *now*.

The sum of these forces creates a set of problems for the MDC and how they see “storytelling” being deployed rhetorically. If it is to be humanized, they need to present a statistically possible human life. If it is to be actionable, they need to show places for intervention. If it is to be interconnected (i.e., “multidimensional”), those connections need to be statistically true, not just implied. Given the amount of data they do not have access to, they simply are unable to do those very things. To borrow from Nick, the data they present can only imply correlation, but cannot prove absolutely causation. Instead, then, and adhering to their policy-avoidant *ethos*, they merely populated the final visual with a human-like figure to imply that *this is what people experience in these areas*:

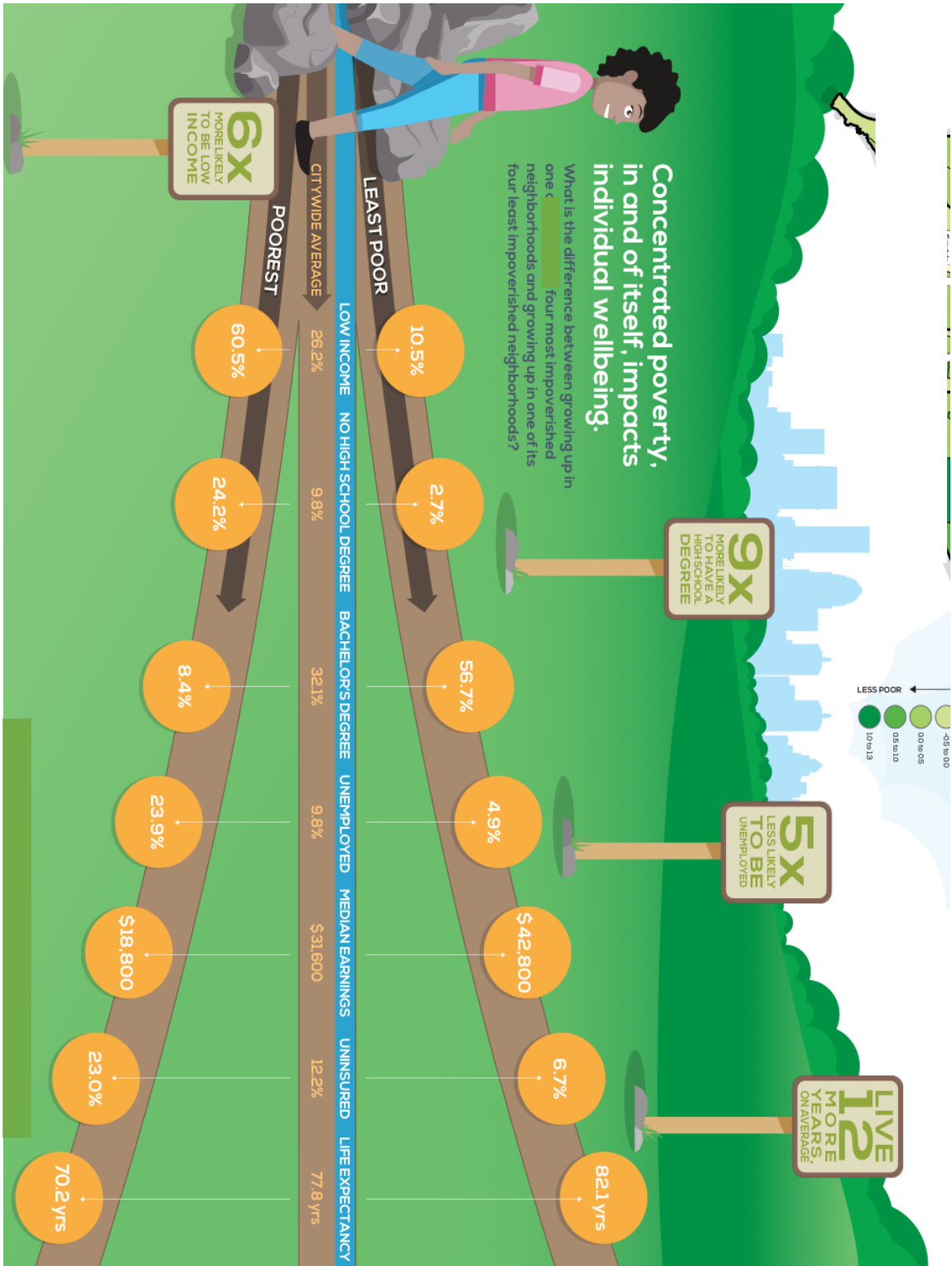


Fig. 3.2. "Diverging Path" image (blinded), lifted from MDC 2015 report.

Populating the visual area with a human-like figure is neither the only nor the most radical change through the life of this visual, however. Ultimately, the process of “humanizing” the data leads the MDC designers to deploy this fairly blunt set of instruments: put a human-looking figure in it and drill down into the “deep drivers” to express how each attaches itself to hypothetical lived experience. To be sure, the “deep drivers” themselves have become fairly “sticky” discursive tools in the circles the MDC writers run in; since expanding them to these four in 2012, large events have been held annually, bringing together a range of organizations that work toward each of these causes alongside MDC data.

There are reasons for expressing more granular measures than the broad buckets of the “deep driver” categories would suggest. In the first instance, though the MDC has aggregate measures on “health outcomes,” for example, a more discrete measure like “life expectancy” is more immediately identifiable and measurable. Hard numbers of “70” versus “82” years are “stickier” than, say, “-2 on the aggregate health outcomes index.” Additionally, the “stickiness” of a concrete, identifiable measures allows the MDC to develop a clearer sense of exigence for further action. It is not clear how to leverage efforts to move the needle on “health index scores,” but we can measure life expectancy over time. This level of measurement and the diverging paths thus creates a call-to-action. The human figure stands in for the humanizing force the MDC wants to bring to its data presentation, the “story” is populated with data points that are visualized almost as discrete events in diverging chronologies, and a reader can infer causal relationships (or at least correlations) among most of them.

These simple “story” points—drawing relationships across data, visualizing these relationships across space and chronology—typify the type of “stories” the MDC attempts to tell: *certain states of being lead to certain outcomes, and we can intervene to affect those outcomes for the better*. The bluntness of the human caricature combined with linear statistical representation allows for the figure itself to stand in for three “people”: the average person growing up in the four least poor areas of Gateway, the average person growing up in Gateway as a whole, and the average person growing up in the four poorest areas of Gateway.¹² At this level of specificity, then, the type of stories MDC strives to tell takes fuller form. “Humanizing,” takes on a second meaning. The MDC “humanizes” through representation as well as definition—representing an individual who underlies the aggregated data *and* representing a population who are implied by that data. These two methods of “humanizing” serve two rhetorical functions. The former humanizes to be memorable and appeal to *pathos*. The latter form of humanization helps with a call to action in a way that can still adhere to the organizational *ethos* of policy avoidance.

The pathways image and its history of development is useful for complicating a view of “storytelling” as one of formal components. The pathways demonstrate multiple meanings and purposes of “humanization.” However, the development of this visual, data-driven narrative is also due to statistical considerations that made a cycle layout unsustainable. Unlike the “diverging paths,” a “life cycle” image would be unidirectional, meaning that the human figure would represent a single individual rather than multiple

¹² Though I earlier suggested that the story was around the “top 5” and “bottom 5” areas, later, the natural breaks (Jenks) algorithm Nick ran created a cleaner “top 4” and “bottom 4.” The MDC chose to go with statistical cleanliness over the memorability of the number 5.

potential individuals. In its original conception, the life cycle would be more directly causal, calling for research that asked, for example, what percentage of unemployed people in a given area also have no high school degree, or what percentage of unemployed people are also uninsured. The databases MDC uses, however, do not provide insight to those questions. Though MDC data scientists are able to determine the percentage of individuals who are uninsured and the percentage of people who are unemployed, they cannot determine the extent to which those figures overlap: there is no data on how many people are *both* unemployed and uninsured in a given geographic area.

Statistical integrity thus informs the ways in which, or the extent to which, it is possible to humanize the dataset underlying the “pathways” image. Statistical reality thus determines the ways in which one can persuade, appeal to emotions, or craft a call to action, then, too. Given the ways in which different demands on data-driven writing thus limit and afford different storytelling forms, I am surprised in a later interview when Nick claims of the relationship between story and data,

I mean one of the difficult things is that data is almost always going to be consistent with multiple stories. So while we can rule out some, we can't settle on one thing, much as it's difficult to find a single truth about things. But what we can rule out are a lot of false possibilities. And I actually have compared it to literary criticism before, like there's no one single true interpretation of *Macbeth* but there are some that would just be plainly ridiculous. Data is like that. There's no one true interpretation of any given set of data. But there are some that would be wrong.

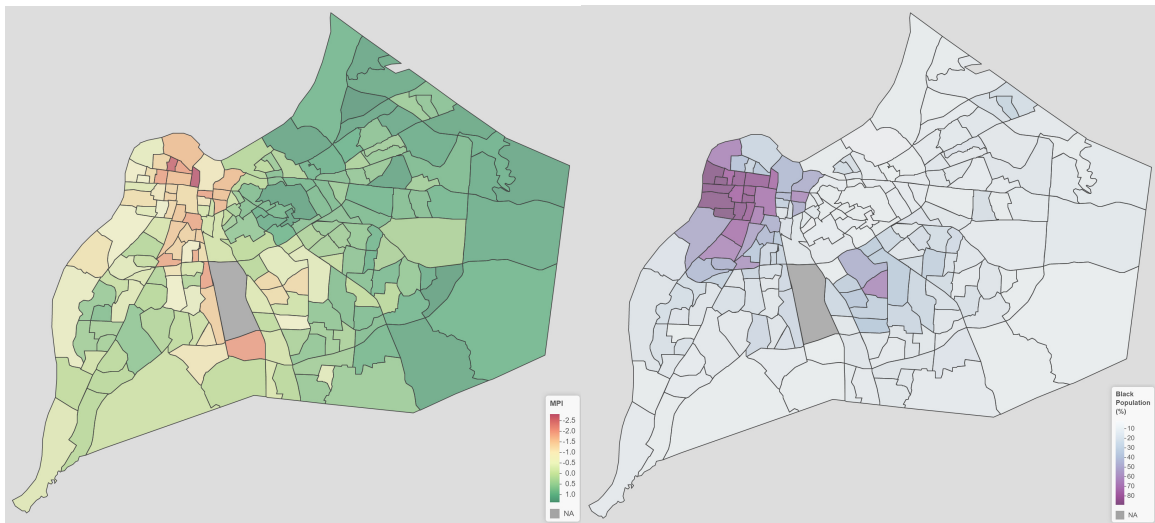
I take the general point here to be that numerical data can belie multiple social, cultural, political, or economic realities. The relationship between geography and employment rates could have a causal relationship with variables as diverse as education levels, proximity to work opportunities, or factors under the broad “quality of place” metric like transportation and safety. But to compare the boundaries of statistical norms and rules

with the creative space of drama seems a bit like apples and oranges. There are multiple ways to interpret the correlations among the variables in the pathway, precisely because the data falls short of being more incisive. And this breadth seems to assist in avoiding direct policy recommendation, too, while being precise enough in what it names as to suggest a rational range. That is, to paraphrase Nick, there are a range of calls to action that we can interpret from the story the MDC tells, but there are some that we could consider plainly ridiculous. We can encourage educational attainment as a way toward healthier, longer lives, but we would not intervene to extend life expectancies and expect that to help with educational attainment.

For the Metro Data Coalition, making data “usable” means making the story form recognizable and the data “sticky.” They emphasize “humanization” as a feature that facilitates tasks of recognizing the cast of characters: the MDC itself, the residents of Gateway, and, ideally, the report users of the future, activated and ready to respond to the call the MDC puts out. Populating the visual space with human-like illustrations, leaning into statistical discourse of “correlation,” and implying calls-to-action are simultaneously the stuff of MDC “storytelling” and, therefore, the stuff of MDC report usability and design. And although in successful instances the statistical norms mesh well with the story forms the MDC wishes to use, there are cases where this two-pronged goal—to create a story and to make that story actionable—are impeded by other forces within the MDC ecology of work.

Sticky Stories of Race

Figures 3.3 and 3.4, below, were earlier discussed in chapter 1. Recall that, on the left, areas in red are the most multidimensionally poor, and areas in green the least. On the right, areas in purple have the highest concentration of black residents, and areas in light blue have the lowest. The maps here resulted in a problem around representing MDC *ethos*. Historically, the group had not discussed race this explicitly in their writerly output. Similarly, though the design allows for an easy “ocular test”—it is clear that the poorest areas of Gateway are also home to the highest concentration of underrepresented minority residents—the MDC was hamstrung when it came time to transition from here to a call to action. In the end, the MDC honored their well-honed *ethos*. They focused on the numbers, named no specific policy, and simply called for efforts to be made to untangle the results of a “history of segregation.”



Figures 3.3 & 3.4: Multidimensional poverty (left) and race demographic (left) heat maps, recreated based on MDC 2015 Report.

Yet, there is also evidence that the “features” of MDC storytelling did not translate into success in this piece of the report. At the end of each report “cycle,” the MDC hosts a town hall, inviting a range of speakers from government, non-profit, and for-profit sectors. At the end of the 2015 cycle, Julie, the CEO of the local Urban League branch, spoke to the above maps, saying “There is nothing here that we didn’t already know. We hope now that this brings more people to this fight.” A year later, rather than respond to the 2016 report, she returned to these maps. “We’ve used this data every day, responded to it every day,” Julie said, “[now] we need to put real effort into moving the needle on what this is saying.” In other words, while we can see clear emotional appeals and clear context in these maps, something about this presentation was not, to evoke Seas again, memorable enough to prompt reports users to real action. Julie says virtually the same, continuing, “If you identify redlining, as these maps more or less do, then you have to deal with institutional racism. If you want to talk about putting money into these west end districts, then you need to start talking about black ownership.” Important in Julie’s responses, a year apart, is the shift from a consistent “we” in 2015 to a distinct “we” and “you” in 2016.

As those like Ahmed, Morton, and Seas suggest, “stickiness” occurs when evidence of larger phenomena are found in discrete events or representations, often transferring affective or emotional force to refocus attention in the way a rhetor intends. This makes sense as a central feature of the MDC’s “storytelling” activity, with writers making such motivation explicit in interviews. Linguistic sign-posting, calling on users to act with data, humanizing reports to allow audiences to see themselves and their communities in it—all of these ideas lend themselves to the concept of “stickiness.” But

if Julie is correct in her claim that this section of the 2015 report found little traction beyond the one event held around it, then we are left with two possibilities. First, it is possible to read these maps as lacking the stickiness that is found in other sections of the report. Second, it is possible that stickiness itself is a double-edged sword, and that the discussion of racial segregation is so “sticky” that it rendered report users immobile.

One possibility for the lack of “stickiness” is due to the lack of the same, blunt, humanizing features MDC writers employed elsewhere in the same report. Taking another look at these maps, we can see that they diverge greatly from other visual pieces. The maps sit independent of the “diverging pathways” image above, separating themselves from the sole human-like figure on a poster-sized page. On the one hand, this suggests that, following Sam Dragga and Dan Voss’s (2001) “Cruel Pies,” that an ethical representation would include human-like figures on the maps themselves. If we visually separate the maps from the diverging pathways, then we are necessarily at a deficit of humanization when we skim the maps independent of their surroundings. What Dragga and Voss get at is essentially the humanizing impact of *pathos*. Discussing Tufte’s own recreation of the iconic Minard Sankey diagram of Napoleon’s invasion of Russia, they conclude, “True, the pictographs are *statistically* redundant with the diminishing width of the line—but they are not *emotionally* redundant” (271). If we take a strong read of Dragga and Voss, then, we could see the final version of these maps as missing out on an emotional, humanizing, “sticky” appeal. One of the three characters in MDC storytelling—here, the residents themselves—is missing from this part of the tale.

We can critique the MDC’s policy-avoidant *ethos* here, too. As mentioned in chapter 1, the MDC responds to its bureaucratic reality—particularly its relationship to

their board of directors and both real and imagined end-users—by avoiding direct calls to change or bolster specific public policy. It would be fair, then, to ask whether the MDC put so much weight on positioning themselves as reliable *but neutral* reporters on the state of life in Gateway that they feared humanizing the racial discussion too much would jeopardize their fought-for *ethos*. Another, perhaps too simple, explanation could be that they simply did not have the space to represent human figures in those areas of those particular pages. But the end result remains the same, as evidenced by Julie’s reaction quoted above: the areas of the report that discussed race directly were simply not “sticky” enough to “move the needle.” If users identify themselves, via a call-to-action, in this story, they do not have the same weight of humanization on the pages that discuss race to do the same there as well. There is no human illustration, no discussion of housing costs or homeownership rates, nothing that points to the human cost of the problems these two maps outline. If we take Burke’s (1969) “identification” as a potential strategy in the drive toward humanization, then success can be measured by evidence of report users feeling “consubstantial” with, or believing one’s interests to be aligned with, either the residents described in those poorer areas or those called upon to act in response. The “humanization” and “call-to-action” features can be conceptually linked in these ways, and an ideal outcome would mean that those who are *not* among the residents described still identify with them. Instead, we have Julie suggesting that this identification fell flat on both fronts—no one identified with the minority residents who are victims of redlining, or at least their focus was not trained on that component of the report in ways that called for a material response.

Perhaps, then, the issue is not a lack of stickiness in these maps but that, quite the opposite, the MDC treatment of race is *too* sticky, so sticky, in fact, that the discussion fails to gain enough traction to prompt motion. It is a policy-avoidant stickiness, in this telling, which is why Julie is prompted a year after release to not only pull the conversation back to the fore but to suggest explicit places where policy workers can act. And we have evidence of this stickiness, too, particularly in the fact that she returns to it regularly and that discussions of racial geography continue in MDC writing beyond 2016. Everyone in the room agrees that these maps represent a real problem, but ultimately any call to act on it—to move—is unanswered. Like the statements that the “West End is impoverished” or “Welfare Queens take advantage of welfare support,” the maps Julie refers to simply bolster “what we [or someone] already knew.” Everyone can agree, or disagree, but there is no room for deliberative or material action based on this stickiness alone.

Ultimately, the best evidence that the MDC’s race discussion is sticky to the point of immobility comes via their treatment of race and racial geography since the 2015 report was released. The 2015 report—and the drafting process of it—represents the first phase. Shortly after its release, however, the MDC developed a new measure, the “racial dissimilarity index.” According to the team, the index measures the percentage of residents that would have to move to a new census tract in order for each census tract to meet a citywide ratio of white and non-white residents. So, for example, if a given city contained 50% white and 50% non-white residents, the MDC index would determine what percentage of *all* residents would have to move elsewhere for the population of each tract to be 50% white and 50% non-white. In Gateway, the dissimilarity index is

calculated to be about 47, meaning that nearly 47% of residents would have to move if we are to see the level of diversity at the local level that we see at the city level. Importantly, this measure was developed and displayed alongside the demographic map above (Fig. 3.4), providing a richer “story” of segregation than the abstract index alone would allow. As of this writing, and as I will illustrate more thoroughly in coming chapters, the MDC is integrating discussions of race into many more of their regularly-kept measures. A website overhaul is underway that would include trend lines by race for measures as diverse as median income, educational attainment, and access to healthcare. More and more, I observe mapped measures presented side-by-side with the demographic map developed in 2015, showing, perhaps, that Julie’s comments went a long way toward efforts to develop richer “stories” around racial segregation in Gateway.

What we see here are a series of moves—successful or otherwise—toward a more productive “stickiness” of this publicly-held story. No single presentation of data will be able to tell the entire story of a city that—like all U.S. cities—has seen the longitudinal impact of Jim Crow, housing segregation, and institutional racism go largely unaddressed. This is not to say that the MDC shirked their duties, to be sure. Nor is it to pass judgment on whether or not they have been or will be successful in “moving the needle” on segregation in the city. The statement made when they first introduced race into their storytelling holds true. The data we see is a result of a history of racism that we have yet to fully contend with. But what is clear is that MDC ran up against a measure of rhetorical success that they could not meet: either none of these iterations are sticky enough to do the work on their own, or they are too sticky to allow for any action on the part of the report audience. The maps in 2015 did not grip report users in a way that led

the way to real change. The “racial dissimilarity index” leaves no room for action either. (What does it mean to say that 47% of Gateway residents would have to move, unless we are prepared to talk about who has the ability to move and housing costs in the area they move to?) The ongoing website overhaul cedes the point while getting us ever closer to real traction: each measure can create its own sticky story of race, but an individual user will have to approach each as its own tool and combine them, or transform them, into something bigger and stickier. Perhaps implied causation helps users make the turn from stickiness to traction, or perhaps larger social and political realities will continue to make conversations of race too sticky to do work with.

Stickiness in the Activity Network

The networks of activity the MDC and their publications move among are consistently influenced and informed by events at different places within those networks. Report use via storytelling’s “features” is helmed in by things that appear to have nothing to do with storytelling at all: the form of a database, the desires of a bureaucratic arm, etc. And because of this, we see the MDC navigating difficult terrain, particularly in telling stories about racial discrimination and racial progress that are meant—in theory—to train the attention of readers in ways that will prompt real, concerted efforts to change. Entering these choppy waters, the MDC finds itself erring toward institutional history, that organizational dictum to avoid conflict, and here, perhaps, misses an opportunity to make the discussion of race “stick” in ways it may have been able to with a bit more risk. It is incumbent, then, to nail down what this terrain looks like and how, at the most discrete levels, it effects these user “features” in the process of design and at the points of

use. In doing so, we have to acknowledge the limits of usability theory and turn again to activity theory.

If the (as of this writing) ongoing website update seems like the best way to achieve “stickiness,” then it is with the caveat that it provides the tools for end users to gather their own set of tools to develop the type of focused, memorable, actionable story that those like Julie look for. It is also important to note that even at the level of individual measures the MDC remains confined by a present network of tools that limit what they can and cannot say about race at a given moment. It remains the case that data on the Latinx community is in short supply, and rarely is it generalizable, given the relatively small (for a large city) and dispersed Latinx community in Gateway.

Educational data seems to be leading the way in this regard, but the MDC remains bound by the timed updates of their go-to databases and the reality of the metro area they write about and for. Heat maps, too, make it virtually impossible to introduce a third variable beyond “white” and “non-white,” making trend lines—with a chronological rather than a geographic focus—the most feasible way to introduce multiple demographic categories. That is to say, if the MDC begins breaking measures out into increasingly specific demographic categories, they would almost necessarily forego the ocular testing that side-by-side maps provide.

While previous chapters have outlined present, external arenas of limitation on the MDC research and writing process, what is made clear over time is the extent to which, at a real, tangible, material level, some of these limitations are self-imposed. Of course, the MDC cannot do anything to speed up the release of new Census data, but the presentation of that data in reports and on-line is a result of artificially created impositions. Their

website holds individual measures on separate pages, which makes it impossible for a casual viewer to see, for example, a racial demographic map alongside an educational attainment map and trend lines expressing comparative attainment between white and minority populations. They have no control over the dispersal of the Latinx population or the available of data on that population, but their choice of heat maps and a focus on racial geography has made it more difficult to accommodate studies on that particular group. Things like institutional history, bureaucracy, chosen data visualization programs, and the external entities MDC circulates drafts to remain on the cusp of self-imposed and independent external limitations on the writing process, but at each node we realize that, fundamentally, the ability to tell a story, the shape of that story, and the impact of that story are tied up in these very networks.

If “storytelling” is defined by its motivations, features, and the twin goals of “stickiness” and action, then identifying the tools alone is not enough to understand it. We should break from a usability model that asks questions about what tools are for and how they fit that purpose, and instead ask what people do (or don’t do) with these tools (and why) once they are encountered in the world. Observing the MDC bears this out. Mapping these research and writing processes shows that the tools defining their storytelling—and ultimately the produced “tools” within the stories they circulate—demonstrates how an air of creativity and unpredictability typifies the activity they and report users engage with. For Victor Kaptelinin and Bonnie Nardi (2006), such observations lend themselves directly to activity theory, particularly the “scope for creativity at different levels” that responds to the movement and change of all activity in its context (222). Understanding the distribution of activity as unpredictable, we can read

the MDC, their produced research, and their report users as changing and being changed by this sprawling activity network. Changes to that system, via the influence of new nodes on a network or the introduction of new considerations to a composing process, are in fact creative *actions*, undertaken in order to transform “raw” material—the data gathered from various databases—into “stories.” “Storytelling” is the sum total of these actions, of responding to different bureaucratic bodies, external organizations, and the technology at hand in order to prompt future action within or beyond that very network.

By necessity, activity requires a transformation of tools. One way to define a story’s “stickiness” as a measure of success, then, is to read the “sticky” elements of a story as those that are transformed and used to give future activity traction. Spinuzzi (2003) makes explicit the connections between activity and transformation and transformation and further, future action: the artifacts created via transformation within a system are transformed in order to—in this new, transformed state—mediate and facilitate future work (40). In other words, if the story-transformed data produced by the MDC “sticks” successfully, it will later mediate work with that same data in a new arena. Traditional usability theory and methodology, then, falls short of capturing the complexity and movement of such processes of transformation and stickiness, making data itself a strange tool or feature of the report-as-tool.

Meeting users—that is, both MDC writers-as-users and report end-users—where they are, inquiring about the tools they use, how they use them, and why, uncovers the influences on that activity in the place where it is at that moment. If we are to accept recent iterations of activity theory—full of transformations and unpredictability—then no two moments of MDC activity can be understood to be the same and no two

transformations of MDC data by external users can be approached the same way. The influences on that activity shift. The context shifts. Julie (as we will later see in more detail) transforms the level of activity for MDC report writing simply by responding to what she sees and does not see. What sticks for one user may not for another, and the tools of use and the motivations underlying tool use change. What the MDC and future users of their data produce—the data rich “stories” they circulate in print and on-line—are necessarily a product of such shifting, uneasy terrain.

To this point, we have seen the process of the Metro Data Coalition writers transforming “raw” data into the story form of the report. The network under study has deepened and sprawled. It has transformed itself via the same research and writing activity it hosts. It has gone out into the world and pushed the idea of “stickiness” and “action” in strange ways. The subsequent chapter, then, considers MDC reports as tools, or sets of tools, in their own right. It follows the Gay and Hembrooke (2004) model of observing use in action, and defining the underlying tensions that stem from object design. That is, it expands the network further and considers new tools and new users—the end users of the reports themselves, influenced by new contexts that the designers of the reports, the MDC, may not even be aware of. Ultimately we cannot account for all the activity prompted by the report or the limitations on its design, but we can track activities of transformation to this next modest phase.

CHAPTER 4

HACKING THE ACTIVITY MAP

A bulk of this study has focused on the composing process and circulation of a single document: the Metro Data Coalition’s 2015 “multidimensional poverty” report. I’ve focused here primarily because the movement of MDC data into the larger civic service sector, and the uptake and use of that data, is a slow and complex process that takes years to track. Even slower in its emergence is evidence of the “impact” of that data. The 2015 report was published in fall 2016. (The “2015” label signals the most recent yearly data available in the report itself. The late-in-the-year release was partially due to the number of technical and organizational constraints the group contended with over time, as evidenced in previous chapters.) In August 2016, the team turned to questions of “measuring impact” under the direction of Loretta, a City-Community Partnership employee who, by contract, dedicates 25% of her time to collaboration with the MDC. Loretta has a business background, which shines through in her title, “Vice President of Mission and Impact.” She is meticulous in her meeting involvement and preparation, regularly coming with notes based on report drafts she has recently perused or on meetings with the CCP or other organizations she has attended. She often speaks from the role of an outsider to statistical conversations, pressing MDC team members to explain in lay terms what she—as a hypothetical audience member—is meant to gain from a given claim. Such clarity of purpose is evident in the way she talks about “mission impact” with the team, too. In an August 9th meeting, she laid out her central questions

for the MDC team: *We can measure investment, but how do we measure impact? How do we quantify it? Is there a case for measuring what is largely non-quantifiable impact?*

Loretta's questions resonate with Andy's own understanding of the MDC's goals from chapter 1. Recall there that Andy defined the MDC's work as "prepping very clear linguistic paths" to inform the way conversations are had around specific issues in Gateway. Loretta echoes this tangentially, as she notes the drive to find hard measures of organizational impact while considering those measures a "holy grail." She continues,

[W]hen we started talking about it, it's like, OK, you look at MDC, you go to the website, you can measure the number of people who use the website. You look at the data points, you can potentially get a sense of how many people are maybe dropping data points into presentations or, you know, things like that. You can get a sense of Twitter activity and that sort of thing. You can get a sense of coverage in [local press], or online, or articles, number of hits on a blog post, you know? You can do that kind of thing. How do we measure the impact that we're having?

What Loretta is getting at here is a common concern among businesses and non-profits: how do we measure the return on investment (of labor, money, and time) when that measurement will necessarily be abstract? By pointing to things like website traffic and Twitter activity, Loretta is implicitly trying to look deeper than "exposure," trying to find ways to measure real-world, material change as a result of a published report. She continues:

And then if we measure and we don't like it, or we do like it but we know we can make it better, how do we make it better? And so my conversation kind of came from, what are the points we can measure, and for those points that we are measuring or can measure or whatever, how do we maybe round that out. It's easy to measure finances, it's always easiest to measure finances, how much money coming in, how much money going out . . . but how do we measure other things, other forms of capital, human, social, intellectual? How do we measure the difference of having MDC's voice in the room, where there are twenty leaders from for-profit, non-profit, public, private, civic, all these partners in the community—how do we measure the fact that Amy's voice in the conversation is

consistently beating the drum about data and the importance of data—how do we measure the impact of that?

The transcript speaks to what may be an obvious difference between MDC work and other for-profit or non-profit work: identifiable return on investment. Whereas many for-profit and non-profit businesses can regularly place their activity in terms of resources invested (e.g., in organizational growth, in a project, in employees) and return on that investment (e.g., in production or provided services), the MDC puts forward a large number of resources without necessarily seeing tangible return on that work in their offices. That is, funding a new report, an event, or a website update may not amount to anything immediate or even visible. MDC writers and project managers are not the ones opening new food banks as a result of their 2015 report. They may not even be aware that the report led to these new openings at all.¹³ For Loretta, then, the “holy grail” is a way to measure “other forms of capital,” “human, social, intellectual.” It means constructing a way to measure what changes when “MDC’s voice” or “Amy’s voice” enters a conversation, something beyond simply pointing to brick and mortar or programmatic community developments. In brief, the CCP and MDC uncover a rhetorical problem here and demand answers to it: how can we measure the “stickiness” of MDC writing, or the persuasive power of the “linguistic paths” they chart?

A large part of this project so far has been about identifying MDC activities and the impact of those activities. Although I have largely focused to this point on questions of the technical and organizational writing processes—the institutional, historical,

¹³ To be sure, the MDC *did* know that their research had led directly to the opening of a new foodbank in Gateway’s west end. In the early days of my time observing the organization, Nick was in regular contact with a representative of a local foodbank, sharing ongoing research to identify where food insecurity was most profound in the city.

technological, and statistical constraints on MDC work—the end game for the MDC is fundamentally a rhetorical one. Their goal, and Loretta’s goal, is about the real-world effects of discourse. Yet, as Loretta here lets on, there is no direct one-to-one match between eloquent report writing about the state of Gateway and concrete change in the world to address it. Writing well does not necessarily mean people will act in accordance with that writing. Eloquence does not always equal impact. So, having focused on the tools the MDC produces, this chapter traces MDC activity out to its logical, planned conclusion: its use and impact in the broader network of non-profit and civic actors. If, as in the previous chapter, we identify “stickiness” as a central goal, how is it we can measure “stickiness” in real time? In what ways can we identify MDC reports as tools to be used elsewhere? How do MDC reports “do work”? How can tracing this external work inform the ways we understand MDC activity networks? More to the point, how can we use the methods of network-mapping and the language of usability and design to provide ways of knowing what “return on investment” for MDC work would be?

To answer these questions, this chapter turns outward in two ways. First, it is necessary to shift our lens, (re)introducing bigger rhetorical concepts like ecologies and circulation to complement usability concepts and activity theory’s “object transformation.” Such an adjustment speaks to conceptual and methodological problems. Being unable to always see the transformation of MDC data in person necessarily places us beyond the scope of discrete activity and in the realm of—to use Laurie Gries’s (2015) term—“collective formation” (286). MDC data can only be said to have broad, emergent influence on the broader network of civic actors if we see it as contributing amorphously at the whims of spatiotemporal context. The transformations it undertakes here are not as

important to those like Loretta as is the ability to point to its circulation and impact. The second outward turn is one we will take away from localized MDC activity and toward the City-Community Partnership, their intervention on MDC activity, and external actors' responses to it. Specifically, I turn to a single grant cycle, designed by the CCP around MDC writing. In the following sections I analyze and unpack those grant applications, which I was given access to by Loretta and the CCP. In brief, what we find is that we can conceptualize the staying power of MDC data through previously mentioned concepts like "stickiness" and "traction." However, to do so we have to accept the liberties taken by those like the CCP to artificially construct imperfect methods for planting and tracking MDC "impact." Ultimately, evidence of MDC "stickiness" is more so in the transformations of MDC "stories"—or their omission—in the broader ecology of Gateway's civic and non-profit sectors.

The Rhetorical Holy Grail

Loretta is right. Identifying clear "return on investment" or "tracking impact" for things like MDC work is difficult. Although I have spent multiple years tracking the organization, observing their work in action, sitting in on MDC meetings and the larger events they host or participate in, there is no quantitative data on hand to prove, say, that Andy's "linguistic paths" have worked in clear, identifiable arenas. Anecdotally, of course, we can claim that they have: "multidimensionality," in particular, has been picked up in healthcare efforts and elsewhere. We can also go through the steps that Loretta suggests and look at website hits and retweets (all of which spike around report releases). We can discuss coverage of the MDC on local radio, TV, and in local papers, and the

partnership with local public radio affiliates for a “Gateway Forward” series, where they promote MDC work—or the topics that work discusses—without always citing its data. All of those things speak to influence in the broader community, but none of that quite shows the MDC producing radical, material change in the non-profit or civic sectors.

The closest opportunity to locating the “holy grail” of “measuring impact” perhaps comes from the City-Community Partnership. The CCP is a philanthropic organization overviewed in chapter 1 and Loretta’s primary employer. Importantly, one of their central activities is funding grants through their annual “Partners in Progress” grant cycle. And in the wake of the 2015 report, Loretta and her CCP team were able to align the funding application with MDC data. Although 25% of Loretta’s contract is dedicated to MDC work, the other 75% is largely dedicated to managing pieces of the CCP mission. In particular, she manages fundraising and philanthropy. And, as she tells me in an interview, this gives her and the CCP team an opportunity to actively shape the agenda of civically-minded organizations in Gateway:

When the poverty report came out, I took that to leadership. We have since carried it through all the forms of leadership throughout our structure to basically say that all of our grant making money will be solely dedicated to organizations that are working in the zip codes, working to help people living in the zip codes that are most distressed. So we took the top 11—so in the poverty report it was like two that are red or whatever—we took the red and the orange, 11 zip codes, represents 30% of the population in Gateway, and we said, “If you’re a non-profit and you’re working in areas that align with the deep drivers and your audience is the people that live in these zip codes, and you’re not starting something new, you’re existing right now, changing lives in these zip codes, we will fund your work.”

What Loretta is describing here is actively remaking the activity network of non-profit in the image the MDC data. That is, although the same nodes are there before and after the 2015 report’s publication, the way they interact and try to inform each other is filtered

through key MDC data points in this moment. Importantly, she does this in a very narrow way. She pulls the 11 most impoverished zip codes (“the red and the orange”) and chooses to focus on organizations working in those areas. She specifies that the work they fund must align with the MDC “deep drivers” (health, jobs, education, and quality of place, as defined in chapter 1). She further indicates that those organizations must prove that they work in those zip codes, that they are “existing right now,” and are not “starting something new.” That is, Loretta and the CCP team narrowly define an easily track-able “rhetorical velocity” (Ridolfo and DeVoss 2009) for MDC data.

For Jim Ridolfo and Danielle DeVoss, “rhetorical velocity” refers to the ways rhetorical output can be tracked through iterations of remix and remediation. It sits within the ecological turn made in the field of rhetoric and composition that calls on rhetors and composers to emphasize the delivery, materiality, and spatiotemporality of rhetorical action (see, for example, Gries 2015). Doing so allows eco-rhetors to account for things like staying power, transformation, and vitality in broader rhetorical vistas. The pulsating and evolving networks that host circulating texts (see Edbauer Rice 2005) are studied then through these materialist lenses—how texts are changed (rather than who does the changing) and the effects such change and re-circulation have on the ecologies texts exist within. Yet, for our purposes, it is most worth noting that Loretta and the CCP essentially define an activity network that doubles as a route of circulation for MDC data. That is, by building a rhetorical situation that prompts users to adopt MDC data in specific ways, we can track the degree to which MDC stories “stick” after publication.

The CCP planned the details for this grant cycle months prior to an official call for proposals. They referred to their approach on an internal document as “A New,

Strategic Focus” entering their fifth year of the “Partners in Progress” initiative. In the second paragraph of the document, they name the Metro Data Coalition specifically, referring to the 2015 report as “[c]ompelling and actionable,” and continuing, “The MDC reproduced . . . data at a zip code level, allowing us to see clearly 11 zip codes (in red and orange), representing 30% of Gateway’s population most in need of urgent investment.”

In this way, we see the CCP develop their own “story” of the MDC report. While the MDC only publicly produced data at the *neighborhood* level, the CCP repurposed a different aggregation of that data and, across a side-by-side table and map (see Fig. 4.1 and 4.2, below) developed a new “story” for their audience of grant applicants.¹⁴

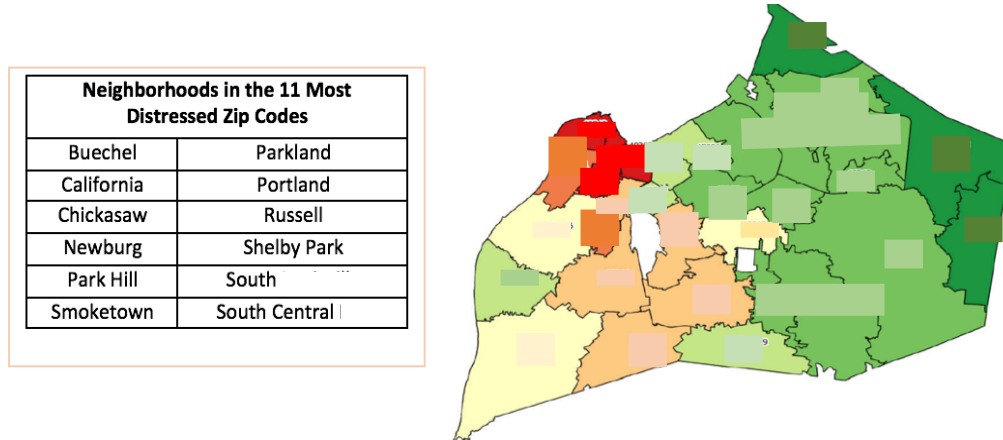


Fig. 4.1, right. Table specifying target neighborhoods for CCP grant applicants. Fig. 4.2, left. Blinded map illustrating target zip codes for CCP grant applicants. Images appeared side-by-side on circulated application materials.

¹⁴ To clarify, the 2015 report named particular neighborhoods of needed investment. The “11 zip codes” named in the document came from earlier drafts and other MDC research. This provided the “Partners in Progress” program to reach a greater number of active non-profits and better suited these programs’ existing data collection process.

On the surface, this is not a major shift in the “story” that organizations tell with MDC data. But it does signal the ability of individual nodes on dispersed activity networks to take up and repurpose quantitative data for their individual ends. Moreover, the side-by-side nature of these visuals speaks to multiple interpretations for multiple audiences. Well-established non-profits, tracking addresses of those they serve, may find it easier to report which zip codes they serve; more local groups may rely simply on connecting with residents of specific neighborhoods. In short, what the CCP successfully does is multiply the ways MDC data can be taken up. Grant applicants can consider data spatially, simply referring to the locations where they work as being in the red and orange areas. They can, conceivably, simply name the neighborhoods they know those they serve come from. They can, most clinically, reference their internal reporting against the zip codes on the map. Each of these carries its own *ethos* for the applicant in question, and provides a wide range of ways for external organizations to see themselves in the MDC “story.”

The language of the announcement re-creates the MDC “story” in other ways as well. The CCP further specifies that they “will award at least half of available grant funds to small nonprofits” and “conduct targeted outreach to nonprofits that work in the 11 target zip codes.” That is, they leverage MDC data to specify who reads themselves into it. They even provide a list of ten “sample, target nonprofits” located in the “11 zip codes.” In short, as we see MDC data begin its route outward along this particular trajectory, we see how the “story” the MDC built holds in some ways and in others does not. The geographic representation remains, showing the foundation for a story of inequity, but the level of disaggregation has changed. The biggest change to the narrative,

though, is who is able to read themselves into it. Whereas the MDC “story” does not make claims about who is or is not able to act toward change (recall the “We All Have A Stake” language from prior chapters), the CCP has narrowed that range of possible interpretations for this particular purpose.

Moreover, the CCP not only conceptually narrows the range of possible actors in the story but they physically plant themselves at the center of grant funding activity by holding and promoting grant writing workshops in specific communities aligned with the MDC report. According to internal documentation, 80 organizations were represented in these workshops. As Loretta explains, this was purposeful:

The poverty report is the call to action. But then we also built around our structures to then say “OK, if you’re doing work in areas where there’s already a significant amount of poverty are you potentially more grassroots?” Yes, smaller organization. You may not be known to us and we may not be known to you. . . . So instead of saying “Oh, come to the Partnership, pay for your own parking, deal with downtown, whatever.” No, “We’re coming to you. We’re bringing all this information. And we want you to know that our money is here for you.”

The CCP effectively hacks the activity network through addition. They define and target a slice of a broader ecology of actors and objects they want to influence. Yet, this audience is peripheral to the original MDC activity network this research has illuminated so far. As the CCP takes up the data, transforms it as an object for use in a new venue, a broader network emerges around a circulated object that retains MDC traces (see Fig. 4.3, below). The CCP streamlines the movement of theirs and other organizations’ tools (in this case, money or resources), directing it in the way that they want, in the style they want, and to the audience they choose. As Gay and Hembrooke remind us, via Engeström, our relationships toward objectives are mediated by the tools, community, and labor at hand (5). The CCP effectively remakes all of these things through this grant

cycle and the attendant workshops. Communities (of non-profit workers) form in these workshops, tools (in the form of MDC data) are delivered in predetermined packaging and forms, and new forms of labor (grant writing itself, with all the types of work that brings) are introduced.

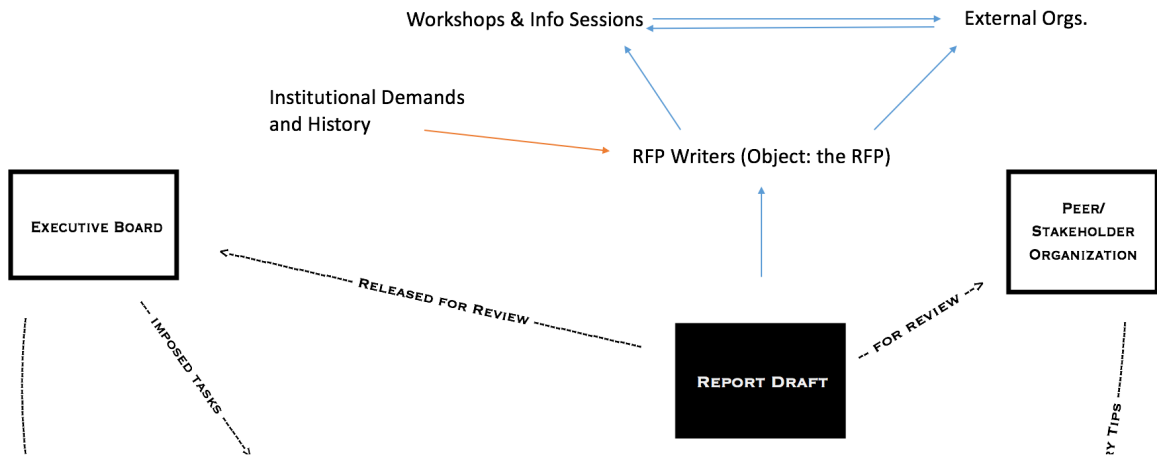


Fig. 4.3. Updated activity network representing the routes added by the City Community Partnership and their 2015 “Partners in Progress” workshopping and funding activity.

In the subsequent sections, traces of MDC data—remade to serve CCP grant funding purposes—will be uncovered in the grant application itself. That is, we will search for old tools newly packaged in an altered activity network. And in doing so, we can consider the ways in which the application itself is evidence of the “stickiness” of the MDC story, identifying which pieces carried enough emotional force for the CCP to remember it and act with it in this new context.

Ad Hoc Usability Testing

So what does it mean, then, for the MDC and CCP to construct such a feedback loop? The volatility of the activity/transformation process is driven home here: the CCP,

with Loretta at the helm, attempts to create an *ad hoc* version of a usability feedback loop to measure “mission impact.” That is, Loretta mixes motivations for constructing a grant funding process in this way, but falls back to a canonical usability research position of tracking how users of this document approach it to create knowledge or accomplish their particular task(s) (see Sullivan and Porter 1993). There is, however, an obvious sticking point here. It is impossible to say that the CCP functions as neutral observers. The act of constructing such a “test”—determining the “stickiness” of MDC reporting by planting it as a central object in grant writing activity—by default disqualifies it from the dispassionate stance required of both lab-based and field-based usability studies.

Far from Robert Johnson’s (1998) fascination with the “mundane,” the CCP grant funding cycle can only provide a partial and partially artificial view of the natural uptake and usability of MDC reports, data, and stories. Not everyone who uses it will be qualified to apply for the CCP grant cycle. Not everyone who uses it represents a non-profit organization. The most faithful reads of Johnson—those that prompt us to consider “the technologies that we hardly notice” in a turn to “everyday practice” (3-4)—call the grant cycle into question as a place to do so. This is not “mundane,” but in fact novel activity. Yet, at the same time, such artificially constructed throughways provide the means for those like Loretta to trace uptake and use through the entirety of a system, to register traces of uptake through the lifecycle of something like the 2015 MDC report. Paradoxically we are then both pulled away from the norms of traditional usability research (in its objective, iterative, and involved nature) while given the basic tools for experience architecture research. We are handed a slice of a named and bounded piece of an activity system to trace and observe—the means to “focus on use throughout the

system” (Pflugfelder 2017; 167)—even as the CCP actively chooses users and brings them into an artificial process where use is constrained in specific ways.

Channeling Gay and Hembrooke’s (2004) SCOT (social construction of technologies) framework, we get something closer to the truth of what the CCP constructs by way of measuring this semi-artificial user feedback. The socially-constructed nature of technologies (and thus activities centered on those technologies), calls upon usability scholars to consider “different versions of a design and various perspectives” on that design (16). In the stages of a design process, Gay and Hembrooke note a central theory to the SCOT framework, one of “interpretive flexibility,” in which the artifact is interpreted and developed through further use (17). It is perhaps unsurprising that the meaning of MDC “stories” go through such interpretive transformation. After all, the policy-avoidant *ethos* discussed in chapter 1 makes plain that the MDC has no interest in locking down a specific actionable meaning through their data writing. Yet, this is perhaps where MDC and CCP practices diverge from Gay and Hembrooke’s iteration of SCOT. For Gay and Hembrooke, “After several iterations, groups eventually share an acceptance or a conceptualization of the technology. The technology is conceptually ‘frozen’ in the view of the groups of stakeholders” (18). Far from being “frozen,” the MDC report writing structure is ripe for evolution: evolution via transformation in partner organization uptake and evolution through influence on future reports.¹⁵

¹⁵ Although beyond the scope of this study, the MDC 2016 report was built as an addendum to the 2015 report, going deeper into the “deep drivers of change” model to unpack the effects of multidimensional poverty on everyday life. In fact, each new report cycle builds upon or consciously refuses to build upon the previous year’s report. See Ch. 1, and the discussion of the “arts report,” for a broader conversation of MDC report topics and their evolution.

In short, Loretta's version of an *ad hoc* test of "mission impact" is fundamentally one of usability. That is, if we take Andy's transcripts and the MDC team's writing seriously, we should recognize that the twin goals of catalyzing action and influencing the discourses of the civic sectors are, in fact, good fits for tracking via grant proposals. Yet, in execution, Loretta short-circuits the naturalistic, dispassionate stance that contemporary usability studies call for. This calls on observers of this process to recognize the readily malleable nature of MDC ecologies of work, to the point of reinterpreting the report's packaging (its overall "story") right next door to the MDC meeting room. This is not to discount Loretta's attempts or the findings in the grant application data. This does, however, speak to the liminal spaces among design, usability, activity, and ecological thinking that the MDC exists within.

Unpacking Grant Application Data

There is ample evidence in City-Community Partnership internal reporting on the grant funding cycle that the pieces of the "story" the CCP added to the MDC's remained salient in their funding cycle. There are five top-line "facts" they pass on to me in their summary, and the first three are about who, exactly, was called to action in this process. The first points to the fact that 80 different organizations attended their workshops. Another is that 61 completed applications were received. The final states that among the 118 letters of intent that were received, the median annual revenue of the represented organizations was \$252,000. This is a vitally important number for the CCP. According to Loretta, such a figure proved success in funding smaller non-profits: "Every year that we've done Partners in Progress . . . the median has been \$1,000,000," she tells me in an

interview. She tags this explanation by saying, “like, that tells you that’s what we’re getting” and adds that the organizations they funded in this most recent round are “significantly more grassroots.” Where the Metro Data Coalition was hamstrung by a policy-avoidant *ethos* in naming specific organizations or initiatives, then, the CCP rounded out this aspect of their “story” and called on specific organizations—literally meeting with them and assisting them in the grant writing process—to become “characters” in their own. Where the MDC was unable to call on specific groups, CCP activity sparked a new story to be written with a known cast of characters. CCP writers go as far as to name organizations that operate in these areas, too. The internal documents include the names of partner non-profits as targets (multiple of whom later received funding in the grant cycle).

The application document itself suggests further storytelling liberties taken by CCP writers. Whereas MDC reports refrain from suggesting even a range of potential actions, the CCP claims the actors in question—those responding to the actionable data—should already be actors in the areas outlined in the report. They draft new stories that share affinity with MDC data stories, and then take the liberty to develop more granular detail within this narrative frame: *these types of actors will operate in accordance with this data, focusing action in these ways*. The MDC report is never named in the application itself, even though the target zip codes are, and by all accounts the organizations that applied were aware of the MDC report and its impact on this grant funding cycle. Applicant organizations are asked a range of questions, some seemingly bland and others quite critical. A sample of the application questions follows:

- What is the organization’s mission?
- Identify the general nature of the work your organization does.
- In which of the zip codes does your organization offer programs or services?
- Describe the community needs addressed in target zip codes.
- Describe the programs/services delivered in target zip codes.
- In what location are these programs/services delivered?
- Provide details about the people you serve (age, income, race, educational attainment).
- Describe the effectiveness of these programs or services.
- Please describe your capacity building project.
- Provide three of the project’s main objectives.
- Provide details on the efficiency, effectiveness, and sustainability of this project.

In brief, MDC “stories” are only able to hint at the actionability of their data. The CCP “Partners in Progress,” capacity building grant application, conversely, directly interpolates applicant organizations into a new “story,” a sequel to the MDC’s, that hypothesizes ways in which the data can be taken up, used, and acted upon.

The zip codes themselves become the most salient MDC feature to translate directly to the CCP’s extension of their story. It is one of the more obvious pieces of evidence of “stickiness,” then, as all 11 zip codes are named among the eventual awardees, albeit some more than others (see Table 4.1, below).

---02	21
---03	26
---08	26
---10	24
---11	25
---12	23
---13	22
---14	24
---15	26
---19	22
---18	18

Table 4.1. Data on mentions of zip codes on grant applications measuring awarded grants only. Max possible: 28. Three zip codes received 26 mentions: ---03, ---08, ---15. The first three digits of these zip codes are blinded for organizational anonymity.

Even here, however, we see only traces of MDC influence rather than a direct transplant of data. Recall that the MDC, in a bid to make their “story” both more identifiable for readers and more localized in its actionability, refrained from presenting data at the zip code level and instead transformed *RStudio* to overlay neighborhood boundaries on census-tract-level data. While these 11 zip codes contain the neighborhoods originally cited as most “multidimensionally poor,” this level of disaggregation also goes broader, and ultimately covers nearly a quarter of the area of the city, implying actionability in new ways and in new places.

If the City-Community Partnership re-creates the data, transforming its “story” via statistical and visual means, we can locate other areas of transformation too—this time by the grant applicants themselves. Studying self-reported organizational missions in the grant applications of the 28 awardees we—possibly as expected—find much language that corresponds to that of the MDC “deep drivers.” Yet most surprising is one salient addition brought on by nearly a quarter of awardees: work centering on incarceration and legal support (see Table 4.2, below). This is a new development in the

broader “conversation” or the circulation of data in the broader activity network of partner non-profit and private civic actors. In other words, this is evidence that the “story” evolves.

Areas of Focus	Number of Organizations	Organizations (Acronyms)
Education	15	AAP, HFK, CASA, CYTE, LSP, 2FF, CC, CP, RCDP, KRM, ACC, CCD, LC
Jobs	11	APP, CYTE, HFK, PM, CASA, SLCM, CC, RCDM, YB, DFS, JFCS
Quality of Place	12	LC, 2FF, MBB, CP, CFH, KCAH, BCD, LMAH, KRM, ACC, SA, PEP
Health	7	CASA, SLCM, MBB, YB, BCD, ACC, SA
Incarceration and legal support	6	RJL, PM, LC, DLK, CC, MBB

Table 4.2. Count of most popular areas of focus for CCP grant applicants. While the top four correspond directly with MDC “deep drivers,” the fifth—“incarceration and legal support”—introduces a new “story” element that remains foreign to MDC writing. Acronyms used for organizational anonymity.

“Stickiness,” then, can be understood here through the features of newly-formed stories, particularly the stories we see evolving in the six awarded organizations who in their application documents focus on issues of incarceration. The update of the MDC data in these stories is what “sticks,” and what is added serves as evidence for the ability of stories to mutate and evolve in public circulation. This is not surprising, necessarily (see Ridolfo and DeVoss 2009, Chaput 2010, Gries 2015). But what remains interesting is that such transformations are present in a “hacked” network, posited by the CCP, to track the “impact” of MDC data in spaces that necessarily require transformation and reconfiguration. In other words, the top four rows of the table above may point to the most direct influence of MDC data on grantees, but the fifth row shows organic

transformation of that data for new users, contexts, and activity. To paraphrase Catherine Chaput (2010), rhetorical situations are decidedly *not* determinable in our present hyper-connected moment. Each organization taking up MDC data emerges within a novel situation with different discrete contextual elements. The multiple “publics” MDC data circulates through determine the final form(s) of the “stories” that data tells, dependent upon the individual circumstances and contexts these public storytellers find themselves confronted with. Though it sounds trite, organizations for restorative justice are inclined to carry those themes and that data to the page when filling out CCP grant applications. A career services organization is going to spin the data to be precisely about jobs.

The organizations that focus on incarceration and legal aid take a wide-ranging view of the connections between MDC work and their individual missions. As they carry their own organizational mission, history, and *ethos* to the table, traces of those things necessarily inform the way the corrections and legal systems are discussed. Some, such as RJL, discuss their work directly in terms of “victim,” “offender,” and “community.” Without any direct reference to the MDC’s other “deep drivers,” they simply outline their restorative justice and “diversion” programs “to prevent youth from further penetration of the justice system.” Others like MBB take a “holistic” approach, addressing “spiritual, emotional, psychological, and educational” needs for the transition of the incarcerated back into society. They cite recidivism statistics, and include evidence of racial discrimination in the criminal justice system (i.e., disproportionate numbers of people of color imprisoned, etc.). Such a wide-ranging, “holistic” focus goes beyond RJL’s vision in connecting aspects of employment, education, and healthcare access to issues of successful transition back into the wider Gateway community. And yet others, like LC

and DLK, consider incarceration as a piece of—but not central to—their work. For organizations like these, questions of immigration and caretaking for children will lead to issues of incarceration (i.e., advocating for underprivileged or marginalized people in the criminal justice system).

In brief, though the CCP attempts to remodel the activity network in such a way as to determine qualitatively what it would mean for MDC data or MDC stories to “stick,” other nodes on that network disrupt the planned feedback loop. In attempts to measure organizational “impact,” the MDC emphasizes things like “two-by-fours,” central data points, and their “deep drivers.” Yet, evidence of MDC data or stories becoming “sticky,” gaining traction in a broad network of civic actors and organizations, is found in transformation rather than fealty to the original rhetorical packaging. Uptake and transformation of these stories—and even their omission—across the ecology points to MDC rhetoric’s staying power and malleability. Variably, such transformations can be as distant from the MDC “stories” as the RJL’s mission statement, or as faithful to that story as something like the local affiliate of the Salvation Army, which directly cites MDC reporting in its application language:

We provide tangible and spiritual support to help families and individuals rebuild broken lives, to help break the cycle of poverty. We do this every single day because we treat others as we would hope to be treated. That is our “why.” In Gateway, 1 in 7 lives in an area with multi-layered poverty, with multiple barriers to well-being (Metro Data Coalition 2015). 12% of Gateway Co. residents live below the poverty level of \$20,410 for a family of three. Families with twice that income cannot afford rent each month. ([Redacted] 2017)

The applicants go on to tie their mission to the other key areas of MDC research, touching on their meal programs (health), shelters (housing, a sub-category of quality of place), employment programs for veterans (jobs), and their day camps (education).

Organizations such as these populate the first four rows of table 2—those applications that strategically touch on the key elements of MDC *ethos* and publications. These organizations make the choice to *not* transform MDC data into something new, toeing the rhetorical and procedural lines in a bid to become one of the trackable actors using MDC data.

Crucial here is that there is no one way to determine the “stickiness” of a Metro Data Coalition story. Transformation can be qualitatively understood and adoption of talking points can be counted, but “stickiness” implies neither, exclusively. Within the range of possible uptakes demonstrated across the 28 sample application documents, we see illustrated a range of iterations of a story of “multidimensionality.” Applicants necessarily understand their own missions as entangled in what the MDC writes about—healthcare, educational attainment, poverty, transportation, and so on. And taking these 28 samples together, we see a broad, sprawling vision of multiple logical endpoints of those entanglements. These stories variably rely on and reject core tenets of the MDC *ethos*: the linguistic paths, the deep drivers, even the two-by-fours. Some of these applications of the MDC story will read completely foreign to the original report. With the construction of this grant application process, then, the CCP considers one way of gauging potential influence or “stickiness” in the world. Yet they do so knowing that it is not an exhaustive test of such “stickiness,” and enter the process already skewing the results. In brief, the CCP creates artificial circumstances in order to consider the broad influence of MDC writing. Such a test within the system is necessarily *ad hoc*.

Yet, the *ad hoc* nature of such testing is natural, and possibly even necessary. As Patricia Sullivan (2007) has recently described recent developments in UX research:

Exerting research control is not inherently problematic; sometimes it is needed. Why do efforts to control user research matter to user experience (UX)? One of the reasons it matters is that broadening our knowledge of user experiences enriches our abilities to understand users, use, and experience in ways that positively impact our capacities to design, develop, and refine the sorts of products, environments, and interactions that support users and their needs. (18)

In other words, with all the qualifications at hand we can still consider the CCP grant cycle a useful place to discuss the ways in which the MDC-as-designer could better write reports, enhance the non-profit and civic work environment, and design the best possible encounters with their stories for the most effective uptake of their data and stories. What Sullivan gets at here is that it is precisely the unpredictability of the “Partners in Progress” activity network that CCP and MDC writers should learn from. If they are to be responsive to the needs of their users—and to the nature of the activity networks they operate within—a clear message in the feedback loop has arisen: *you need to talk about incarceration and our legal system.*

Ecologies, Circulation, and Velocity in MDC Technical Writing

Though the SCOT framework is narrow for understanding MDC writing, it does speak to the socially constructed nature of their work, and the work that Sullivan points to above. From my earliest observations, it was understood that MDC “storytelling” was shot through with institutional, technical, and networked considerations that shape what is and is not said. True to cultural understandings of “storytelling,” there’s a co-constructed nature to the MDC’s work: they take in and re-make stories from numbers, put new stories into the world, and allow them to be remade at the whims of whichever way the broader network of non-profit organizations turns at that time. There is no doubt

that incarceration shows up in 2017 because discussions of incarceration are part of the broader political and cultural moment in the U.S., for example. What is less clear is whether the MDC will ultimately respond in kind.

Rhetorical scholarship has contended with this kind of ecological thinking for some time, speaking to broader material concerns that have arisen in the past two decades. Jenny Edbauer Rice's 2005 article "Unframing Models of Public Distribution: From Rhetorical Situation to Rhetorical Ecologies," and her later book *Distant Publics* (2012), are perhaps two of the most canonical works in this tradition. At its most basic, Rice's work prompts scholars to re-examine rhetoric as ecological rather than rhetorical, arguing that the circulation of rhetorical artifacts and their continuous uptake and repurposing effectively breaks down a more situational view. Rice's vision of rhetorical activity is a mobile one, not confined by Bitzer's notion of "context" but shifting consciously—spreading and transforming within a distributed ecology (2005; 20). And through these transformations, Rice tells us, we understand a mutuality of influence, where later rhetorical uptake transforms how observers or participants understand earlier iterations of that rhetoric. In other words, a rhetorical ecological model for understanding MDC work would imply that the way partner organizations took up and reinterpreted MDC writing in terms of, say, incarceration, informs the way the original MDC report rhetoric is viewed. Perhaps it was *always about* incarceration, even if incarceration was not invoked directly. Or perhaps policy avoidant *ethos* simply makes such rhetoric ripe for latent transformation of original meaning.

Rice's work on ecologies is taken up and supported elsewhere in rhetorical theoretical scholarship, too. As previously mentioned, Chaput (2010) places ecologies in

a neoliberal, affective moment, considering the transformation of rhetoric a staple of a hyperconnected age that is over-determined by phenomena as diverse as the fluid identities of audiences to “transhistorical connectivity” and the “everyday activities” rhetorical production stems from (20). Laurie Gries (2015) refers to such interconnected, networked phenomena as “constituted by flows of historical and cultural forces, energies, rhetorics, moods, [and] experiences” (27). Her “principle of transformation,” moreover, points to the “futura” of rhetorical action as a means to honor its “becoming,” the state of “flux” rhetoric finds itself in as accruing meaning over time and through an uncertain trajectory into the future (288-89). That is, something like the MDC report gains meaning through uptake when transformed according to the “cultural forces” or “moods” of the moment. Jim Ridolfo and Danielle Nicole DeVoss (2009) have similarly staked out the area of “rhetorical velocity” as a theory of planned delivery for uptake and transformation. Yet even in their telling, not *all* potential uptake can be accounted for or “anticipated.” They thus hypothesize planned delivery that accounts for, at least, “ranges for various types of appropriation, recomposition, and remixing by different composers.”

Professional and technical writing have similarly taken up and applied ecological thinking to their practices. Organizational writing, for one, has long been concerned with influences beyond what classical rhetorical situation models can account for (see, for example, Driskill 1989, Henry 2000, Spinuzzi 2003). M. Jimmie Killingworth (2005), puts such ecological thinking into sharp perspective, however, noting that professional writing, as a scholarly field and practice, fundamentally resists an ecologically-informed pedagogy due to its inability to be “localized” as a practice.

[W]e are talking about an activity developed within a modernized culture, and like all activities and artifacts associated with modernism, writing

tends to pull free of place. At best, it is foot-loose, mobile, and portable (as in exportable and importable); at worst, it is alienated, abstracted, and homeless. (366)

For Killingworth, as for Driskill, Henry, and Spinuzzi, the very features that drive the fields of professional and technical writing—its breadth, global circulation, digital embrace, and unpredictability—make it resist easy understanding. As Stacey Pigg (2014) and others have noted, the introduction and study of social media as a tool of professional writing has only served to further distribute such rhetorical action, allowing us to structure our own interpersonal networks while having access to those of millions more for future communicative action (70). And just as organizational flux and social media practices further broaden our ecological lens on technical writing, Julia Mason (2013) reminds us, too, that underlying much of this ecological breadth is an ecology of genres and transformations that constitute activity. Using gaming communities and “player contributions to gaming’s genre ecologies” as a baseline, Mason calls on us to consider the weight and importance of technical communication in these everyday spaces (229). That is, technical communication runs through gaming communities in ways that prompt the construction of activity networks, and by jumping into them, participants in this activity fundamentally transform the genres that circulate.

In brief, the Metro Data Coalition and City-Community Partnership enter an activity network and broaden it to an ecology in this way. They put ideas, objects, and hacked, circular activity loops into a community of civic actors and call on them to act in response. Or, more precisely, the introduction of their research into this network prompts others actors within it to respond. Those actors variably adopt and transform the object for new use in new contexts. In these partner organizations’ writing we find some traces

of MDC data and stories, but those traces are only understood as there when we know what it is they originally responded to. The mission statements, reports, and applications are just a few genres that constitute such activity. But understanding these phenomena ecologically allows us to focus on the emergent and temporary influences foregrounded *en route* to more substantive action across the communities (or neighborhoods and zip codes) they serve.

The Futurity of MDC Data/Stories

The vistas of professional and technical writing has already been broadened substantially by ecological thinking. While rhetorical scholarship prompts our understanding of ecologies through the symbolic action of rhetoric, technical and professional communication is immediately and regularly reminded of the stakes:

Technical communication is ubiquitous and frequently invisible. Outside of the problems tackled by practitioners who officially wear the professional title are fields of problems silently mediated by documents. These problems resolve not just as documents but as things in the world: rockets that launch into space, patients who follow courses of treatment, help centers that deliver solutions, and shipping companies that deliver packages. (Read and Swarts 2015; 14)

For Sarah Read and Jason Swarts, the consequentiality of technical communication and the scope of the ecological models we apply to it makes it imperative to consider the movement among networks that documents and other technical artifacts take, even when the work of technical writing is difficult or impossible to observe. The objects of potential futurity—the document(s) under review or the products of other technical communication work—becomes a pit stop on a broader network. The development toward futurity thus becomes the crucial question: *how can we better design the*

networked workflow to lead to more desirable outcomes? Or, to put it in the language of the MDC: how can we craft a document that has stickier data points and stories?

One potential answer is to advocate for an understanding of the MDC (and organizations like them) as taking up such questions within the purview of usability studies. They hack their activity network to build more immediate feedback loops, circling it back to the CCP, as a way of studying the futurity of their documentation, data, and “stories.” Observing such motion to its end point, the MDC would believe, would allow them to study the velocity of that document: where it went, how it was taken up, and how it was transformed for future use. But if we are to take the ecological models brought to us by rhetorical studies, then such network hacking also creates a broad, publicly-informed understanding of the type of civic work that the MDC wants us to pursue. The life of MDC data is one of social construction, flux, futurity, and consequentiality. As the last few chapters have uncovered, the “rawness” of data is never debated because it is assumed to be “cooked” in its earliest stages in Census and Federal Reserve databases. Therefore, its future, too, should be assumed to be one of emergence and becoming, of transformation and social construction.

A second possibility for understanding the futurity of MDC writing is through a lens of rhetorical velocity. The MDC hacked activity network can only work insofar as we study only the grant cycle. That is, if the question is whether or not the report was “sticky” enough to prompt multiple applications for this grant cycle, then the answer is, of course, that it was. Yet, as a means of studying “impact” more broadly, such hacking does not work. The MDC is ultimately tied up in multiple articulated networks—technical networks, bureaucratic ones, discursive networks, and so on—but to focus on

the grant cycle is to assume that one alone can paint a fuller story. Ultimately, this is a rhetorical problem, then, and one that the concept of rhetorical velocity allows us to consider more deeply. Yet, while rhetorical velocity is contingent on seeing visible traces of rhetorical production delivered strategically for uptake, such visibility in technical communication—as Read and Swarts remind us—is rare. In short, the CCP is not fully capable of measuring impact to the extent they want with the mechanism they have created here. We need another model.

If we consider, for example, the work of RJL, one of the six awarded grantees to include incarceration and legal assistance in their mission, we note few recognizable traces of MDC work. The longest description of their organization, in fact, makes no mention of the other MDC deep drivers: “Research has proven restorative justice practices have shown a significant reduction in youth recidivism while increasing victim and offender satisfaction with the justice process and reducing post-traumatic stress.” They suggest that their focus is instead on repairing relationships as a result of criminality, including “How the young person will reduce their risks of engaging in criminal behavior.” The focus here is recidivism, which conceptually can be tied to the multidimensional and interconnected nature of the MDC’s other deep drivers: incarceration clearly impacts future employment, educational attainment, and access to healthcare; criminality is clearly a problem for the amorphous concept of “quality of place.” However, outside RJL’s invocation of “all 11” zip codes in their application, there’s little other tangible evidence the “linguistic paths” those like Andy want to point to as vital to MDC’s impact.

In RJF's other public-facing writing, there's some sense of MDC traces. Much like the MDC, they often present their data geographically (see Fig. 4.4, below). They present data on the crimes committed by their clients alongside zip codes where crimes occurred. And those zip codes—as their grant application suggests—match those the CCP and MDC want to focus on. In all, their data presentation is heavily quantitative and tied up in a “storytelling” discourse: the types of crimes committed (i.e., “against persons” and “against property”), the demographics of offenders, the rate of “closure” (i.e., number of successful mediations between offender and victim), are tied up in a story of overall effectiveness of the organization. Yet, beyond such formal cues, there is little evidence that the RJL is picking up on the “linguistic paths” or other terminological components of MDC writing. Ultimately, then, even rhetorical velocity falls short, because the “stickiness” of MDC writing is not terminological, but ideational. The effectiveness of the grant cycle in pointing out the “stickiness” of MDC stories is that the data points us to new networks created, new nodes on ecologies uncovered, around concepts like “multidimensional poverty” and the geographic, neighborhood focus of the MDC report. The rhetorical ecology in which MDC stories circulate may, according to the writers and project managers themselves, form around their “deep drivers” and other linguistic paths, but evidence of ideas “sticking” is in the mutation of this ecology to include new components. Restorative and reparative justice, legal support, and other new additions—such as energy conservation, childcare, advocacy for victims of trafficking and sex workers, all of which show up in the long-form data—are all evidence “stickiness” in as far as we are prepared to focus on the *futurity* of MDC data and stories.

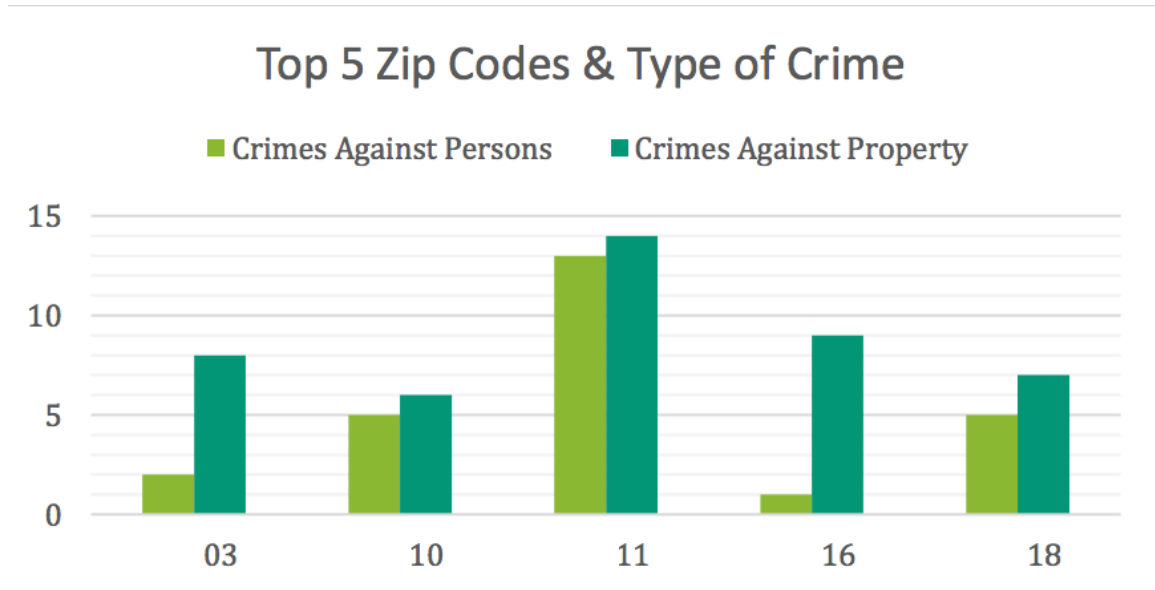


Figure 4.4. Data visualization from RJF 2017 report to stakeholders, demonstrating the geographic focus of their data against crime “types.” First three digits of zip codes are masked for organization anonymity.

The endpoint of “stickiness” may then be one of dilution. This is not to say that the stickiness of an MDC story is too weak to hold, but understanding the futurity of MDC writing means accepting (a) the often invisible, transitory, and temporary nature of that story, and (b) that the MDC cannot and should not control the way their stories are taken up. Andy’s “linguistic paths” don’t have to be visible for us to understand that an organization advocating for sex workers can find affinity with the “multidimensionality” of poverty in cities like Gateway. Pointing to job training, community renovations, and mental health services proves that such advocacy networks see the ripples of their work across areas of employment, education, healthcare, and community building. Similarly, an organization focused on reparative justice can see themselves as advocating for long term stability of communities and access to opportunities for their clients. There is no doubt, then, that these and other applicant organizations saw the multidimensionality of the issues they tackle, even if it was not as explicit as following a particular “path.”

The methodological issue for tracing impact, and the rhetorical problem of doing so, is thus that the MDC does not influence conversations so much as facilitate the creation of new nodes within the ecologies they work through. That is, we cannot keyword search their deep drivers to come up with clean, quantitative or qualitative explanations for their influence elsewhere. If the work of technical communication is fundamentally invisible, that is, then there is little point in looking for pieces of it circulating widely. Organizations can dip into discursive keys for the sake of discrete tasks—like garnering funding from a donor by strategically adopting the terms they want to see used—but by and large we do not and will not find MDC language transforming the foundational mission statements of partner groups. The MDC’s “stickiness” is fundamentally multidimensional and should be approached as such: it is not about tracing terms or visuals outward but instead about how those terms build new networks of civic activity. The futurity of MDC writing is a phenomenon born of these networks, and traces of that futurity are found in the breadth of the ecology that takes it up, responds to it, transforms it, and puts it to use in new ways.

What follows here will bring us to the present (as of this writing). In it, I consider the ways in which the Metro Data Coalition responds to the feedback they have gotten through City-Community Partnership grant cycles and elsewhere. I do this to posit ways of understanding both futurity and stickiness as problems for technical communication and rhetoric. If we are to consider the ways in which the work of technical writing becomes “invisible,” we will need to consider what it means for documents to cycle outside of known activity networks into broader, more public ecologies, and return, changed, to a point of origination. Doing so is vital for organizations like the MDC who

want to consider the impact of their communicative work. And more crucially, doing so remains vital for understanding how rhetoric and technical communication can inform the ways we think about and deal with statistical data as writers and inhabitants of our own ecological contexts.

CONCLUSION

OPENING AND CLOSING FEEDBACK LOOPS

As of this writing, the Metro Data Coalition is set to publicly release its 2018 report within a week. This is the report that most immediately follows Julie's—the Urban League CEO's—indictment of perceived inaction in the previous cycle. Since observing that moment, I have returned to where this project began: Andy's description of the “neighborhood maps” as “what we're gonna do.” Out of context, it is fairly unclear who the “we” in that statement is. In its context, it is only slightly clearer. Prior to that opening moment, I asked Andy explicitly who he hopes is reading MDC reports. He says,

So I guess, to me, the message needs to get to as many people as we need to align the way we talk about an issue as a community, and to galvanize people to action. A little bit of a cop out, but it's also true. I don't need our report to be read by Joe Schmo in the street. My brother-in-law is not gonna read what's goin' on, but—the medical community where he receives his care, the soup kitchen where he volunteers his time, uh, the, you know, school system where we send our kids all need to understand the point that we're trying to make. So it's part of why we really focus on story and digital appeal and something that's gonna click in people's heads—they're gonna remember the “2x4.”

Andy is, and remains, indebted to a vision of a clear and predictable activity network of MDC reporting and writing. If the right people can remember the 2015 report's “2 x 4,” that is, then it will alter the way people working in healthcare, food access, education, and elsewhere do their work and serve their communities. Moreover, he remains indebted to a vision of rhetorical circulation that suggests the most aesthetically pleasing or

eloquent version of this project is all that is needed for success. This, as we have seen, may be slightly misguided.

In chapters 1 and 2, I overviewed the ways in which bureaucratic and technical contexts hamstrung MDC design activity, and traced some of these influences further to articulate how such realities affected the future status of the report. Chapter 3 bore this out most profoundly, holding up Julie King and her annual responses to MDC research as testament to the shortcoming of the rhetorical model the MDC holds. In chapter 4, I demonstrated Loretta's and the CCP's attempt to track "mission impact" through a particular hacking of their known activity network. Here, again, unpredictable things occurred, such as when legal support and incarceration proved to be almost as vital to funded programs' missions as the MDC deep driver of "health." In brief, the arc of this project represents an effort to trace seemingly innocuous phenomena in an organization's writing process outward. What I found, instead, was a messy ecology of writers, organizations, discursive cues, tools, and activities that mark a certain unpredictability in MDC research, writing, and circulation processes.

This is not to shortchange the capacity of workplace observation or certain theoretical frames to make sense of such workplace and writing activity. As we have seen, these heuristics excavate what are profound moments of active creativity—and the multiple forms that creativity takes—in the broader MDC writing process. Whether it is opening a feedback loop to test report language, grappling with new coding languages in digital spaces, or designing a new grant funding process, the research subjects here engage in inventive activity throughout each report "cycle." It is tempting to say to practitioners, then, that there are, simply, moments of unpredictability. So what can we

do? By way of one answer, my observations suggest is that we can remain both vigilant and imaginative in our writing processes, be they in the classroom, the workplace, or in academic research. The practices celebrated here are the novel ways writers open their activity networks, routes of circulation, and new feedback loops, and their ability to reflect on how this re-invents the very networks writers work within. Such unpredictability, and our responses to it, is a starting point.

Shaping Future Ecologies

Julie, of the Gateway Urban League, is an unsung hero in this story of the MDC, particularly when we consider the long-term effects her intervention has had on MDC writing. Recall from chapter 3 that she was the figure who over the course of multiple years called for action on data that the MDC had been putting out. At the end of the 2015 report cycle, she referred to MDC data as “things we already know.” More than a year later, as the MDC themselves pulled back from stories of segregation, she neglected the new report in favor of reflecting on the actions (or inactions) of the previous year:

We’ve used this data every day, responded to it every day, [now] we need to put real effort into moving the needle on what this is saying. . . . If you identify redlining, as these maps more or less do, then you have to deal with institutional racism. If you want to talk about putting money into these. . . districts, then you need to start talking about black ownership.

What the iteration of this story in chapter 3 does not account for is that, moments before, the Mayor had touted investment in West End businesses as something “being done” to combat multidimensional poverty in the areas most in need. Julie, that is, is responding here to a new event in this rhetorical, writerly ecology, as it comes up. Moreover, she does so in a way that pulls from a broader cultural story about the difference between

investment in black communities and black ownership of that investment. In that room, that afternoon, her story “stuck” because it evoked a larger story of minority disenfranchisement, of redlining and the residue of redlining in Gateway.

Julie has some hope for the overall “stickiness” of MDC stories, though. In interview transcripts, she presents herself as operating in, frankly, different networks. Yet, she imagines that the futurity of MDC data will be one in which Andy’s “linguistic paths” will become second nature for civic workers, government workers, non-profits, and other community stakeholders to take:

I think that ultimately that data is going to be used to gather people to think about strategically investing in West Gateway. And here’s what I think is going to happen: Between the MDC research and the Redlining report that was just recently released, it is undeniable that what has happened in this part of our community was done intentionally, by law and policy and everything else. So now in order to dig out of this hole it is going to take the same level of strategy and intention to invest that was used to divest. Those have to go together. So I would imagine in the next 12 months we’re going to really see a bigger plan. So you see the Gateway Forward plan—I think all of it—sometimes it’s like my kids when they come home from school. Sometimes they’ll do something and I’ll say “Where did you learn that?” and my oldest daughter always says, “I knew it. I’ve always known it.” Like nobody ever taught her anything. She’s just always known everything. I think with—when you get that data from MDC and others you hear it so much you don’t even know where it came from but it begins to inform your decisions. It begins to inform policy. It because to inform meetings. And I think that’s the kind of thing that’s happening.

Julie points to multiple pieces of her own activity network(s) when considering data points that have been deployed and “stuck”: “you hear it so much you don’t even know where it came from but it begins to inform your decisions.” That is to say, that the MDC is not alone in their effort to shape civic action through data-driven research and publication. Julie knows this. The MDC knows this. But what a moment like this suggests quite clearly is that Julie’s own work ecologies—largely separate from the

MDC's—are what inform her reactions to MDC reporting. When asked about how MDC writing and the 2015 report affected her work at the Urban League, she deflects:

What I really need to do is tighten up what we have right now. So as a result of that data—and I guess things that I had already known—we have a lot of work to do in our workforce department. So we gotta do some turnaround pretty quickly about how we do business and how we deliver. So did it come from the data for me? Not necessarily, because I don't think you live and do this kind of work and not have an idea of what the data is. But it's nice when it's packaged in a way that others can receive it. It makes the conversation a little bit easier; it explains it a little bit more.

Julie sees data as things out in the rhetorical ether. Every mention of data is coupled with “things I had already known.” Moreover, she suggests that future actions were not even necessarily informed by what the MDC did. Her piece in this ecology, as far as those like Loretta are concerned, is a negative one. Julie does not concede that the MDC's “mission impact” reached the Urban League offices. The MDC did not “necessarily” inform Urban League actions that followed.

Certainly, this seems paradoxical. Of course Julie's work was affected by MDC writing: she showed up and responded to it *twice*. (And as of this writing is scheduled to do so again.) So what I suggest, then, is that Julie's “impact” on MDC work is ecological, not necessarily a piece of the trajectory away from MDC research and toward the creation of, say, a particular new workforce program. In such a sprawling ecological framework, there is no one-to-one fit between a particular data set and a particular activity that results from it. Ecological thinking on MDC writing thus allows us to see Julie as a key piece of MDC networks even as she believes herself to be slightly separate from them. Indeed, as we see, her words to and about MDC data serve to flesh out the MDC's perception of these networks and ecological home, prompting profound temporal and spatial shifts in their practice.

Opening and Closing Feedback Loops

There is a disconnect between Loretta and the CCP’s concept of “mission impact” and how the MDC’s position shifts as a result of Julie’s engagement with their work. It is a disconnect between a unidirectional model and a circular, iterative, one. Both of these models suggest a long temporality—both the “mission impact” and the iterative models take shape over time—but the goals differ. Loretta, with some success, sought to imagine a way in which MDC’s “impact” could be tracked. The jury is still out, however, as to what has changed materially as a result of CCP funding those particular projects.

Conversely, the MDC team ultimately chose to respond directly to the “sticky” story of race that has been increasingly present in their work ecologies. There is a much more in-house material change. The 2018 report is due for public release in a matter of days. And while the previous report fell short of meeting Julie’s threshold for actionability, the MDC team appears to have made a concerted effort to center discussions of race, gender, and geography in their reporting. They open with such language, committing themselves to this focus: “To help highlight and catalyze activity to address these inequities, MDC is committing to analyze and highlight racial, geographic, and gender gaps *everywhere possible* alongside measures of overall community progress” (emphasis mine). This declaration of commitment, “everywhere possible,” marks a major shift in MDC writing. They make real attempts to become responsive in acknowledging their accountability to the entire Gateway community and their accountability to “catalyzing change” by focusing on communities who have long been underserved. The report is organized in such a way where each new data point is coupled with a visual that disaggregates the data by race, or geography, or gender (see Figs. 5.1 – 5.3, below).

Homeownership, Affordability and Race

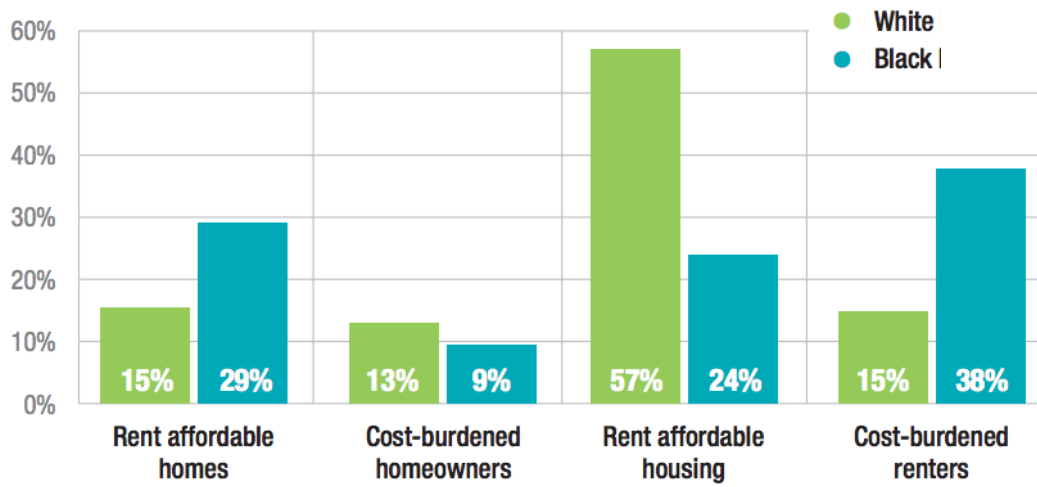
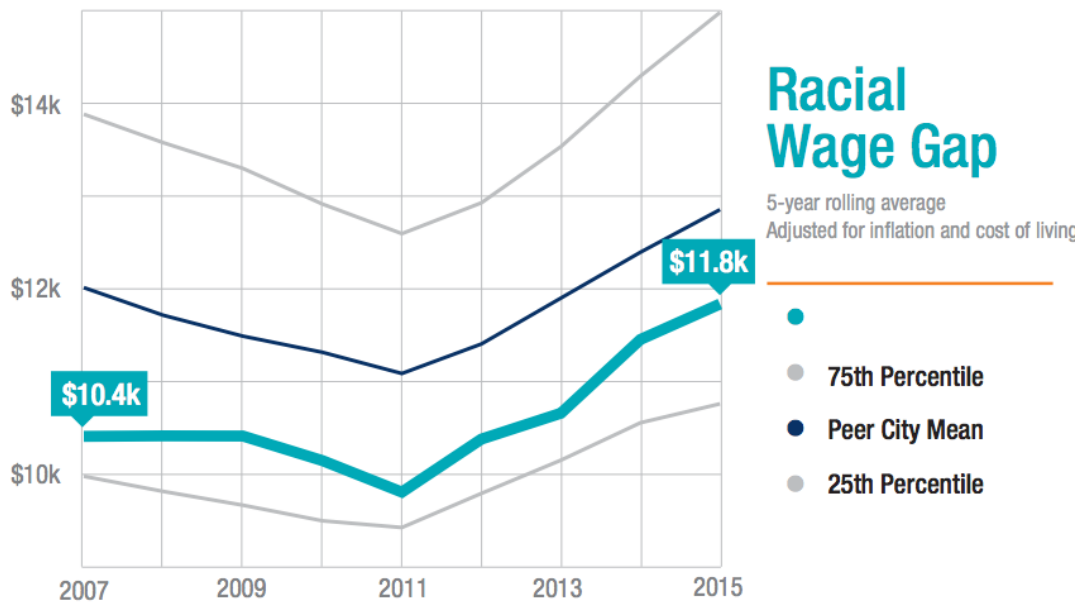
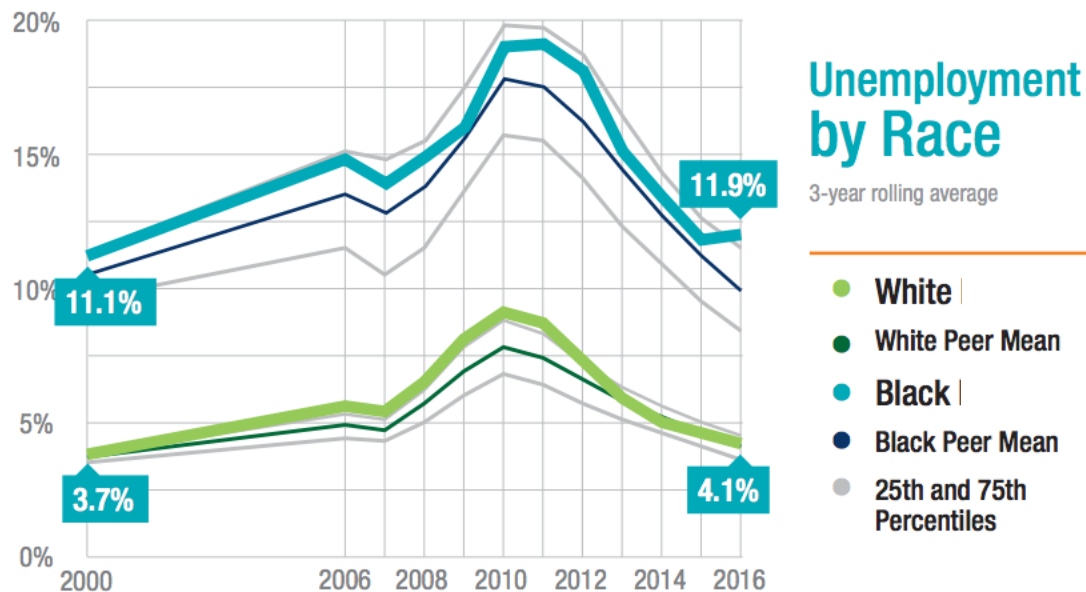


Fig. 5.1. Graph from 2018 MDC report, representing homeownership and cost burden by race.



Although the wage gap between Black and White residents is lower than the peer average, this is mostly due to the relatively low wages of White residents and not due to high wages of Black residents. The wage gap has been increasing since 2011.

Fig. 5.2. Graph from 2018 MDC report, representing wage gap between white and black Gateway residents. The corresponding text fleshes out a “story” found in the blue line, representing Gateway.



The unemployment rate for Black residents is several times larger than that of White residents. The 2017 unemployment rate was 3.6% for White residents and 13.5% for Black residents.

Fig. 5.3. Graph from 2018 MDC report, representing gap in employment between white and black Gateway residents.

The MDC considers the futurity of their data in response to what has happened in the past. Julie King, and her explicit call-to-action in the previous year, called on MDC writers to work through data on racial disparities but—unlike the 2015 report’s race map—make it central to their final product, even central to understanding their own “deep drivers.” In other words, as much as the MDC tried to make their “stories” “stick” in my time there, it was ultimately a story Julie was a part of that stuck for them. For those like Kristen Seas (2015), “stickiness,” or the rhetorical restructuring of attention, goes both ways:

[W]hat is rhetorically effective can be measured only in hindsight—and only by considering the changes we see after the tipping point has passed. The outcome, and thus apparent effectiveness of our rhetoric, can just as

easily be attributed to the threshold of the auditor, the environment in which that person encountered the message, and/or the structure of his own social networks. (63).

For Seas and others in this ecological vein, rhetoric—and markers of effectiveness of that rhetoric—mutate out in the world, often independent of any single recognizable rhetor.

While there is no doubt that Julie is a force in shaping the present report, the “stickiness” of her message is also tied up in a recent history of social justice work around Black lives. Issues of incarceration, police brutality, access to things as simple as education and clean water, disparities in healthcare, gentrification: all of these become touchstones of what Julie said to the MDC and the assembled guests.

Julie provided feedback to the MDC—perhaps feedback it took too long to consider. But she represents a particular type of feedback loop that professional and technical writers should consider in our present, ecological/viral moment. Julie’s invitation to the original forum was a particular construction of the activity network over multiple years, yet it was one that, for the MDC, proved unpredictable. Their adaptive, creative response is then found in the ephemera of the most recent MDC report. In the vein of Timothy Morton (2013), as we approach this series of rhetorical objects—the MDC report, Julie’s response, a second report, an unexpected response, and then this final report—the traces of other phenomena emerge. The closer we look, the more emerge. Implicit is a debate over how to talk about racial discrimination, how to address an unresponsive local government, and how to move from the lip service of social justice talk to concrete action. An entire ecology is tied up in, and thus reflects, this process.

Such a feedback loop is sprawling, and pushes against traditional understandings of what feedback looks like in technical writing (see Barnum 2002, Porter 2013). James

Porter recognizes the increasing interest in things like “process, action, and reception,” but fitting the MDC into his heuristics proves fruitfully tricky (136). The MDC are writers, but they are also researchers, non-profit representatives, designers, and users. They change their networks of activity by introducing tools and others entities in a bid to hone their product through feedback. But this feedback sprawls, and carries with it the traces of broad social and cultural phenomena that the MDC are then responsible to sift through and adapt to in their longitudinal, iterative process. The MDC would thus do well to come to terms with this messy process, particularly the pieces that point outward, beyond their perceived ecology of work and circulation, but nonetheless carry these same traces inward, bringing them to bear on the MDC writing process.

We see signs elsewhere in the present report, and in my observations leading up to it, that the team has begun to internalize this need to respond to shifting social and cultural conversations. In the drafting of the report, there were questions directly related to terminology. *Why are we using “Hispanic” rather than “Latino”? Or should we use “Latinx”?* There were questions about whether “white” and “black” should be capitalized, and whether it was at all appropriate to use the phrasing “whites” and “blacks” rather than “white residents” and “black residents.” These are fairly baseline questions for any community-oriented writing organization to consider, and the fact that they were first debated in 2019 signals a sea-change at work in the MDC offices, their research, and their workflow. Additionally, it signals just how constrained they had previously found themselves by bureaucratic demands and their own institutional history and *ethos*. In addition to the graphs above, the current report includes the language of social justice in this front-page disclaimer:

MDC strives to use inclusive language and analyze data for traditionally underrepresented groups whenever possible. However, current data has its limitations. Data are often scarce for Hispanic and Latinx populations, as well as for the LGBTQ+ population. National data we collect—for measures such as overdoses and certificates—are often unavailable at the zip code or neighborhood levels. While we strive to use language that is inclusive as possible, the terminology we use to describe race, sex, gender, and other identities mirrors the data source it was retrieved from.

Here, the MDC acknowledges the shortcomings of the very thing they purport to do: use data to inform and spark action toward a greater community good. If there is wanting data on Latinx populations living in poverty, or obtaining ample healthcare, then the targeted responses to the data they hope for necessarily will exclude these populations. If they cannot mine data about LGBTQ+ residents and housing affordability, they cannot prompt targeted action on behalf of this community.

In at least one venue, this is already a problem. As of this writing, there is little evidence that the current presidential administration will seek to amplify their efforts to count the range of marginalized identities in the upcoming 2020 Census. In a 2018 piece for *NPR*, Hansi Lo Wang reports that Obama-era recommendations (themselves tied to a 2015 Census report on this very issue) would not be adopted for the 2020 Census. In particular, more granular, self-reported race and ethnicity questions would be disregarded. A push, for example, to create a separate self-reported box for those who identify at “Middle Eastern or North African” (MENA) would be pushed aside, leaving that metric coupled with “White.” The draft version of the race and ethnicity question given to the White House in 2017 proposed further ability to self-report diverse identities. Survey-takers would be permitted to check a greater number of boxes—including a newly-added MENA box—underneath which would be a detailed breakdown. For example, checking “Black or African American” would then prompt document users to

consider a range of sub-demographics: “African American,” “Nigerian,” “Jamaican,” “Ethiopian,” or “Haitian.” There is then an empty space to self-report a different identity in writing (e.g., “Somali” or “Afro-Caribbean,” etc.). As Wang suggests, the decision to add or refuse to add this ability to self-report more accurately “would carry wide implications for legislative redistricting, civil rights laws and health statistics.”

I include this point because it gets at a precursor level to MDC writing activity and circulation that is only implicit in my observations. The databases themselves, and those in positions to influence, construct, and revise them, shoot out similar traces into the MDC’s ecology of work before that work even begins. The decision to acknowledge this, then, is a result of both a closed feedback loop, created with the introduction of Julie and the Urban League, as well as a technical/statistical condition of the context MDC writers work from.

The Unpredictable Life of Data

What is becoming clearer here is a thread that stretches from the U.S. Government to a Census employee, to a database, to Nick’s computer, to an MDC meeting, to the CCP and partner organizations, out into the broader, unpredictable network of civic workers in Gateway, and back again. And this is only if we wish to place the MDC at the center of that understanding. If we place the Census Bureau at the center, or the Urban League, or one of the CCP’s workshop attendees, that trajectory and the MDC’s place in it would, of course, look quite different. This is not to say that these networks do not exist or are subaltern to that of the MDC, even though this project has focused largely on them and them alone. Instead, the very stuff of ecologically-informed

writing practices requires us to recognize when and where our considerations de-center one actor in favor of another. That is, at the moments where the MDC reconsiders their own central position in this writing activity—the moment they consider the larger networks users work within, the way in which Census data collection is influenced by other forces, or the way in which smaller non-profits are locked out of funding opportunities—is where we see creative actions to remake these networks. Design thinkers like Donald Norman (1993) allude to something like this by suggesting good design means storing results and tracing those phenomena forward and backward in time. Clay Spinuzzi and Mark Zachry (2000) speak to this in terms of understanding the “ecological niches” that need to be filled (177). Laurie Gries (2015) moves us methodically through these new ecological contexts, considering a “complex network of technologies, human actors, distribution strategies, economic structures, political institutions, social media, moods, desires, affects, and so forth” that impinge on the rhetorical life of an artifact (283-84). In all these cases, the fields of rhetoric, usability studies, professional and technical communication, find themselves grappling with the sheer size of the plane the activities of research, writing, publication, and uptake that they find themselves on. Data is not immune to this phenomenon.

What we have, then, is an unpredictability of not just end-effect but of process, too. As the MDC compiles and produces data-driven work, they do so not knowing what the future brings, be it the future of the Census database, of human activity, or the future feedback they will receive. They try to contain this activity by molding particular routes to take, but, time and time again, these attempts at containment fall short. Though writing on radically different scale, Johanna Drucker (2015) speaks to something like this in

Graphesis. In closing, she warns: “The expansion of access to any and all stored data that can be repurposed and remediated nearly boggles the mind. Capacities may well outstrip fluencies” (194). Indeed, the MDC capacity to move through data quickly—to slice it, repurpose it, and present it—has certainly outstripped *something*. I do not believe, in their case at least, that “fluencies” is it. Rather, as we contend with the forms of argument and communication that come in our increasingly quantitative, data-driven age, it is necessary for professional and technical writers (practitioners and scholars) to recognize that what many have “outstripped” is not their own or their end-readers’ “fluencies.” Observing the MDC has pointed to an ecological circulation model rather than one of message containment. That is, Andy and MDC team’s vision of what this circulation work looks like—charting linguistic paths, directly influencing work, determining means to track mission impact—does not suit their present moment or the industry they work within. Data, and the viral life of data in these ecologies, does not suit this model. What data seems to have outstripped, then, is the MDC’s ability to contend with the virality of quantitative information. In this model, the data moves too quickly to anticipate the social forces that prompt others to remediate the data once more, and to their own ends. The MDC is thus one organization—and this project just one story of an organization—grappling with this reality, and in observing their grappling we what it looks like to do data-driven work in our messy ecological present.

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CURRICULUM VITA

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English Department
Bingham Humanities 315
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EDUCATION

Ph.D. Rhetoric and Composition, University of Louisville, Louisville, KY - 2019

Dissertation: “Vital Data: Writing and Circulating Quantitative Data in Non-Profits”

Committee Members: Stephen Schneider (Director), Karen Kopelson, Frances McDonald, Joanna Wolfe

Master of Arts in English, Rhetoric and Composition (with Distinction) - Rutgers University, Camden, NJ - 2013

Thesis: “Re-Orienting from Without: Burkean Notions of 9/11 and the Rhetoric of Dissent”

Committee: William FitzGerald (Director), M.A.R. Rafey Habib

Bachelor of Arts in English (Dept. Honors; summa cum laude) - Rutgers University, New Brunswick, NJ - 2011

PUBLICATIONS

Chapters

- “Becoming Data.” *Making Future Matters*, ed. Rick Wysocki and Mary P. Sheridan. CCDP. 2018.
- “Social Movement Friction and Meaningful Spaces.” *Mobility Work in Composition*. Ed. Bruce Horner, et al. (Chapter accepted; advance contract from Utah State University Press)

Article in Progress

- “Storytelling With, Around, and For Data.” *Kairos*. Special issue on data visualization.

Articles Under Review

- “Storytelling with Data as Distributed Activity.” *Technical Communication Quarterly*.
- “Getting There: Reflections on Community Engagement and Activism Support,” co-authored with Christopher Scheidler. *Spark*.

Book Reviews

- Review of *Rhetoric in the Flesh: Trained Vision, Technical Expertise, and the Gross Anatomy Lab* by T. Kenny Fountain. *Technical Communication Quarterly* 25.4 (2016)
- *Multiple Autisms: Spectrums of Advocacy and Genomic Science*. *Medical Humanities* (2016; online)

CONFERENCE PRESENTATIONS

- “Activist Support Networks in Mixed-Media Activist-Artist Student Collaboratives,” with Christopher Scheidler. Conference on Community Writing 2019. Philadelphia, PA. Forthcoming
- “Circulating Data: Stories of Accountability.” Association of Teachers of Technical Communication 2019. Pittsburgh, PA.
- “Storytelling with Data in an Age of Distributed Work.” Association of Business Communication 2018. Miami, FL.
- “Telling Stories, Shaping Data: Narrative Affordances in Data Ecologies.” Rhetoric Society of America 2018. Minneapolis, MN.
- “An Ecological Model for Data Visualization.” Association of Business Communication, Midwest-Southeast Conference 2018. Cincinnati, OH.
- “Adapting for Usability: A Data/Narrative Case Study.” Conference on College Composition and Communication 2018. Kansas City, MO.
- “Vital Data: Quantitative Writing in the Age of Big Data.” Association of Teachers of Technical Writing 2017. Portland, OR.
- “Static Rhetorics: Rhetorics of Quarantine in the Face of Outbreak.” Watson Conference 2016. Louisville, KY.
- “Spatial, Optical, Mobile: Early Public Health and Nuisance Populations.” Cultural Rhetorics 2016. East Lansing, MI.
- “Refiguring Refusals: Anti-Vaxxers and the Rhetoric of the Multitude.” Rhetoric Society of America 2016. Atlanta, GA.
- “For the ‘Greater Good’: Early Rhetorical Dimensions of Public Health.” Health Humanities Cleveland 2016. Cleveland, OH.
- “Scenes of Agency: Identifying as Ill and Navigating Treatment Choice.” Cultural Rhetorics 2014. East Lansing, MI.
- “Re-Orienting from Without: Burkean Notions of 9/11 and the Rhetoric of Dissent.” Rhetoric Society of America 2014. San Antonio, TX.

- “Impious from Without: Bush’s Altar, Sontag’s Sacrilege and the Dimensions of Burkean Piety in Post-9/11 Dissent.” Rutgers Graduate Student Conference 2013. Camden, NJ.
- “Toward a Critical Frame: The Anti-Historical Frame Narrative as Identity Formula in Ralph Ellison’s *Invisible Man*.” Hunter College Graduate Student Conference. 2012. New York, NY.

AWARDS

- School of Interdisciplinary and Graduate Studies Research Fellowship (2014, 2018)
- Association for Business Communication Graduate Travel Grant (2018)

ACADEMIC EMPLOYMENT

Assistant Professor of English – Professional Writing

Misericordia University, Beginning Fall 2019

Graduate Research Fellow and Teaching Assistant, Rhetoric and Composition

University of Louisville, 2014-2017, 2018-2019

- Taught courses in first-year composition, scientific and technical writing, and business writing
- Contributed to departmental digital humanities initiatives, including podcasting and digital storytelling projects

Assistant Director of Business Communication

University of Louisville – College of Business, 2017-2018

- Taught courses in business communication
- Provided tutoring in oral and written communication, presentation design
- Consulted on marketing materials and workflow for new MSBA program

Part-time Lecturer, Writing/Composition

Rutgers University, Camden, 2013-2014

- Taught courses in basic writing, first year composition, and public argument

Adjunct Instructor, First-Year Writing

Drexel University, Philadelphia, 2013-2014

- Taught ESL sections within the first-year composition sequence

Adjunct Instructor, Academic Skills Department

Camden County Community College, 2014

- Taught reading courses within the academic skills sequence

Adjunct Instructor, English

Rowan University, Glassboro, NJ, 2013

- Taught literature and linguistics courses within the University's English department

Graduate Teaching Assistant

Rutgers University, Camden, 2011-2013

- Taught courses in first year writing sequence

TEACHING EXPERIENCE

Introduction to English (ENGL 152)

Misericordia University

Fall 2019

Freshman Writing Seminar (ENGL 151)

Misericordia University

Fall 2019

Storytelling With Data (MSBA 625)

University of Louisville, College of Business

Fall 2018

Business Communication (BUS 301)

University of Louisville, College of Business

Fall 2017, Spring 2018

Science and Technical Writing (ENGL 303)

University of Louisville

Summer 2016; Fall 2016

Business and Professional Writing (ENGL 306)

University of Louisville

Spring 2017

Intermediate College Writing (ENGL 102)

University of Louisville

Spring 2016

Introduction to College Writing (ENGL 101)

University of Louisville

Fall 2015

Writing Public Arguments (WRIT 300)

Rutgers University – Camden

Spring 2014

Intermediate Composition (WRIT 102)

Rutgers University – Camden

Spring 2012-Spring 2013

Introduction to Composition (WRIT 101)

Rutgers University – Camden

Fall 2011-Fall 2012

Basic Writing (WRIT 099) Rutgers University – Camden	<i>Fall 2013</i>
Composition and Rhetoric – ESL (ENGL 101-3) Drexel University	<i>Fall 2013-Spring 2014</i>
First-year Reading (ENGL 013) Camden County Community College	<i>Spring 2014</i>
Experiencing Literature (ENGL 2123) Rowan University	<i>Fall 2013</i>
American English Grammar (ENGL 5301) Rowan University	<i>Fall 2013</i>

ACADEMIC SERVICE

Service to the University

Co-Director – *U of L English Ph.D. Recruitment Day, 2019*

- Coordinated travel and events for prospective Ph.D. students
- Collaborated with department administrators in planning subsequent recruitment events

Workshop Coordinator – *CV and Job Doc Workshops, 2018-2019*

- Coordinated and ran workshops on job searches for interdisciplinary Ph.D. students
- Provided remote support for non-attendees

President - *U of L Professional Writing Reading Group, 2017-2019*

- Reviewed course materials for professional and technical writing courses
- Scheduled and oversaw reading group discussions

Assistant Director of Business Communication - *U of L School of Business, 2017-2018*

- Offered editorial assistance for faculty and staff projects, including published articles and an in-progress text book
- Served as a volunteer coach and judge for “Fast Pitch” public speaking competition

Founding Editor - *MASH: A Digital Journal of Media, Arts, and Humanities, 2015-2017*

- Organized themed issues and solicited issue/essay topics
- Oversaw budgetary matters and development

Editorial Assistant - *The Henry James Review, 2016-2017*

- Copyedited and performed administrative work, corresponded with authors

Peer Mentor - *University of Louisville*, 2015, 2017

- Provided mentorship to Ph.D. students during visitation and through their first year

President - *English Graduate Student Association of Rutgers-Camden*, 2011-2013

- Collaborated with faculty and students in planning academic and professional events

Committee Chair - *Ralph Bergen Allen Scholarship for Composition*, 2012-2013

- Recruited and organized standing scholarship committee within the Writing Program
- Reviewed and scored scholarship papers

Service to the Profession

Conference Volunteer - *Association of Business Communication Conference*, 2018

- Assisted in registration and chaired panel on intercultural communication

Reader - *Rhetoric Society Quarterly*, 2018

- Reviewed submitted article and provided reader report

Webinar Coordinator - *WPA-GO: Technical and Professional Writing*, 2017

- Prepared materials for and led webinar on teaching professional and technical writing
- Provided sample syllabi, rubrics, and assignment sheets for attendees

Conference Volunteer - *Watson Conference on Rhetoric and Composition*, 2014, 2016

- Assisted in day-to-day operations of conference proceedings

Conference Committee President - *Rutgers Student-Led Academic Conference*, 2013

- Developed and organized an interdisciplinary, graduate academic conference
- Reviewed paper and panel proposals

Service to the Community

Project Manager - *JCPS Story Project*, 2017 – Present

- Built collaborative relationship between U of L and local public school (grades 6-12)
- Worked with students to plan and realize digital storytelling projects

Press Officer, Committee Member – *KY Industrial Workers of the World*, 2014-2015

- Developed blog infrastructure for local IWW chapter
- Organized local teach-in and social events