Rhetorical dilemmas in funded science annual reporting

by

Sara Beth Parks

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Program of Study Committee:
Jean Goodwin, Co-major Professor
Margaret LaWare, Co-major Professor
Barbara Blakely
Michael Dahlstrom
Stacy Tye-Williams
Abby Dubisar

The student author and the program of study committee are solely responsible for the content of this dissertation. The Graduate College will ensure this dissertation is globally accessible and will not permit alterations after a degree is conferred.

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DEDICATION

This dissertation is dedicated to my parents, Donna and Darrell Parks, who supported my long trip through graduate school and always seemed to know when to check in on me; to my friends in Ames who ensured we didn’t become academic hermits; to my committee members, particularly Dr. Jean Goodwin, for epitomizing ‘academic kindness;’ and to my participants and others in Iowa NSF EPSCoR who took a chance on a humanities graduate student and allowed me to become a member of your team.
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ABSTRACT

Scientists experience angst when faced with the task of writing the annual reports often required by their employers or funders. Although similar annual reports are widely studied in business contexts, communication and science studies disciplines have not considered annual reporting in science contexts. This is an oversight because annual reporting is one of the main ways that scientists communicate the progress of their research to stakeholders, including publics and policy-makers. Therefore, annual reporting is one way that science is guided and constrained by societal and cultural expectations. Further, existing scholarship has not considered the scientists’ frustration in reporting, which is a missed opportunity for communication scholars to engage with real, reoccurring communication concerns. Therefore, this dissertation fills these gaps by developing a deeper understanding of the experiences, issues, and challenges of science annual reporting. Specifically, this dissertation explores the ways in which scientists’ interpretations of their obligations suggest many possible rhetorical routes to fulfill report requirements, some of which are in tension with each other. It also shows strategies report writers use to make and justify their choices.

The National Science Foundation’s Experimental Program to Stimulate Competitive Research for Iowa (Iowa NSF EPSCoR), a large interdisciplinary and interinstitutional grant project provides a useful case to study how annual reporting works since changing report requirements over its 5-year term led Iowa scientists and staff to regularly re-evaluate how they wrote reports. Interviews with faculty and staff, annual report documents, and other
supporting documents were analyzed using grounded practical theory and rhetorical analysis. The analysis identifies the reasoned, reflective, but sometimes tension-reinforcing decisions report writers make about how to manage communication dilemmas. Although communication research generally considers transfer of known genre characteristics a way to constructively manage uncertainty in how to write, this case shows the transfer sometimes reinforces problems.

Annual report writers at Iowa NSF EPSCoR experience problems largely due to the rhetorical scarcity NSF prescriptions create. Changing national requirements restrict some rhetorical choices such as word count, timing of submission, and style, while also identifying varied audiences to target and providing frameworks for organizing rich detail. These prescriptions not only conflict with each other; they also often run afoul of what report writers believe an annual report ought to be like. This leaves report writers with a dilemma in how to best write a report.

In particular, requirements that ensure grant research is described in detail compete with requirements to ensure concision, such as page restrictions. As well, report writers’ perception of the annual report as a stakeholder-oriented communication with unknown public stakeholders plays a role in creating rhetorical scarcity because the rhetorical tools to target different audiences also sometimes conflict with each other, and writers are uncertain which set to use. In addition, rhetorical scarcity is felt when report requirements do not seem to allow for writers to fulfill their administrative role to support local faculty and staff fairly, for example by describing all the research in equal detail.
When report writers choose any of a myriad of rhetorical techniques, such as highlighting only one research project, including figures or tables, or including prose descriptions, they show the salience of two ideal visions for the annual reports: the annual report as a comprehensive inventory of activities and the annual report as a narrative of struggle and achievement. These ideal visions are important because they are whole models of good conduct and values. Report writers use these ideals to justify their rhetorical choices during reporting. Inventory includes characteristics such as reporting data in tables and appendices, targeting evaluative audiences, and valuing numeric, comprehensive, and granular data. Report writers often describe inventorial reporting in the positive frame of “keeping track” of activities or more ambivalently as merely “collecting.” Narrative includes characteristics such as a single prose voice and temporal organization, targeting skeptical public audiences, and valuing coherence and balance. The inventory and narrative ideals imperfectly combine. This imperfect combination brings rhetorical scarcity to the forefront and reinforces frustration.

Based on these results, there is a potential opportunity for communication scholars to positively engage with frustrated science annual report writers by guiding reflection about the ideals being invoked, their interaction, and their fit with stakeholder expectations. This engagement promises to help report writers better manage the frustrations of annual reporting.
CHAPTER 1. INTRODUCTION

Overview

What is it about annual reporting that causes angst? And what advice can communication scholars give people who are struggling to fulfill report requirements? These questions bothered me for four years during my employment as a communicator in a large science grant. Top-down institutional changes frustrated a few of the administrators I worked with so much they sought me out to discuss their communication problems. However current communication research is mostly explanatory rather than normative. So although I could engage by providing a sympathetic ear and editing documents it was difficult for me to give useful practical advice. This is the main motivation for my choosing to study annual reporting practices in institutional science. My experience allows me to contribute to our understanding of an important, but often overlooked, genre through scholarship that takes responsibility for providing reflective tools to guide engagement with real-life frustrated practitioners.

Genre theory background

This dissertation began as a response to a call from Carolyn R. Miller and Jeanne Fahnestock for rhetoric of science scholars to explore genres beyond the science research article in order to discover, “different understandings of how genres structure, enable, and constrain the work of science” (2). Their request reflects the socio-cultural influence on rhetorical genre scholarship as introduced by C. R. Miller in her touchstone article, “Genre as Social Action.” This
dissertation picks up C. R. Miller’s second problem in defining rhetorical genre, which is “the problem of understanding the way in which a genre ‘fuses’ (in Campbell and Jamieson’s term) situational with formal and substantive features” (155). C. R. Miller argues that situations are defined by people’s interpretation of meaning, not material perceptions. Therefore, “typified rhetorical action” is a response to these meaningful situations recurring in particular social contexts (151). However, through her dissertation work on Environmental Impact Statements, which she discusses in “Genre as Social Action,” she argues that even if documents are similar in form and substance and are embedded in a recurring rhetorical situation, they should be considered a “class” only, not a genre, if they do not have a “rational fusion of elements” (164). That rational fusion should include no conflict in interpretive contexts for the form and a good fusion of substance to form. For C. R. Miller, genres should be a “normative whole” (164). This distinction is mirrored in “Genre as Social Action” by her assertion that “a rhetorically sound definition of genre must be centered not on the substance or the form of discourse but on the action it is used to accomplish” (151)

C. R. Miller’s argument about what counts as genre is troubling because it allows classes of documents which are likely perceived as genres by their creators to be dismissed simply because they create problems or have dubious effectiveness, or have unclear purposes. In fact, this is the result of her investigation of Environmental Impact Statements. However, environmental rhetoric scholar David Dayton retrieved Environmental Impact Statements as genres. He compares C. R. Miller’s conception of genre to Habermas’ “discourses” which “fulfill strong idealizations of communicative rationality – or
fulfill them to a sufficient degree” but are rare. Therefore, he argues, the perfect match of context to form and content fusion are ideals that ought not be used as a measure for genre nor as a practical framework necessary for rational decision-making (Dayton 363).

Business communication scholarship on corporate annual reports shows a similar mess in the fusion of legal and administrative elements and fuzzy purposes as Environmental Impact Statements. For example, Anderson and Imperia’s investigation into gendered image use in passenger airline corporate annual reports delves into the legal and promotional cross-purposes of visual stereotyping (Anderson and Imperia). Hyland’s look at the metadiscourse in Hong Kong CEOs’ letters to shareholders (a typical front piece to corporate annual reports) found the rhetoric being used to create ethos appealed imperfectly to different audiences (Hyland). A narrative analysis of shareholder reports found the use of subgenres allow report readers to co-construct the narrative of ambiguous financial reports (Jameson). As well, corporate annual reporting’s rhetorical situation has shifted towards public contexts, audiences, and purposes and that shift has driven changes in reporting rhetorical techniques (Lord; Stanton and Stanton). As institutional science continues to incorporate new practices from corporate reporting we expect to see practitioners experience even more frustration, confusion, surprise, or resistance (Bazerman "Systems of Genres" 82).

Unfortunately, there is little rhetorical scholarship on genre that takes the frustration of practitioners seriously. This may be because rhetorical genre theory often elevates the genre as the main actor. For an extreme example, Anis Bawarshi’s “The Genre Function” explicitly demotes humans. This is a claim he
acknowledges is risky, “to argue that communicants and their contexts are in part functions of the genres they write, is to endow genre with a status that will surely make some readers uneasy” (Bawarshi 335). Scholarship in rhetorical genre theory has borrowed Foucault’s “author-function” in order to illuminate the ways genres are constitutive, even to the assertion that they create the recurring situations (Devitt). I do not argue that genres may function in these ways. However, elevating the text seems to lead scholars to see genre as a solution to messy communication problems. For example, Bawarshi draws on C. R. Miller to portray genres as ever helpful.

In other words, as individuals’ rhetorical responses to recurrent situations become typified as genres, the genres in turn help structure the ways these individuals conceptualize and experience these situations, predicting their notions of what constitutes appropriate and possible responses and actions. This is why genres are both functional and epistemological – they help us function within particular situations at the same time they help shape the ways we come to know these situations. (Bawarshi 340)

Here Bawarshi positively portrays the helpfulness of genres. They help us know what the situation is and help us know how to act in that situation. However, what about when practitioners don’t fully know what the situation is and don’t know how to act in the situation? What about when writers are tasked with writing a document they perceive as following genre conventions but don’t fully understand its purposes? Uncertainty seems to disrupt the always-helpful application of genre theory. This dissertation will delve into how practitioners do and ought to manage the dilemmas that arise under conditions of uncertainty.
Practical engaged reflection approach

Although much recent rhetorical genre scholarship does function within practical theory, defined by communication scholars Barge and Craig as applied communication scholarship “explicitly designed to address practical problems and generate new possibilities for action” (Craig and Tracy "Building Grounded Practical Theory" 235), it mostly functions as mapping. Mapping is the first of three approaches identified by Barge for practical theory (Barge). Mapping describes practical challenges, such as selecting the most effective rhetorical techniques, increasing persuasion, or manipulating the influence of genres across systems. However, Craig asserts that Barge’s second approach, an engaged reflection approach, is more useful “when the goals of a practice involve value-based normative dilemmas” which, he reminds, likely includes the goals of most practices (Craig and Tracy "Building Grounded Practical Theory" 235). Engaged reflection allows the scholar to hear the voices of challenged practitioners in order to redescribe how the meanings they make of the rhetorical situation play a role in creating their practical communication dilemmas. This work is particularly important for postcritical, engaged scholarship, as it is likely that the frustrated practitioner will be the person communication scholars most closely engage.

Postcritical, engaged scholarship

This dissertation is the culmination of a trial engagement that I purposefully took on in order to participate in a productive response to critiques of science studies. Rhetoric of science theories about the relationship of science to persuasion have been leveraged to help construct “science controversies,” “instant revisionism,” and “conspiracy theories” (Ceccarelli "Manufactured Scientific Controversy"; Haraway; Latour). Rhetoric of science scholarship faces
the charge of assuming an anti-science stance (Condit). In the face of existential political threats to science, rhetoric of science scholars have undertaken a new approach to “partner within the science community for mutually beneficial projects in which we can positively affect science and/or science suasion” (Parks). Herndl and Cutlip have theorized this approach as a move from “talking about science to doing science” whereas Walker has urged rhetoric of science scholars to view our relationship-building activities that include intervening in public science communication, through transdisciplinary teaching or more direct work, as an important part of science itself. Walker suggests, “the gap between talking about science and doing science isn’t quite so clear.” (Walker)

The engagement I performed as a paid member of the science grant not only allowed me to participate in the project of science but gave me a perspective of institutional science as composed of humans. Researching the annual reporting practices of my colleagues in the grant gives me insight to how people come to understand their human experiences in this context. Thus, a requirement of institutional science becomes a project for a humanities scholar.

**Grounded practical theory**

For a metatheoretical approach that helps reclaim sophistic, practical goals for rhetoric scholarship, this dissertation combines grounded practical theory with rhetorical analysis. Grounded practical theory as a research tradition stems from practical communication theory. Its purpose is to redescribe a communicative practice for normative critique. The intent and perspective of grounded practical theory fits well with a rhetorical sensibility because it adheres to the main assumption of rhetoric. That is, as Karen Tracy, one of the originators of grounded practical theory (with Robert Craig), explains, “people are choosing
how to act in order to achieve or avoid certain outcomes” (“Reconstructing” 303). Grounded practical theory has an added benefit to rhetorical analysis in that it uses a distinct method that has easy to follow steps and an organizational schema that lends credibility to empirical qualitative scholarship for better engagement with participants who have science backgrounds.

Annual reporting in this case was experienced as a tension-filled communication dilemma because reporting was understood in several distinct ways, articulated with multiple possible rhetorical situations. Therefore this case’s participants developed techniques to manage the problems of adhering to multiple ideal ways of reporting in the same document. These techniques are grounded in sometimes tension-reinforcing beliefs about how annual reporting ought to be accomplished and its ideal rhetorical situations.

This dissertation has works at two levels of inquiry. It reconstructs one case of annual reporting to understand the local challenges and provide deeper engaged reflection about why tensions exist and how to employ them more usefully. Secondly, it generalizes the dilemmas that practitioners faced to reveal the relationship between the meanings that practitioners embedded in the rhetorical situation and their practical responses to problems. This dissertation has four overall purposes: (1) to develop a deeper understanding of institutional science annual reporting experiences, issues, and challenges, (2) to explore the ways in which these experiences created tension-reinforcing beliefs and practices, (3) to discover the strategies practitioners used to manage tensions, and (4) to give normative advice through reflection about why tension-filled annual reporting practices exist and how to employ them more usefully.
This first chapter will now introduce and provide some context about the institutional science grant in which this case is situated. Then it will provide a literature review that sets up the main questions this dissertation explores.

**Iowa NSF EPSCoR Background**

The National Science Foundation’s Experimental Program to Stimulate Competitive Research in Iowa (Iowa NSF EPSCoR) was a 5-year, $20 million grant to “build Iowa’s research capacity in renewable energy and energy efficiency” (The National Science Foundation "About EPSCoR"). The grant was designed to be complex, involving the three major universities in Iowa, over 80 faculty, as well as partnerships with community colleges, industry, and K-12 education.

The participants in this case are crucial for the importance of this study and its normative generalization. This is because I studied the practices of top scientists and engineers in their field. These were participants of a huge and successful national grant. They are practitioners of very high quality and have been acknowledged by their peers for their expertise. Importantly for this case, not only are they experts in their science fields, they are early adopters of national science communication strategies and are highly effective communicators who have proven their success by running their respective labs, by collaborating, by publishing often and in their fields’ top journals, and by gaining the admittance to the grant in the first place. Studying the practices of these participants is a privilege, and makes the case of importance to any other practitioner who wishes to reach this level of successful communication practice or scholar engaging with them.
Although this case focuses on Iowa’s NSF EPSCoR participants, guidelines and expectations for annual reporting were influenced by pressure at the national level. For some non-administrative participants, annual reporting was the only means through which they had contact with the national institutional levels of the program and for all participants annual reporting was one of the relatively few ways they experienced national level constraints on their actions.

There were two national-level systems under which Iowa NSF EPSCoR functioned. The first was EPSCoR as a cross-agency practice to improve less competitive states’ or regions’ research and development infrastructure, capacity, and competitiveness. The second was the NSF’s version of EPSCoR.

**Background on EPSCoR**

This section will give background on EPSCoR in order to show the political pressures that likely contributed to epistemic uncertainty and frustration during annual reporting and annual report requirement changes. Experimental programs to stimulate competitive research are U.S. grant funding programs used by federal agencies including the NSF, NASA, FDA, DOE, and NIH to distribute funding to less competitive states. A state’s eligibility to compete for grants from an EPSCoR is determined by its funding level from previous years. The eligibility guidelines in place from 2012-2016 stipulated a state’s level of support had to be equal to or less than .75% of the total agency research and related activities budget for the most recent three years (The National Science Foundation "Criteria for Eligibility"). An often-repeated organizational joke is ‘just don’t call it welfare for states.’ This joke reflects uncertainty within the program since EPSCoR’s funding philosophy and selection structures are often criticized and EPSCoR is regularly threatened by political forces; for example,
during the time of this case by an amendment to kill the NSF’s EPSCoR program in the U.S. House of Representatives (Mervis).

States can “graduate” from an EPSCoR and lose eligibility if they cross the threshold of grant funding from the federal agency. In 2013 Iowa lost eligibility for NSF EPSCoR, though the grant on renewable energy was allowed to fulfill its 5-year term and a no-cost extension. Recently graduated states from NSF EPSCoR, such as Iowa, Tennessee, and Utah, are likely to move in and out of eligibility as they gain and lose funding over time. Some states are never expected to graduate, suggesting a futility in ultimate mission with which participants must cope.

**Background on NSF EPSCoR**

This section will give background on the National Science Foundation’s relationship to EPSCoR. EPSCoR practices began at the NSF and the NSF continues to be the leader in determining EPSCoR practices. For example, at the time of this case study, the Department of Energy (DOE) EPSCoR website hyperlinked to the NSF EPSCoR website for eligibility criteria (Office of Science). The NSF EPSCoR program stems from a congressional inquiry into the geographical concentration of NSF funding in 1977. In response, Congress authorized the EPSCoR in 1988. The two objectives listed in that authorization are:

- to assist States that historically have received relatively little Federal research and development (R&D) funding; and
- to assist States that have demonstrated a commitment to develop their research bases and improve science and engineering (S&E) research and education programs at their universities and colleges. (2870)
The first objective’s vague designation of “relatively little” has allowed the NSF to tinker with eligibility criteria over time. The general trend of those changes has been increased eligibility, with over half of all states being eligible for NSF EPSCoR during the time of this study. This increased eligibility makes EPSCoR a significant program within the NSF while also contributing to a sense that the NSF can change the shift the goal posts on states at any time. The second objective gives the NSF some leeway to deny funding to states that are otherwise eligible for the program in terms of funding. Again, however, the trend over time has been to increase eligibility.

NSF EPSCoR grants are intended to serve as investments in a state’s “research infrastructure” to build “capacity and competitiveness” (The National Science Foundation "EPSCoR"). In practice this can include support for physical buildings and equipment, faculty lines, courses, graduate students and postdocs, workforce development, STEM education, special projects, travel, etc. The explicit mission of NSF EPSCoR is:

to advance excellence in science and engineering research and education in order to achieve sustainable increases in research, education, and training capacity and competitiveness that will enable EPSCoR jurisdictions to have increased engagement in areas supported by the NSF. (The National Science Foundation "EPSCoR")

The NSF’s use of the word “increase” in their mission statement allows the agency to point to successes without the necessity of states graduating the program. Mission creep is another criticism leveled at the program (Mervis).

In 2011 the NSF requested an evaluation of the NSF EPSCoR program. The Institute for Defense Analysis Science and Technology Policy Institute’s 2014
report has been cited both in favor and against continuing NSF EPSCoR (Mervis). The report points out that evaluation of the program and subsequent recommendations are a challenge due to the imprecise outcomes specified in the original legislation (IDA Science & Technology Policy Institute vii). It is likely that these imprecise outcomes for the overall NSF EPSCoR program have a trickle-down affect to the state reporting level, helping create an uncertain situation where desired outcomes from state’s annual reports also are imprecise.

Although most of the IDA report recommendations concern eligibility, three reflected or influenced the annual reporting rhetorical situation enough to emerge as significant context for this dissertation. Recommendation 2.1 suggests EPSCoR continue to emphasize “experimental strategies.” This recommendation doubles down in response to questions about whether a 30-year-old program implemented in over half of U.S. states can still be considered experimental. This recommendation shows freedom to experiment and report failures without negative consequences ought to be valued in NSF EPSCoR reporting.

Recommendation 2.3 suggests there needs to be “easily usable public profiles” of EPSCoR states, a recommendation that reflects concern for and an institutional value of positive public science communication. Already, we can see a potential dilemma emerging for participants about how best to portray their science. Should EPSCoR projects be experimental with nuanced expert evaluations or be beneficial to the public and with publicly accessible justifications for their raison d’etre?

Finally, recommendation 2.4 suggests a shift in emphasis towards evaluating “research competitiveness” across multiple EPSCoR states instead of attempting to compare the science and engineering “research base” across
EPSCoR states (IDA Science & Technology Policy Institute viii, 37). Here we see uncertainty forming because evaluating competitiveness is more qualitative, slippery, and less familiar to science researchers than comparing quantifiable research base measurements.

To my knowledge these recommendations were not explicitly incorporated into NSF EPSCoR at the time of this case. However, they are an important part of the context as an indirect or direct influence on reporting requirement decisions, or as a reflection of other more hidden forces in the national rhetorical situation. They inform and reflect both Iowa participants’ and national level agents’ ideas about what good reports should show.

**Background on Iowa NSF EPSCoR**

This section will give background on the Iowa grant in order to familiarize readers with the grant’s organizational hierarchy and goals. Iowa was awarded its NSF EPSCoR grant on renewable energy in 2011 after a couple failed proposals. A participant who helped write these proposals and revisions remarked there was a 7-8 year history behind the proposals since renewable energy researchers in the state had previously worked on joint projects. Participants mark 2012 as “year one” of the grant and that was also the first year of annual reporting. Reports were due every summer of the 5-year grant, including 2016. The grant ended in August 2016 but a 1-year no-cost extension was granted to the program so researchers and staff could have a grace period to use leftover funds and wrap up projects. Please see the end of this section for Figure 1.2, a timeline of the Iowa grant.

The official title of the Iowa NSF EPSCoR grant was “Harnessing Energy Flows in the Biosphere to Build Sustainable Energy Systems” though most
participants and most public documentation referred to it using the EPSCoR acronym. Its proposal states the grant’s purpose was to “support a transition in energy supply from subsurface fossil energy stores to renewable energy flows at or near the earth’s surface” (The National Science Foundation "Award Abstract"). The proposal suggests a “holistic systems perspective” but organized the research programs into four “research platforms”: wind energy, bioenergy, energy utilization, and energy policy. Here we see foreshadowing of another dilemma report writers found themselves dealing with: whether the project should be reported on and evaluated holistically or by platforms. A fifth platform, broader impacts, was reconceived as its own platform in practice, though uncertainty about its status as a research platform continued throughout the duration of the grant. Each research platform developed two or more “planks,” originally conceived by the proposal as general “research foci” but in practice some planks transformed into distinct research projects or activities. Figure 1.1 (below) shows the graphical way Iowa NSF EPSCoR conceived its platforms working together.
Figure 1.1 The “Iowa NSF EPSCoR Pyramid” (revised version 2015)

The broader impacts aspect of the grant (shown in the revised above graphic as the base, “infrastructure investment”) as originally described in the proposal was truly experimental and ambitious. The stated goal of broader impacts in the proposal was “to translate the knowledge gained in the research platforms into specific actions that can increase the participation of under-represented minorities in STEM fields” ("Award Abstract"). To do this the grant created a Future Leaders in Advancing Renewable Energy (FLARE) Institute. Grant writers envisioned a program that would integrate broader impacts “through all elements of activities leveraged by IA EPSCoR, thereby having a far greater state-wide impact than any individual program could achieve on its
own” ("Award Abstract"). By year 3 the FLARE Institute had essentially disbanded. Challenges of staffing, scope, and changes in management are reflected in the annual reports. However, the vacuum left by the FLARE Institute combined with internal interest and external cultural pressure for research faculty, postdocs, and students to implement their own broader impacts activities. These activities expanded the original scope defined for broader impacts to general public outreach, rather than just increased participation of under-represented minorities. This situation created uncertainty for what “counted” as broader impacts for the grant. It also reflects the tension between experiment and failure in the program.

**How location affected Iowa NSF EPSCoR**

Iowa NSF EPSCoR primarily brought together the three major universities in Iowa. Iowa State University (ISU), University of Iowa (UI), and University of Northern Iowa (UNI) are located a significant distance from each other. This distance impacted communication and ultimately the concentration of management power within the grant. It is roughly 1.5 to 2 hours’ drive between each university on mostly flat, straight, and boring roads. Once the importance of face-to-face communication was re-established after an administrative shake-up in 2013, a few members of the management team made regular trips from their home location of ISU to meet with UI and UNI administrators and faculty.

Originally, the management team makeup was purposefully balanced across the three universities. However, the first year of the grant was characterized by upheaval. This is reflected in the first, failed version of the annual report from that year and subsequent dialogue between NSF agents and Iowa NSF EPSCoR administrators as the management team chose new strategies,
created new positions, and brought in new people. Documentation from this time in the grant’s history provided this dissertation with crucial insight into both the hidden power of the national institutional level and potential mismatches in values and purposes between NSF agents and local administrators.

Consequences and uncertainty from the first year’s challenges remained throughout the grant. For example, the management structure was never fully finalized. The website refers to some administrators as co-project directors, co-principal investigators, platform leaders, and co-leaders on different pages. Administrative participants I interviewed tended to describe their roles in terms of the actions they performed rather than their EPSCoR titles. The relative re-concentration of management power at ISU also had a ripple effect. For example, the website hosting and IT was moved to ISU during the second year and that relative proximity caused ISU bioenergy and ISU energy utilization projects to be more closely covered and known by top administrators than, for example, wind energy projects at the UI.

Place also affected concentration of power, projects, and communication within the research platforms. Existing research programs in wind energy at the UI and bioenergy at ISU tipped the scales of these research platforms towards those respective universities, though partnerships did sometimes succeed on projects across university lines. Energy policy activities primarily occurred at ISU, likely influenced by an existing public policy research center (CARD). Many energy policy researchers were members of both Iowa NSF EPSCoR and CARD. Energy utilization projects mostly were university-specific. The focusing of power in platforms along physical university boundaries reflects the
holistic/individualistic reporting tension for Iowa NSF EPSCoR administrators who had to negotiate local pre-existing institutional allegiances while portraying the program cohesively as a state-wide project.

The people of Iowa NSF EPSCoR

Iowa NSF EPSCoR was intended to be interdisciplinary, urging collaborations between engineers, scientists, economists, and social scientists in the grant proposal. These academic groups were named in the grant proposal as necessary for predicting impacts due to “landscape-scale interventions in the biosphere” during a societal pursuit of renewable energy. The actual makeup of faculty by the fifth year of the grant included researchers and staff from a range of other disciplines such as design and education. To my knowledge I was the only humanities academic receiving direct support from the grant, though some teams did create partnerships with other humanities scholars for particular projects.

Beyond research faculty, several staff members were partially supported by the grant. Undergraduates, graduate students, and postdocs were fully and partially funded. Platform leaders had some discretionary funding they could use to support activities and people; sometimes without the beneficiaries knowing that they were connected to the grant. As well, infrastructure and activities initially funded by EPSCoR often continued to be used, spreading the influence of the grant without, necessarily, a financial paper trail. Sorting out who and what benefited from the grant became difficult by the final years as the grant’s influence was folded into relationships with other programs.

For annual reporting process purposes it is difficult to sort out who did what in the first year of the grant. Because of the administrative changes in the
second year, institutional memory of that time mostly came from one administrative participant I interviewed who was understandably reticent to discuss the failings of faculty and staff who were no longer with the project. After the first year, the ideal reporting process followed the grant hierarchy. The Project Director (PD) and Chief Operating Officer (COO) jointly requested information from the Platform Leaders, who requested information from Plank Leaders and Primary Investigators of major projects. One faculty participant I interviewed admitted the request for information ran all the way down through junior faculty to post-docs and graduate students. This was my personal experience as well.

Since categorizing the participants is a component of this dissertation’s method, please see Appendix A for more information about how this dissertation treated the people involved.

**Background on my experience**

I was hired in 2013, the second year of the grant, as a graduate research assistant through the College of Engineering to write content for the recently created Iowa NSF EPSCoR website. I joined the external engagement plank of the broader impacts platform and was housed with the rest of that plank at ISU. When I joined I immediately began to create relationships with members of the management team, such as the COO, to gain basic knowledge for use on the website. For example, I created the first grant-wide online directory using information gathered from the first annual report. Beyond writing science journalism-like news, features, and profiles for the website, I also helped with some basic event management and internal communications. It was the perfect vantage point to create relationships, gain trust, and see how the grant worked as
a system across institutional boundaries. I stayed for the remaining years not only to retain relationships with potential participants but because I genuinely enjoyed the people I worked with and met through the grant.

Figure 1.2 (next page) is a timeline of important dates. This timeline encompasses six years because the start date for the grant was September 1, 2011 and end date was August 31, 2016. Annual reports were due to the NSF 90 days before the award date, so for Iowa NSF EPSCoR reports were due June 3. This means most of May, June, July and August were only covered in annual reports as “planned activities.” The timeline also notes the starting year for an online database system, which will be discussed in Chapter 2.
2011
9/01/2011 Grant proposal accepted after several revisions.

2012
Year 1
6/3/2012 Year 1 annual report submitted
9/25/2012 Reverse site visit to the NSF.
10/2012 Revised annual report resubmitted after negative evaluation.

2013
Year 2
1/2013 I began working for external engagement.
NSF EPSCoR implemented online database system.
10/2012 Iowa replaced and gained several key administrators.

2014
Year 3
FLARE Institute allowed to lapse.
9/23/2014 Site visit of NSF agents to Iowa.

2015
Year 4
No-cost extension applied for and granted.

2016
Year 5
8/31/2016 Regular grant term ended.
12/2016 My position ended.
No cost extension allowed expenses through 2/2017.

Figure 1.2 Iowa NSF EPSCoR Timeline
Literature Review

This dissertation is studying institutional science annual reporting, which is an important recurring genre practice in science. Annual report documents are the main means of evaluation as well as formal communication between science grant participants and the national funding institution. Yet, to my knowledge, no one has studied annual reporting in science contexts. This is surprising because annual reporting is well-studied in corporate contexts. This literature review assumes that work done on annual reporting in corporate contexts should help inform the study of annual reporting in science contexts. I will explore the most likely aspect of annual reporting identified in business and corporate contexts to cause practitioner frustration, that the genre experienced a major change in the 1990’s. Next I will review why we need to study the reporting practices of institutional science. Then I will speculate on the likelihood of science popularization’s influence in affecting institutional science’s annual reporting practices. Finally I will return to the attention that has been paid to the vexations writers experience when they approach genre not as a helpful tool but as a source of frustrating dilemmas, introducing Applegarth’s concept of rhetorical scarcity as one possible way to make sources of frustration visible.

Annual reporting genre change in corporate and business communication

The introduction to this section hinted that the genre change seen in corporate annual reports from about 1990 to 2000 resulted in reports that now seem to be mirrored in some ways by institutional science annual reporting and therefore may inform an analysis of reporting in institutional science contexts. This section will review the genre change as it was shown in scholarship on
corporate annual reports. Then, the next section will investigate the mirror that has been, and is likely to continue to be incorporated into institutional science reporting.

The genre change that annual reports experienced in the corporate context, a transition towards marketing and PR, is well studied (Lord; Stanton and Stanton; De Groot). Lord’s literature review that covers scholarship on corporate annual reports from 1989-2001 (pre-Enron) reviews several studies that identified the start of PR and marketing techniques’ integration and chose these innovations as research areas. Lord identifies the 1998 Plain English Amendment to SEC requirements as one of the major forces for innovation in annual report content during the time period (371). De Groot’s dissertation comparing English and Dutch genre practices in multi-modal annual reports also identifies the same time period, particularly the crisis of credibility from Enron as well as AHOLD scandals, as a turning point that created the contemporary annual report. Since her dissertation compares European annual reports, she explains that the International Financial Reporting Standards (IFRS) have led to a reliance on non-financial texts in annual reports since the IFRS compliance no longer allows as much freedom in “competitive positioning on the basis of financial accounts” (De Groot 18).

Stanton and Stanton’s UK-focused literature review of scholarship from 1990-2000 takes genre changes into explicit consideration as well. Stanton and Stanton argue that the reports’ changing nature during this time period played a large role in how researchers viewed the documents. They identify increasing influence from PR (479) as well as Marketing (481). As foci for research on PR aspects they identify “Image management” which includes narratives and
photographs. “Marketing” foci include CEO letters and mission statements. Stanton and Stanton point out that although several of the studies identify the techniques that turned corporate annual reports into “a corporate public relations tool,” the intent and achievement of public relations purposes in annual reports at the time remained unanswered (484-85).

In her work on how corporations visualize their identities in annual reports, Ditlevsen starts to answer these intent and achievement questions. Her empirical analysis suggests that visuals strategically “construct a corporate identity that is aligned with company strategy in order to position companies as attractive to investors and other stakeholders” and that the annual reports are only one part of a growing “stakeholder-oriented approach to communication” within corporations (391).

Ditlevsen’s approach is also different from Lord’s and Stanton and Stanton’s because she categorizes reports an “investor relations” tool without much dissembling even while she claims corporate identity building is an understudied area. However, she never argues that corporate identity building might be an understudied area because annual reports have only recently become an investor relations tool. The recent history of this genre change seems hidden. White and Hanson’s 2000 case study of annual reports as an Aristotelian genre also presents as common knowledge that corporate annual reports include narrative, persuasive PR, and marketing techniques. I suspect the unproblematic characterization of annual reports as partially narrative, PR, marketing, or investor relations tools is possible and unremarkable after about 2000 because the PR and marketing techniques had been almost fully integrated into corporate annual reports.
Institutional science business genres

The completion and now relative invisibility of corporate annual reporting’s incorporation of PR, marketing, and other non-financial strategic texts after 2000 seems to be mirrored in institutional science annual reporting. However, since seemingly no one has studied institutional science annual reporting it is currently impossible to say the genre change happened or that it followed the same historic trajectory as corporate annual reporting. This is an area in need of archival research. This section will review a possible reason why no one has yet taken up this area of research and suggest an expanded focus on institutional science communication, the business of science.

Science studies scholars tend to focus on two communication contexts for science. These are the internal communication of doing science (scientist-to-scientist publication or speech) or science communication in public (science popularization). The two focuses have historical roots. For example, according to the field-founding 1976 article by Philip Wander, Rhetoric of Science as a field ought to be composed of two areas: internal science specialist communication and the role of science in public policy debate. While specialist rhetoric was initially the main site of the field’s research and criticism, more recently the field has returned to science’s role in policy and the public. This is evidenced and urged forward by texts such as the “Inventing the Future” 2013 POROI special issue, and recent Association for the Rhetoric of Science, Technology, and Medicine’s interest in “Post-Critique Rhetorics.”

This dissertation defines a third focus area: institutional science communication (communication between scientists and funding agencies). This is the business communication of science. There are communication scholars who
already do take on this third focus. However, they tend to analyze grant writing. Grant writing scholarship often employs discourse analysis for pedagogy and practice (Myers "A Syntactical and Rhetorical Analysis"; Myers "The Influence of the Purpose"; Connor and Mauranen; Charles, Pecorari and Hunston; Tseng). Although grant writing is important, the backdrop in the United States of increased access and scrutiny on institutional science documentation has led to increased public attention to and internal worry about even seemingly mundane institutional science communication. Because science as a pursuit holds a special place and elevated status in western culture, with a historically unique set of norms and communication values (Merton and Storer; Constantinides; Segal and Richardson), moving beyond grant writing into other areas of institutional science communication ought to inform scholarship on genres usually only considered in corporate contexts. Taking on this focus will expand our conception of the places where science communication occurs, and discover new influences and constraints on science.

The genre change identified in corporate annual reports has been linked to the increasing influence of PR and marketing. However this may not be the whole story in institutional science. In science contexts, PR and marketing strategies are likely interpreted as science popularization. Science popularization techniques share similarities to public relations and marketing but popularization techniques have more negative connotations to overcome during their incorporation into institutional science documentation. Science popularization carries challenging values for science and a contentious history. This second part of this section defines science popularization and suggests that although techniques of institutional science reports may look similar to changes
that have occurred in corporate reports, a historical bias against science popularization makes the context for producing more public-friendly documents very different. I fear that without specific scholarship in institutional science communication, corporate recommendations could be uncritically applied, causing more frustrations.

**Science popularization**

This dissertation defines science popularization as *the tailored communication of science for a non-expert, public audience.* Within the two areas of Rhetoric of Science described earlier, science popularization is most often situated as public communication. However, this dissertation identifies science popularization in a more liminal institutional context between public and private, lay audience and expert. Much annual reporting frustration and confusion may be the result of moving purposes and requirements across these borders.

Several aspects of science popularization in public contexts have intrigued communication scholars. Some of the common interests include public reception (Bucher and Niemann; Barros and Reis), techniques, norms and ethical issues (Avraamidou and Osborne; B. Miller; Dahlstrom and Ho; Badenschier and Wormer), science popularization in new media environments (Liang et al.; Gross and Buehl), history and particular historical cases (Kuritz; Barton; Daum; Bowler), topoi of science popularization (Fahnestock; Walsh; Ceccarelli *On the Frontier of Science*), popularization in the service of policy (Ceccarelli "Manufactured Scientific Controversy") and models (Hilgartner; Brossard and Shanahan; Trench). Most of the scholarship on these aspects of science
popularization assumes popularization occurs for purely public contexts and lay audiences.

Work written for science communication practitioners and scientists published in popular public forums often illuminates distrust and frustration between popularizers and scientists. Many of these texts pit popularization against specialist science discourse. Practical advice is often comprised of easy generalizations, “do’s and don’ts,” wielding a bias against the point of view of the audience community targeted. For example, Bhattacharya’s Guardian article entitled, “Nine Ways Scientists Demonstrate They Don’t Understand Journalism” and Olson’s Don’t Be Such a Scientist push scientists towards popularization while David Freedman’s Columbia Journalism Review article titled, “Survival of the Wrongest” and Discover magazine’s ongoing series, “The Worst Science Article of the Week,” pushes popularizers towards science specialist values. This debate’s playing out in public may heighten report writers’ frustration with the incorporation of science popularization in institutional science as well as their allegiance to specialist values and techniques.

There is a much smaller body of scholarship that studies the interplay between science popularization and expert-to-expert communication within science itself. For example, a small empirical study by Weinberger, Evans, and Allesina asks if adhering to science journalism techniques in science abstracts increases the number of citations. This small study joins a growing body of work published in disciplinary science journals that investigates attitudes and media factors within particular science disciplines. In their Guardian article companion piece to Bhattacharya’s, “Nine Ways Scientists Can Help Improve Science Journalism,” psychology researchers Chambers, et al. call on scientists to team up
with communication scholars in order to do more discipline-specific media studies (Chambers et al.). The clash between science popularization and specialist communication in science is also interesting to rhetoric scholars. For example, Varghese and Abraham analyze book-length scholarly essays as a hybrid genre gaining popularity in public and status within science. Also, rhetorical historical case studies such as Bazerman’s “Reporting the Experiment” or Campbell’s and Gross’ works on Darwin show the tension between reporting specialist science and gaining prestige through arguing about findings in public forums is not a new phenomenon. Rhetorical scholarship on current case studies that combine science popularization and institutional communication may be a way to justify engagement with science discipline-specific projects.

To my knowledge there is no work on popularization in institutional science except, again, in grant-writing scholarship and advice texts. For example, Oster and Cordo’s handbook focuses on using narrative in grant proposals. Charles, Hunston, and Pecorari’s book takes a more scholarly view but relies primarily on discourse analyses to give grant-writing advice. Narrowing institutional science communication scholarship to grant-writing alone does a disservice to the breadth and complications of institutional science communication. If we don’t consider these complications, possibilities for engagement are diminished because much (if not most) modern science is dependent on its communication with institutional funders.

**Attending to practitioner frustrations with genre**

This section returns to the attention that has been paid to the vexations writers experience when they approach genre not as a helpful tool but as a
source of frustrating dilemmas. I will introduce Applegarth’s concept of rhetorical scarcity as one theory that makes sources of frustration visible.

When practitioners believe they know how a genre ought to be written, but are faced with unexpected institutional requirements, we expect them to become frustrated and confused. Bazerman points out that genres, “sediment into forms so expected that readers are surprised or even uncooperative if a standard perception of the situation is not met by an utterance of the expected form” ("Systems of Genres" 82). Why genres stabilize or change may be due to changing contexts and purposes (Coe; Gross Communicating Science) or power shifts and control (Yates and Orlikowski "Genre Systems”; Spinuzzi Tracing Genres through Organizations: A Sociocultural Approach to Information Design ). Because science institutions are under increasing scrutiny due to increased public awareness and access to their documents, understanding writers’ frustration with shifting institutional requirements in their business genres and engaging them by providing useful advice is especially important (Miller and Fahnestock 2-3).

Applegarth’s concept of “rhetorical scarcity” may be particularly useful to explain communicators’ frustrations. She defines rhetorical scarcity as a “manufactured situation of intense and increasing constraint within a genre that significantly restricts rhetors’ access to key rhetorical resources” (455). The limiting aspects of rhetorical scarcity may explain communicators’ frustration when authorities redraw access to rhetorical tools. However, Applegarth notes that limiting is not the only possible response to genres under pressure. She creates a binary between “rhetorical richness,” an expansion of access, and rhetorical scarcity. She explicitly maintains the good and bad connotations (477).
The annual reports of Iowa NSF EPSCoR may complicate this binary. NSF EPSCoR requirements restrict some rhetorical choices such as word count, timing of submission, and style, while also creating opportunities to target varied audiences and providing at least two frameworks for organizing high amounts of detail. I suspect the NSF EPSCoR requirements provide greater possibility for rhetorical richness in purpose but may cause frustration because practitioners perceive rhetorical scarcity in techniques and strongly feel that loss of freedom. Here genre amplifies the problem; it is not the solution to uncertainty. Understanding why the genre in this context causes frustration is a crucial step in giving good advice.

This first chapter has given general background on the institutional situation of Iowa NSF EPSCoR as well as a brief overview of both the scholarly and practical areas of institutional science reporting that the dissertation will inform. I drew the following six conclusions from the literature review: (1) that findings on annual reporting in corporate contexts can inform the study of annual reporting in science contexts, (2) that institutional science reporting is different enough from corporate reporting to warrant scholarship, (3) that science popularization is likely influencing practices, (4) that annual reporting is different enough from other genres of institutional science communication to warrant scholarship, (5) that attending to practitioner frustrations is important, and (6) that Applegarth’s concept of “rhetorical scarcity” can be instrumentalized to identify sources of frustration.

The next chapter will propose a useful methodology, which contains explicit research questions, to be combined with rhetorical analysis. The end of Chapter 2 will provide an illustration of the method, which will form the basis of
Chapters 3 and 4’s analyses. Chapter 5 will summarize the analyses and provide normative advice and conclusions.
CHAPTER 2. METHODOLOGY

Methods

From my position in the same office area as the COO and a few other administrators, I could see the stress and long hours experienced at the end of spring semesters, annual report time. In a small way I also contributed to the reports since I kept records and reported data for the external engagement plank as well as worked with the COO to fill gaps in reporting from other platforms. In my external engagement capacity, I sometimes covered an event or a research development that was missed in the reporting from a platform. During this engagement experience I was also taking classes in science communication through the Greenlee School of Journalism and rhetoric of science for my PhD program. I was struck how the guidelines I was working with seemed to borrow language from public science popularization best practices and how those same guidelines seemed to be points of angst for the grant’s administrators. What was going on here? Was the practice of annual reporting really merging with science popularization? And why the frustration?

In choosing annual reporting as the practice of inquiry for this dissertation, I was also resolved by an ethic of engagement to have the academic inquiry serve a practical purpose. I accepted grounded practical theory as a methodology and a theoretical framework that would fulfill these purposes.

Introduction to grounded practical theory

Communication scholars are often called to give advice to practitioners and inform their work (Ceccarelli “To Whom Do We Speak?”; Herndl and Cutlip; Vernon) but rhetorical genre studies have mostly been descriptive, ranging from
genre “mapping,” an application of activity theory (Spinuzzi *Tracing Genres through Organizations: A Sociocultural Approach to Information Design*) to historical and genre acquisition perspectives based on rhetorical genre theory that stems from C. R. Miller’s work (C. R. Miller; Artemeva and Freedman). Bawarshi’s review of genre scholarship from linguistics to composition studies claims it has transformed from “a descriptive to an explanatory activity” (335), but I argue explaining how genres function to constitute human activity is still not enough. Practitioners engage with communication scholars and scholarship when they are stymied. Helpful engagement with frustrated practitioners requires normative advice. Therefore, we must tap theory and methods that position scholars to build and convey good advice for guiding people through practical problems.

To help steer theory-building and better practice, I introduce the Grounded Practical Theory (GPT) metatheoretical framework developed by Craig and Tracy (“Grounded Practical Theory”). GPT is a novel addition to rhetoric scholarship and it is useful because while it honors case-based research in providing space to explore communication dilemmas and describe the communication practices within a particular case, it also urges scholars to redescribe practices in less context-specific, more generalizable frames. GPT provides a model that accounts for practitioners who make choices while they practice a genre. This model suggests that the practices will have generalizable tensions embedded in them. It requires explicit attention to defining the exact communication practice and level being explored, which helps make scholarship more accurate. Finally, it allows scholars to more easily build a normative
framework for helping practitioners sort through their communication challenges.

In their introduction to the special issue on GPT in the *Journal of Applied Communication Research*, GPT founders Craig and Tracy explain that their commitment to communication as a practical discipline led to GPT. The authors cite Dewey’s pragmatism and Aristotle’s *praxis* and *phronesis* as particularly influential ("Building Grounded Practical Theory" 231). They propose that GPT brings together normative critique and systematic description ("Building Grounded Practical Theory" 233-34). GPT’s pragmatic and rhetorical roots make it amenable to combinations with other pragmatic methods. For example, most of the articles in that special issue combine a GPT framework with another analysis method. Tracy further explains in her book, *Colloquium*, the practical roots of GPT stem from social psychologist Michael Billig’s analyses of everyday thinking. He theorizes that thinking is essentially dilemmatic and these dilemmas are productive. Or as Tracy puts it, “thinking requires tension” (*Colloquium* 5-6).

GPT is both a methodology and a theoretical framework. At its core, GPT requires the scholar to reconstruct a communication *practice*, such as annual reporting, at three levels: technical, problem, and philosophical. The *problem level* is where the communicator might experience dilemmas: how should they act in the face of competing expectations? Discourse strategies and rhetorical techniques the communicator leverage comprise the *technical level*. Values and assumptions that guide the communicator to choose and justify these techniques comprise the *philosophical level*. The philosophical level of GPT reconstructions shows how communication dilemmas are born from competing *situated ideals*
(participants’ beliefs about how they ought to act). In this dissertation I link situated ideals to the perceived rhetorical situation, which also influences the technical and problem levels of annual reporting.

According to one article that appears in the special issue highlighting GPT, its purpose is to help researchers, “make implicit values and principles of a social practice explicit and available for critical evaluation and, ultimately, the construction of a normative model applicable to similar situations” (Koenig et al. 249). Craig and Tracy acknowledge the tension of creating generic advice from particular cases within GPT and categorize its framework as “descriptive-normative” and “positioning-universalizing” ("Building Grounded Practical Theory” 237) in ways that make it comparable to traditional rhetorical categorization scholarship. Tracy’s work distinguishes GPT’s purpose from grounded theory by noting that grounded theory is intended to “develop explanatory theory” while GPT develops “normative theories” ("Reconstructing” 305).

GPT has the potential to transform genre scholarship. Bazerman’s definition of genre as “ready solutions to similar appearing problems” ("Systems of Genres" 69) and C. R. Miller’s definition of genre as “typified rhetorical actions based in recurrent situations” (159) show that genre studies already accepts that genres are social practices that encompass the three levels suggested by GPT. Yates and Orlikowski’s groundbreaking work on genre, rhetorical theory, and structuration draws on Bazerman and C. R. Miller to propose that genres are continually and socially recreated via interaction between normative genre rules, recurring contexts at particular levels of abstraction (for example, a department meeting versus a committee meeting), and individuals. Although from this 1992
work Yates and Orlikowski’s career partnership has explored many aspects of particular genres (Mazmanian, Orlikowski and Yates) and genre systems, GPT suggests a more standard and perhaps more practical way to tease apart the complexities of communication uncertainties and dilemmas that rely on genre conventions but are still challenging. Using GPT allows genre scholars to unleash our pedagogical and sophistic inclinations. We can finally do scholarship that is designed to describe, explain, and help us give good advice.

To summarize, the result of my ethic of engagement, or belief that academic inquiry ought to serve a practical purpose, is that I chose GPT as a method and theoretical frame. Undergirding the method are three assumptions: (1) that practitioners make reasoned, reflective choices about how to act during communication, (2) that case-based research provides a space to explore communication dilemmas, and (3) that case-based practices can be redescribed in less context-specific, more generalizable frames.

**Research questions**

The GPT framework suggests three basic research questions for any reconstruction: (1) what problems frustrate participants during the communication practice, (2) what techniques do participants employ to manage their problems, and (3) what situated ideals do participants invoke? These are the research questions of this dissertation. These research questions correspond to the problem level, technical level, and philosophical level of reconstruction. These questions map well onto my chosen inquiry into institutional science annual reporting because this communication practice is virtually unstudied. Therefore we do still need to find out the basic problems practitioners experience as well as how they managed challenges in this case. The situated ideals invoked
are key for being able to give normative advice and think critically about the practice.

**Practical-experiential approach to scholarship**

This dissertation combines my rhetorical sensibility with a phenomenological acknowledgement of the experience of annual reporting. Participant interviews, expressions of the Iowa NSF EPSCoR reports themselves, and supporting documents are treated as necessary dialogue that is always contingent, always too distant, and an impossible communication to perfect. Yet my rhetorical sensibility insists better communication is possible through strategy and reflection. In his landmark overview of communication as a single field, Craig warns that combining practical and experiential theoretical frameworks could either result in, “an antirhetorical rhetoric in which persuasion and strategic action are replaced by dialogue and openness to the other…or else a hermeneutical rhetoric in which the roles of theory and method in communicative practice are downplayed” (Craig 39-40). My approach is unabashedly interpretive. However, that interpretation is informed by my longitudinal 4-year embedded experience in Iowa NSF EPSCoR.

**Description of corpus**

Although GPT studies often use interview transcriptions as a main text, there is precedent for using other data such as texts and ethnographic notes as the main texts and to supplement (Tracy and Craig 149-50). My data set includes ten semi-structured interviews of ten participants at two levels of involvement in annual report writing and across the three universities involved in the grant. Due to anonymity concerns, I treat participants as members of classes: contributors and main authors/administrators. This means interview data are not linked
specifically to individuals, either by pseudonym or other code, although at times I note when one individual has a lot to say on a topic or when individuals within a class agree or disagree with each other. Main author participants are those participants who are named on the annual report documents. I asked all main authors for an interview. Interviews from this class are those participants who agreed to an interview with me. Contributors are those participants who received funding and contributed information to the reports, but who are not named as authors of the reports. Contributors are a sample of convenience, but I also used contributor interviews to ensure I had coverage across platforms of the grant as well as the three universities. I interviewed four main authors and six contributors. Interviews generally covered the participants’ roles in annual reporting and their perceptions of the benefits and drawbacks of reporting. Please see Appendix A for more detail about these interviews, Appendix B for the IRB-approved question guide, and Appendix D for the IRB approval.

My data set also includes the complete Iowa NSF EPSCoR annual reports and NSF guidelines for annual reporting from 2012-2016 as well as publicly available documents that support the annual reporting process. Full annual reports with appendices are three-hundred page PDF documents that were downloaded from the NSF’s reporting website. Reports from 2013-2016 are aggregated via a database template that shows the report subheadings, but not the questions that the data answers. For the questions, I had to use supplemental documents such as official and unofficial EPSCoR question guides. These and other supplemental documents including documents created from a “reverse site visit” of Iowa faculty to the NSF Washington D.C. offices, a “site visit” of NSF agents to Iowa, formalized memo exchanges after Iowa NSF EPSCoR’s first 2012
annual report was deemed insufficient by NSF agents and they required revision, and Iowa NSF EPSCoR administrators’ set of templates and guidelines that were disseminated only within the Iowa project, create a set of documents that lend credence to as well as contextualize the interview data.

**Overview of AIDA method**

The method of GPT, action-implicative discourse analysis (AIDA), is a flexible series of stages the researcher must move through before drawing normative conclusions. Tracy summarizes AIDA as “understanding the problems of a practice, the conversational moves that reveal them and the strategies that manage them… the practice’s situated ideals… [and] developing implications for action” ("Reconstructing" 316). The stages of AIDA I have used in this study are (1) naming the practice, (2) categorizing the participants, (3) conducting semi-structured interviews, (4) collecting documents, (5) transcribing interviews, (6) coding interviews, (7) coding annual reports and supporting documents, (8) describing the rhetorical context, (9) identifying situated ideals, and (10) reflecting on practices. Please see Appendix A for a brief application of these ten stages.

I will show through using GPT that scholarship in rhetoric can be produced with an eye for what would be useful in engaging with frustrated communicators. Although this dissertation’s conclusions will not directly affect Iowa NSF EPSCoR participants because the Iowa NSF EPSCoR grant will be complete, the dissertation’s conclusions may help me and other scholars engage with other grant programs or organizations that must produce annual reports. The framework ought to help scholars think about how similar problems and techniques work in shifting and dilemmatic genres. The framework may also
help NSF agents think about the implications of NSF guidelines in practice. My ultimate goal in choosing this methodology is to provide communication scholars with a tool to help make our engagement with those outside our field more useful.

**Basic GPT and Rhetorical Analysis**

This section will show how GPT and rhetorical analysis can be used to reconstruct the problem, technical, and philosophical levels of annual reporting in this case. This section will apply GPT’s methodology using clearly delineated levels for each section. Of course, this separation of levels is a fiction; in practice all levels occur simultaneously and influence each other. Analysis in Chapters 3 and 4 will proceed more holistically.

**The reporting situational frame**

Mapping communication practices is always a positioned activity. After all, there is no way for a scholar or reflective participants to take a completely neutral and universal point of view towards a human communication. Every identifiable genre has personal and cultural baggage. Yet we also need to trace the frame of a practice as understood by its practitioners in context in order to delineate, define it, and make it available for inquiry. Craig and Tracy term this dilemma in practical theory a “positioning-unifying tension” ("Building Grounded Practical Theory" 237).

This dissertation expands the view of annual reporting as a genre of writing, as might be accepted if rhetorical analysis were the only method, to consider reporting as a communicative practice. Viewing reporting as a communicative practice allows me to consider and analyze communication
outside the genre itself. This permits us to better hear the voices of frustrated practitioners and better understand their dilemmas.

The reporting situational frame does not specify rhetorical choices such as best delivery method, exact intended audience, and appropriate timing. These ambiguities seem like they should be solved by a stakeholder’s report requirements. However, my GPT analysis will show that even the rhetorical genre ideals for reports are co-created. Requirements were interpreted to portray several visions of what a report ought to be like. When participants made and justified practical choices, they suggested the salience of different ideal visions for annual reports. My analysis shows that report writers and contributors can and do assume the agency to make choices based on their individual beliefs about appropriate reporting even in the face of explicit stakeholder requirements.

**Problem level analysis**

Report writers and contributors experienced several problems while writing and contributing to the annual reports. Craig and Tracy remind that the first goal of GPT’s method is to “understand the problems of a practice” and to do that we should focus on “moments in which participants seem to be experiencing discomfort, tension, or conflict” (Tracy "Reconstructing" 223; Tracy and Craig 149). The most obvious moment of reporting-related discomfort experienced during the grant occurred in Year 1, when the first annual report failed its review and had to be revised and resubmitted. A reverse site visit of Iowa administrators to Washington, D.C. to give presentations to a panel of NSF agents occurred during the revise and resubmit process. A recommendations memo from this reverse site visit panel suggested that report writers ought to
“Specify the challenges and strategies for overcoming the technical aspects of research planks,” particularly the “objectives and barriers” (NSF EPSCoR Reverse Site Visit Panel). The Iowa administrative team replied via their own memo:

In preparing the annual report, we had difficulty deciding upon the proper level of detail in describing the technical accomplishments of the research platforms. This reflects, in part, our efforts to detail our progress on specific milestones and metrics, which focused on infrastructure investments, and keeping the annual report to a reasonable length (on the order of 100 pages). (Iowa NSF EPSCoR "Iowa NSF EPSCoR Rii Track 2 Project Response to Reverse Site Visit Review Panel: Submitted to the NSF October 31, 2012")

Grounded practical theory analysis suggests moments of tension, such as this suggestion and reply, are indicative of a practice’s problem level. Here we see the NSF agents’ request for a seemingly simple technique, “specify,” is complicated by practitioners who indicate they value showing “efforts to detail our progress on specific milestones and metrics” as well as “keeping the report to a reasonable length.”

A similar tension is explicitly embedded in report guidelines. The main portion of the annual report is labeled “Detailed Report.” Instructions for completing this section every year of the grant read, “While the length of the Detailed Report is not restricted, clear, concise writing is required” (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards Annual and Final Report Guidelines"). These guidelines do not give a page minimum or restriction. Yet in practice, and as suggested by the reverse site visit response above, report
writers attempted to norm the balance of concision and detail through page length.

This situation slightly changed in 2013 when the annual report submission process moved to an online system. Suddenly, report writers were restricted by word count in the online forms, even though guidelines for the Detailed Report continued to indicate that total length would not be restricted. One main author reflected on this change during her interview.

Excerpt 1

Because prior to that it was a Word document that you could send and there was no specifications on length. It was basically like the appendix kind of thing. It had very detailed and complete, you know, long sections that you could just write, just put anything in.

It is important to note that this main author was not hired until Year 2 and therefore may be idealizing the lack of restriction she perceived in the report from 2012. She presents lack of restriction as the ability to “put anything in” and idealizes “detailed and complete” report sections. She insinuates a contrast to the current situation where the ability to write “detailed and complete” report sections is now a challenge. This sense of new rhetorical scarcity is echoed by a description of the decisions one of the other main authors asserts he had to make when writing Detailed Report sections into the online form after 2013.

Excerpt 2

But I won’t put it in the text box because, well, first of all you can’t attach figures. And a lot of times the detail is too, too much to put in the, because I have to, I have 8,000 characters in section 2B. Okay, 8,000 characters is about 2 ½ to 3 pages of single-spaced text. And I have, you know, and in that section I have
maybe 15 or 20 pages of materials and I can’t put all that detail into the, because I have to weigh the stuff going on in wind energy with the stuff going on in bioenergy, and the stuff going on in energy policy, as well as broader impacts.

GPT suggests that the tension shown through this reasoning occurs at the problem level. The participant shares that figures don’t attach in the text boxes and he only has “2½ to 3 pages” in which to fit “15 or 20 pages” of gathered materials. This is a clear indication of rhetorical scarcity. The requirements of the online system manipulate the rhetorical situation to create constraints. At the same time, this main author was already in a situation where he had to make hard choices to “weigh the stuff going on” across platforms.

So far, this analysis of the problem level has identified rhetorical scarcity as the main problem of annual reporting in this case. Competing requirements that create detail and concision in reports have been shown to help create this rhetorical scarcity. These requirements repeat across the problem level in different guises. They are embedded in the interviews of participants, the texts of NSF agents, the guidelines for annual reporting, as well as in the experienced restrictions of the online form’s word count and self-imposed page limits. While rhetorical scarcity remains the main problem of reporting explored through this dissertation, I have also identified secondary frustrations that help create this problem. These challenges are sometimes intertwined and sometimes only tangentially related to the requirements for detail and concision.

Ultimately this dissertation tells the story of how the report writers and contributors successfully met those challenges. This study’s participants are some of the most successful scientists and supporting staff in the U.S. After all, they successfully won a giant national grant, ran the grant successfully, passed
their annual reports and other national reviews, and Iowa graduated the NSF EPSCoR program. In 2016 as I was completing interviews and report writers were completing the final report, one main author took the opportunity to reflect on this success.

Excerpt 3

Well, so, the first year of the project the report was rejected. And the second report was accepted but it had a lot of detail in it. But then, this research.gov was brand new so there was nothing to consult because everyone had to do this. So no, but I do feel proud of how we figured out how to put it together to capture all this information in a single document. Even if NSF doesn’t necessarily look at it, our external evaluator does, and it is captured somewhere so if someone wanted to know, we have it.

Although much of my focus is on frustrations, GPT can also be applied to instances of praise, such as this. Here, the participant acknowledges the first and second years were rocky, which he links to challenges in determining the right amount of detail, particularly for the online system. Yet he feels proud that the team ended up with annual reports that managed to “capture all this information in a single document,” suggesting that both collecting a high quantity of information and framing it as a single project were challenging.

The participant points out that one of the rhetorical choices of audience still remains controversial. He asserts that it is good to have produced a document that pleased the external evaluator as well as generally to “have” what someone might want to “know” in the future, even if other NSF agents don’t “necessarily look at it.” Again, this praise suggests an initial major uncertainty in
which audience to please more. Of course, narrowing the choice of audience adds to rhetorical scarcity.

The use of annual reporting for what Ditlevsen terms a, “stakeholder-oriented approach to communication” has bled into NSF annual reports. The 2016 NSF EPSCoR annual report instructions explicitly argue that an explanation of a project’s “impact” is particularly required for stakeholder orientation. The following statement begins the fourth section of requirements, labeled “Impact” in the guidelines.

Over the years, this base of knowledge, techniques, people, and infrastructure is drawn upon again and again for application to commercial technology and the economy, to health and safety, to cost-efficient environmental protection, to the solution of social problems, to numerous other aspects of the public welfare, and to other fields of endeavor. The taxpaying public and its representatives deserve a periodic assessment to show them how the investments they make benefit the nation. Through this reporting format, and especially this [Impact] section, recipients provide that assessment and make the case for Federal funding of research and education. (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards: Annual and Final Report Guidelines")

This statement situates the reports as public stakeholder oriented communication. The statement captures what is owed to the stakeholders of NSF grant projects, who are identified as “the taxpaying public and its representatives.” This statement greatly narrows the range of possible audiences to only public stakeholders. Analysis of the statement shows it demonstrates an allegiance to three types of public stakeholders.
The three types of public stakeholders are suggested by assertions that stakeholders deserve to see assessment of grant programs, that they deserve to be informed, but also that they ought to be persuaded of the benefits of the programs. While “assessment” invokes an evaluative audience, to “make the case” implies persuasion to at least a slightly skeptical audience. The strongest verb of the statement, “show,” implies informing a low-information audience as well as supporting assessment and persuasion. These three imagined public audiences, evaluative, low-information, and skeptical, narrow the realm of possible audience choice even further.

However, these are not the three audiences cited by the main author in excerpt 3, above. Instead, he invokes two non-public audiences: “the NSF,” and “our external evaluator.” He does somewhat acknowledge a potential public stakeholder with the less specific “someone” who “wants to know” but doesn’t speculate on why anyone external would want to know about the grant, downplaying this audience. Here we see an example of a main author reacting to the problem of rhetorical scarcity by resisting the guidelines’ audience specifications. This resistance creates a challenge at the problem level of analysis. The main author needs to choose both what audience to target and justify that decision, especially since his choice is likely to subvert the guidelines.

So far I have reviewed how GPT can be applied to instances of text and discourse to identify the problems of a practice. I have claimed that the main problem in this case is rhetorical scarcity. Points of frustration that empirically led to my identification of rhetorical scarcity include the challenge of creating a detailed report that is also concise and knowing which audience ought to be targeted. However, these challenges also intertwine with each other. For
example, if participants limited the rhetorical context for the report to an NSF agent doing evaluation, detail became very important. On the other hand, a public, low-information audience needs concision.

Throughout this dissertation the analysis will move both down towards the concrete choices made in writing the reports, the technical level, as well as up to the abstract justifications of those choices, the philosophical level (Tracy "Reconstructing" 223). The next section will apply GPT to the technical level. Just as there were many challenges my analysis found at the problem level, there were many techniques participants used to manage the practical challenges. Yet, unlike the problem level, my analysis did not find just one main technique at the technical level. However, for clarity in this first GPT analysis, the next section will focus on one unique technique. Chapters 3 and 4 will take a more holistic approach.

**Technical level analysis**

The word ‘highlight’ was often used as both a verb and a noun in Iowa NSF EPSCoR. Highlighting was viewed as an appropriate technical strategy for managing the problem of rhetorical scarcity. Highlighting was formalized as “NSF Highlights,” a portion of the annual report where the journalistic guidelines and writing style created even more rhetorical scarcity, and the audience was explicitly public. “NSF Highlights” were treated significantly differently than the rest of the annual reports. For example, the main authors were my immediate supervisor and myself. Although “NSF Highlights” are a significant manifestation of the highlighting technique, for clarity and focus this section will attend to how the general strategy worked for participants. For a more complete review of “NSF Highlights,” please see Appendix C.
Local administrators likely grasped highlighting as an informal strategy and technical solution from NSF agents at the time of the 2012 reverse site visit. The panel’s recommendations and responses from Iowa administrators identify highlighting as a solution to deficiencies in the first annual report and face-to-face presentations. For example, one exchange between the panel’s report and the local response to it explicitly does this. The panel wished to see practitioners give more technical detail about the science research.

However, the panel would have liked to see more evidence related to the technical aspects, as well as challenges faced in the first year. The technical research aspects of the program were not well articulated in the presentation as well as the written materials. Future reports should highlight the technical accomplishments of the research. (NSF EPSCoR Reverse Site Visit Panel)

In response, the Iowa administrators wrote the following promise, repeating almost exactly the NSF agents’ language of highlighting.

To correct this perceived deficiency, we will highlight in our next annual report specific technical accomplishments in the fundamental research that is an essential part of the EPSCoR project. (Iowa NSF EPSCoR "Iowa NSF EPSCoR Rii Track 2 Project Response to Reverse Site Visit Review Panel: Submitted to the NSF October 31, 2012")

No part of this exchange defines what highlighting actually means to the NSF agents or Iowa administrators. However, we can infer from this exchange that highlighting is perceived as a technique that would move the report content towards sufficient technical evidence and specific articulation.
After this exchange in year one, the highlighting technique and the term “highlight” were used informally in the report texts to frame a focus on a particular project or set of projects. For example, the 2014 Annual Report begins sixteen of the Detailed Report’s sections and sub-sections with versions of the following statement: “Many activities were completed during Year 3 of the Iowa NSF EPSCoR project to address project goals. Highlights of the major activities are provided below” (Iowa NSF EPSCoR "Rppr Preview Report: Preview of Award 1101284 - Annual Project Report"). These statements are always followed by report content that reviews required aspects of a few of the major projects in every platform. A close analysis of this report content will be discussed in Chapter 4. Generally, however, the informal use of highlighting as a frame in the annual reports indicates an attention to particular projects, though not necessarily their accomplishments, challenges, or even technical aspects.

One main author described highlighting as a strategy to show “cool things.”

Excerpt 4

*Because those stories, every year I look at those stories and, you know the first thing I do when we start this annual report is I go through the history of all the stories just to see, you know, ‘here are some people, here are some good things and we need to make sure these are in our annual report because these are cool things to have.’ Or we try to put them in somewhere or some way or another we want to try to highlight that. And I wish that, and so with our program officer and with NSF I really want to also highlight, here are some excellent outreach efforts that we do. Even if it’s just by highlighting these areas that we do.*
This main author was particularly concerned that the unique, newsworthy, human-interest research stories and broader impacts projects would be lost in the annual report. She considers highlighting a way to recover and point out these non-technical details to NSF agents. For this main author, highlighting is a way to point out accomplishments primarily. This is similar to one way the term was used by another main author.

Excerpt 5

I didn’t want to limit researchers’ descriptions of what they’re doing. Because they’re really, they are all very proud of their accomplishments. Some highlight it better than others. You know, some researchers, again, provide bullets, fragments of a sentence, but there’s no context. Others will provide figures and more description and it’s very helpful.

In this excerpt, a main author describes the type of material he prefers to receive from contributors. Although he notes that everyone is “very proud of their accomplishments” he points out, “some highlight [their accomplishments] better than others.” Here we can glean that a good highlight of an accomplishment includes more technical detail such as figures and description, as well as context. Poor highlighting is providing “bullets, fragments of a sentence” but “no context.” These normative observations about how to highlight well both help manage rhetorical scarcity and create it by limiting options.

So far, this GPT analysis has linked highlighting as a technique to problem management of rhetorical scarcity. The participants identified highlighting as a way they managed detail and audience challenges. We see giving detail, specifically technical detail, is thought to be achieved through highlighting. This analysis also suggests again that detail is linked to accomplishments, which the
main author in excerpt 4, like the other main author earlier in excerpt 3, argues is important for the evaluative, non-public NSF agent audience.

Although claiming in excerpt 5 that good highlighting means more detail, this main author also identifies that highlights are used to create concision. One of the most useful aspects of GPT analysis is its ability to feature seemingly contradictory qualities at the various levels of analysis.

Excerpt 6

And then for the accomplishments section I take that big appendix and I summarized the highlights that I want to include in the annual report on research.gov and then we attach the appendix.

In the above excerpt, the main author may be conflating highlighting and summarizing. He describes his process as writing an appendix that is unlimited in length, and then summarizing highlights out of that appendix to use in the online form. The appendix will be discussed in further detail in Chapter 3.

Earlier, I identified that highlighting in practice seemed to correlate with focusing on specific projects. This implies making choices of what to highlight in order to gain concision. However, here we see the main author “summarized the highlights” which either means he summarized all the information he had into highlights or he highlighted specific projects which he then summarized together. Either way, it is implied that summarizing highlights results in a concise text that fits in the restricted word count online form. This means the highlighting technique is perceived to manage the rhetorical scarcity in concision requirements.

Although this main author seemed to see summarizing and highlighting as essentially similar actions, another main author did not. She discussed this
difference of opinion candidly. Although they are the same class, it is important to note that the main author this participant discusses in the following excerpt is NOT the same main author who is excerpted above, but a third member of the administrative team. This means this class of participants were not always consistent in how they imagined good reporting.

Excerpt 7

*But there’s also, there were some things that I wish we had included or just, you know, got lost in the pile as we were trying to assimilate a vast quantity of data.*

*And then you have to make decisions as to how you’re going to put it together.*

*And you have to summarize things. And you know [main author] has, basically he summarized the broader impacts. And chose that, in his own way, where I might have, okay well maybe I might have, I wish we could’ve highlighted more some of the specific things where he might, you know, you’ve probably seen how he summarizes it. Which is his prerogative.*

This excerpt again shows this main author’s concern with specific broader impacts projects being “lost” in the summary. She acknowledges, “you have to make decisions,” “you have to summarize things” in order to attain the concision necessary for the report. However, she rues the loss of “specific things” which she figures she might have highlighted had this been her area to write.

Analysis at the technical level in this section focused on the aspects of one technique, highlighting. It established that highlighting was perceived to be a way to manage the problem of rhetorical scarcity by allowing greater detail, greater concision, and targeting both the public (through “NSF Highlights”) and internal NSF audiences. Many of the excerpts in this section included assertions of praise or blame and justifications of using the technique. In chapters 3 and 4 a
discussion of those philosophical level aspects will be integrated holistically into
the analysis. However, for clarity I have retained the philosophical level for the
end of this chapter.

**Philosophical level analysis**

According to GPT, now that we know the basic problem of rhetorical
scarcity, and a technique associated with its management, highlighting, we can
not only identify philosophical level dilemmas, such as valuing more than one
audience, but also figure out the hierarchy of its situated ideals. According to
Craig and Tracy, situated ideals are “participants’ beliefs about good conduct”
that “capture the complex prioritizing of competing concerns and values that not
only will, but arguably should, be operative in actual practices” (Tracy and Craig
150). Essentially, situated ideals help participants manage dilemmas and justify
their solutions. Reconsidering the influence of situated ideals is a powerful tool
for critical reflection and normative judgment.

GPT tells us that instances where a participant expresses praise or blame
or a similar emotion (such as regret, in excerpt 7, above) are ripe for helping
determine the philosophical level dilemmas associated with a problem. In
excerpt 7, the challenge is how best to manage rhetorical scarcity created by a
necessity for concision. Writing a report concisely is presented as a non-
negotiable aspect of good reporting, something “you have to” do. It shows up as
an obligation over and over, from restrictions on “reasonable” page length to
speculations about how much the main audience can be expected to read. This
suggests concision is a situational ideal for annual reporting.

In excerpt 6 one administrator portrayed highlighting as a strategy that
summarizes (or supports summary) and thus creates concision. However,
Excerpt 7 shows a different administrator critiquing summary for not highlighting “specific things” enough. Now we can start to see that although a concise annual report is valued, how to achieve concision leads participants back into the problem and technical levels. To attain concision, ought the report writer completely or incompletely summarize, completely assimilate, “pile” project information, or should they highlight an incomplete set of projects carefully chosen for audience impact?

Although highlighting was often portrayed as a magic bullet to retain detail while achieving concision, highlighting was also criticized by one main author.

Excerpt 8

But the limitations that the research.gov put on the PI in terms of character count is really hard in very large projects. And yes, I understand that they don’t have time, you know, they don’t want to read 200 pages. I understand that. But there’s a lot of activities going on in these large projects and that’s really, it is in my opinion, if I select one thing to highlight a project manager might come back and say, ‘what did you do in this area?’ This one I didn’t highlight. Or an investigator says, ‘you didn’t highlight my area.’ So that’s a challenge.

This excerpt shows one main author’s hesitations about relying heavily on highlighting. He points out that highlighting may be insufficient due both top-down and bottom-up pressure. He worries that NSF agents who are using the report to evaluate need details about every project area, not just selectively highlighted projects. He also worries that faculty on the grant may feel slighted if their project is not chosen for highlighting. This introduces a potential third
audience to consideration. Specific strategies this main author uses to manage this set of audience-based tensions will be discussed in Chapter 4.

Generally, however, excerpt 8 is an argument for complete, detailed coverage over concision. Although the participant implies he respects NSF agents’ time and their preferences for concision, he identifies other audiences who he also respects and takes into consideration when making the value judgment of how to handle concision in the reports. This dilemma of competing audiences and purposes correlated with competing values and techniques shows how closely rhetorical concerns are bound with the dilemmas faced by practitioners. It also shows how GPT can help inform rhetorical analysis and make the rhetorical decisions and value judgments being made explicit and the available for critique and reflection.

To see another instance of good conduct being asserted, we can return to the 2012 reverse site visit panel’s suggestions that asked Iowa administrators to, “Specify the challenges and strategies for overcoming the technical aspects of research planks,” particularly the “objectives and barriers” and give greater detail via highlighting:

However, the panel would have liked to see more evidence related to the technical aspects, as well as challenges faced in the first year. The technical research aspects of the program were not well articulated in the presentation as well as the written materials. Future reports should highlight the technical accomplishments of the research. (NSF EPSCoR Reverse Site Visit Panel)

The panel’s suggestions show they want “more evidence” particularly of “technical aspects,” “challenges” and “technical accomplishments.” This call for
detail joins excerpts 8, 7, 5, and the response from Iowa administrators pointing out that a good report is a detailed report. Including detail in reports is a situated ideal of reporting. This situated ideal is also supported by the annual report guidelines, which will be discussed in greater detail in Chapters 3 and 4.

The panel’s suggestion to include “technical research” detail shows they believe reports ought to treat detail as “evidence.” The panel’s use of the term “evidence” links detailed annual reporting to creating argument with claims that need evidential support. So, for GPT analysis we can say including detail is a situated ideal for annual reporting in this situation because it allows the report to create arguments with well-supported claims. This excerpt specifies these claims should include both “challenges” and “accomplishments.”

However, this is a different reason for giving detail than the Iowa administrators relied on. In the excerpts above, over and over again, local participants indicate they value detail in reports because that detail creates a good archive. For one example in excerpt 3 an administrator admitted, “but I do feel proud of how we figured out how to put it together to capture all this information in a single document.” Capturing information seems to fit with the archival reason for detailed reporting, not the argumentative reason. For another example, from the reverse site visit panel response, one of the reasons administrators cited for not knowing the “proper level of detail” to give is, “This reflects, in part, our efforts to detail our progress on specific milestones and metrics, which focused on infrastructure investments” (Iowa NSF EPSCoR “Iowa NSF EPSCoR Rii Track 2 Project Response to Reverse Site Visit Review Panel: Submitted to the NSF October 31, 2012”). This reason shows administrators view
detail in the annual report as an ideal way to record progress, not to support an argument for challenges and accomplishments.

Local administrators’ response to the panel’s suggestion picks up on highlighting as a technique, as I discussed in the previous technical level section, but analysis in the philosophical level shows this response does not seem to acknowledge the potential difference in reasoning for the situated ideal of giving detail. The Iowa administrators’ response is, “To correct this perceived deficiency, we will highlight in our next annual report specific technical accomplishments in the fundamental research that is an essential part of the EPSCoR project” (Iowa NSF EPSCoR "Iowa NSF EPSCoR Rii Track 2 Project Response to Reverse Site Visit Review Panel: Submitted to the NSF October 31, 2012"). In fact, the use of “accomplishments” in this response suggests they may have misinterpreted the NSF agents’ request.

My philosophical level analysis of the reverse site visit panel’s suggestion concluded that their likely intention was to request detail in order to support argumentative claims for specific accomplishments and challenges. Instead the local administrators interpret the request as asking for detail about completed “technical accomplishments of fundamental research.” This nuance reframes accomplishments as an archive of complete of fundamental research. The Iowa administrators’ response, while drawing on the same ideal of creating detailed reports, seems to show that recording their technical research is actually accomplished is the reason for the detail, rather than that the technical research detail supports claims of accomplishment.
Conclusion

This section has reviewed how highlighting was used as a technique to manage the problem of rhetorical scarcity, which manifested as dilemmas due to the sometimes competing situated ideals of concision and detail. I have shown that local participants worked within these situated ideals to reason through and justify their decisions in ways that likely resisted, misinterpreted, or just missed aspects of NSF agents’ requests.

The next two analysis chapters use two more situated ideals as organizing models. Both of these new situated ideals help manage the rhetorical scarcity created by competing situated ideals for detail and concision. Chapter 3 identifies and investigates one way the situated ideal of recording and presenting as much information as possible as succinctly as possible manifests. I have labeled this ideal “inventory.” Chapter 4 looks at one way the situated ideal of telling the persuasively comprehensive story of the grant program manifests. I have labeled this ideal “narrative.” I have taken a more holistic approach to chapters 3 and 4 in order to show how GPT’s levels function within a situated ideal and explicitly contrast two situated ideals that create major dilemmas during reporting.
CHAPTER 3. REPORTING AS INVENTORY

Iowa NSF EPSCoR administrators and faculty faced a problem. They wanted to record and present as much information as possible as succinctly as possible for evaluation by multiple audiences they didn’t really know. This chapter shows that both report guidelines and grant participants relied on a set of techniques that were justified as numeric, comprehensive, and granular. These added up to a situated ideal of the report I have labeled inventory. Report guidelines, submission requirements, and submission practices retained language and other indicators that pushed participants to rhetorically consider ways to deliver information that worked best for an evaluative audience. After inductively building an understanding of some practices and reasons for them that add up to the belief that good reports ought to be inventorial, this chapter will present a dilemma within inventory, that this ideal was understood as both keeping track and as collecting information.

**Inventory in the guidelines**

The NSF EPSCoR guidelines, Iowa NSF EPSCoR templates, and other supporting documents gave both implied and explicit suggestions of what the report ought to be. Although instructions included specifications for nearly every rhetorical concern, this section will review report delivery and implied evaluative audience. These rhetorical concerns seemed particularly linked to participants’ justifications numeric, comprehensive, and granular justifications for creating inventorial reports.

After 2013, Iowa NSF EPSCoR’s annual reports were never printed or published as complete, single documents. Although referred to in the singular
and retaining one firm due date, annual reports from 2013-2016 actually consisted of online entries into a content management system (CMS) database and multiple email attachments to NSF agent receivers, compilers, and reviewers. What components of the report were delivered in what way was a joint decision between the NSF, as written in the guidelines; individual NSF agent preferences, which changed during the course of the grant; and grant administrators. The multiple delivery forms for the reports imply report components can be easily split into parts that can stand on their own. The reports in practice no longer had a purpose to be cohesive, readable texts. However their parts needed to be granular enough that each piece could be submitted in isolation.

Although reporting piecemeal can be justified as both numeric and granular, this and other restrictions placed on the reports caused tension in participants who valued comprehensive reporting. For example, one administrator described the challenges of handling comprehensive annual report data.

Excerpt 9

But there’s also, there were some things that I wish we had included. Or just, you know, got lost in the pile as we were trying to assimilate a vast quantity of data. And then you have to make decisions as to how you’re going to put it together. And you have to summarize things. And you know [PI] has, basically he summarized the broader impacts, and chose that, in his own way. Where I might have, okay well maybe I might have, I wish we could’ve highlighted more some of the specific things where he might, you know, you’ve probably seen how he summarizes it. Which is his prerogative.
In this excerpt comprehensiveness is considered impossible. The administrator claims the “vast quantity of data” must be assimilated, put together, and summarized. Although her wish for greater comprehensiveness is modest, “I wish we could’ve highlighted more some of the specific things,” as discussed in the previous chapter she implies that greater specificity is preferable to summation. Interestingly, the administrator does not divulge which piece of the annual report she has in mind here. Her use of “I wish we had included” implies she may be discussing all the parts of the annual report as a whole, which was typical for the administrators and contributors in this case. It also suggests that despite one administrator’s characterization of one part of the annual report as a comprehensive “storage house” [excerpt 22] there were specifics that did not make it into the annual reports at all.

The significant portion of the 2013-2016 reports’ ultimate destination was to be part of an online content management system (CMS) database via the Research.gov Research Performance Project Reports system (RPPR, also sometimes referred to by its CMS name, “FastLane”). The interface for this database was an online questionnaire that presented administrators with a series of text boxes that had, in most cases, 8,000 character limits (about 2-3 pages). Some of these text boxes explicitly required numerical entries. The use of a database that required specific numerical entries suggests that numerical data were valued in this case. These features show the RPPR database follows our expected function of databases to granulate and standardize entries for easier comparison and reuse.

Although this is easier for numerical data, technical communication’s delivery of many types of organizational knowledge is experiencing a shift to
single sourcing into CMS databases (Hart-Davidson et al.; McCarthy et al.). In his case study on an academic CMS implementation, Cripps explains that adaption of single sourcing means, “the text (content) that used to go into a document is fragmented into discrete chunks or granules. These chunks are then entered into a database as information that can serve a variety of purposes and appear in different forms” (Cripps 424). In this case not all of the database entries were numerical. However they were still treated as granular chunks of database information. ‘Filling in the boxes’ was a significant way that participants viewed reporting.

Another main part of the annual report was submitted via Excel spreadsheets, emailed to an NSF agent, which contained classic accounting information such as salary breakdown, participant demographics, and expenditures. Instructions for these tables explicitly asked for numerical information. There was overlap in data that was reported via database and the emailed spreadsheets. This overlap specifically relates to numerical information and was a source of frustration for administrators who had to gather information for contribution.

Excerpt 10

I’ve gotten to know what the heck they want in whatever cell it is. Things like, you know, I’m trying to think of a good example, some of those templates they ask for salary and fringe to be split up, some ask for a salary and fringe together. So rather than arguing back and forth about how silly that is, you know I can, I know that’s coming. So I can set up our internal finances a little easier.

This administrator, since he was not the administrator who directly typed into the database and sent the accompanying portions of the report via email, cannot
necessarily see that the numbers requested, here “salary” and “fringe” both independent and added, were entered into different parts of the report which were not necessarily read together or even by the same audience. Therefore, he justifiably understands reporting the numbers in different ways as “silly.” He divulged that in his first year as administrator this reporting requirement in particular forced him to recalculate information for every participant by hand, which cost him significant time. However, this does not mean the administrator did not value the numerical information.

**Excerpt 11**

*Or and then, I mean, it’s like I’m not sure what that data is trying to accomplish. And if it’s trying to accomplish something there’s got to be a better way to do it. Because what that ends up having is, in this day and age, me and this thing, my calculator, [taps calculator] get a ton of work out. And it’s because there’s no way I can design a financial template using Oracle to that… And then, to just, financial accountability, I think that’s really important. You know everyone obviously has a, NSF has a right to know where you spent the money and why.*

This administrator was deeply concerned about the rhetorical purpose of the numerical information and how it would be interpreted. The annual reports seemed to ask for accounting information in ways he viewed as abnormal. He cites as evidence of this abnormality that standard accounting software was unable to handle the requirements. Although he valued reporting numerical data, here “financial” information, he assumed report delivery kept these numbers together and therefore the additional requirements didn’t really add anything new. This is suggested by his use of the singular in wondering, “what that data is trying to accomplish.”
His assumption that numerical data was kept together during delivery is justified. Generally the report guideline language did not distinguish between the database and emailed spreadsheet parts of the annual report. Report guidelines referred to the interface of both the database and the spreadsheets as “data boxes” and “text entry boxes.” For example, “RPPR data is either entered directly into data or text boxes or uploaded as attachment PDF files. Data fields and text entry boxes support only ASCII characters” (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards: Annual and Final Report Guidelines"). As mentioned earlier, these boxes collected both numeric and textual information. The guidelines did not name the boxes differently to identify the quality of information gathered.

Entering information into data fields and text boxes is an action that assumes the text to be entered already exists outside the document and simply needs to be discovered and transmitted into the document. The assumption that the transmission of this information is non-interpretive nor creative suggests the information was already perceived to be granular and that this is appropriate. The guidelines’ use of the word “data,” while an accepted term for non-numeric information, still retains a connotation of scientific distance that objectifies the information and lessens the influence of its human producers and audiences.

Although this quotation from the guidelines suggests a PDF attachment is acceptable, the use of a PDF appendix to supplement the data was viewed as a novel technique by Iowa NSF EPSCoR both at the local and national levels. The PDF appendix to the database will be discussed later in this chapter.

This section has established that valuing the report as an inventory was encouraged by the report guidelines due to its specification of techniques and
justification of those techniques as granular, numeric, and comprehensive. It also established that Iowa participants generally accepted these requirements with a few reservations that sometimes pitted inventorial reasons against each other. The next section will cover the problem of audience that was articulated with this situated ideal.

**Evaluation as a rhetorical guide**

Instructions for the reports also outlined how the reports were to be evaluated. Descriptions of how evaluation occurs gave explicit and implied audience characteristics for the report. The guidelines specify,

> Evaluation of Annual and Final Reports by the managing PO focuses on comparing what was to be done in the project year, as detailed in the proposal and the project’s strategic plan, and what was actually accomplished in the project year. (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards: Annual and Final Report Guidelines")

Although administrators explained that NSF agents had quite a bit of leeway in how they evaluated projects, the language of evaluation in this explanatory excerpt specifies comparison to previous years. The instructions assume “what was to be done” is pre-defined and portrayed in a comparable way to “what was actually accomplished.” The modifier, “actually” reinforces that this data ought to be comprehensive. These guidelines suggest the reports should be static and complete accounts amenable to granular comparison, an idea that influenced how administrators understood what they were doing during the report process, as shown in the next excerpt.
Excerpt 12

*We basically remind report readers what we’ve promised in our strategic plan and deliverables. And then describe what we’ve done to either meet or not meet those in our duties in particular here.*

Excerpt 12 shows that the administrator internalized the relatively objective comparative ratio for evaluation criteria. There are only two options here for the evaluation: meeting or not meeting what was promised. Her mention of “deliverables” suggests a numeric frame was at least partially appropriate for the evaluation. Deliverables can be counted. And the annual reports did outline what was promised down to the particular numeric details. For example, how many new posts would be added to the webpage per year was specified in the strategic plan. This administrator also has evaluative report readers in mind. By presenting the data as either meeting or not meeting what was promised, she pictures this evaluation to be very easy for NSF agents. These imagined evaluative readers are very important as a main audience of the report.

Unprompted, participants often imagined kairotic moments the evaluative audience might consult the reports. This seemed to help them imagine an evaluative audience. For example, the following excerpt joins excerpt 12 in imagining future evaluative readers.

Excerpt 13

*There was no way to tie it back to anything unless you were in my brain. And so I guess, you know, I was asked to provide those types of numbers and to the extent that, you know, I created them and used the best data I could, sure I had confidence in them. But did I have confidence in the fact that, you know, if someone, Joe Public or even an administrator at NSF, tried to ever tie any of that*
back amongst those various reporting elements, it’s just, there’d be no way to do it.

The administrator quoted in excerpt 13 suggests the annual reports ought to be stricter numerically due to the possibility of evaluative readers. This excerpt also shows his discomfort with the low levels of comprehensiveness and contextualization required in this numerical accounting. Though this administrator believes he was comprehensive, “I had confidence,” he was worried about proving the numbers in an audit, “There was no way to tie it back to anything unless you were in my brain.” Even though, in this case, the administrator dealt specifically with numerical data, his ideal vision for reporting these numbers included more contextualization to show their comprehensiveness. This and excerpt 12 show that an assumption of an evaluative reader permeated the administrative team. However, the values that emerged when participants considered evaluation were sometimes at odds.

In the first year participants learned the importance of evaluative readers when their first annual report was rejected and a “reverse site visit” (RSV) to NSF evaluators led to frustration and fear. The context of this first year is important to understand how comprehensiveness specifically came to be a significant way to reason for inventorial reporting.

Comprehensiveness of the reports was emphasized much more by Iowa NSF EPSCoR participants than the guidelines required. Although the report guidelines asked somewhat impossibly for “completed expenditures and obligations projected to the end of the reporting period,” the main purpose of the annual reports, to compare “what was to be done in the project year, as detailed in the proposal and the project’s strategic plan, and what was actually
accomplished in the project year” (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards: Annual and Final Report Guidelines”) didn’t have to be interpreted as a requirement for comprehensive reporting. This is because the proposal and strategic plan, while they did give some numeric benchmarks for larger projects within the grant, were often written in strategically general language.

For example, the revised version of the first year’s annual report lists strategic plans for the Bioenergy platform such as “expand research capacity for evaluating ecosystem sustainability of bioenergy agriculture” (Brown 65). This strategic plan only requires a demonstration that expansion is occurring to fulfill the requirement of accomplishment. There is no comprehensive endpoint for expansion. While the plan does include more particular “milestones,” such as purchasing particular equipment and completing permissions for access to research sites, these are either completed or not completed. And not all equipment purchased and sites accessed were pre-determined in the strategic plans. “Metrics” required by the strategic plan were numeric, such as journal articles published, but there are no numerical metric goals specified in the original strategic plan for each year. Instead, numerical goals were added on a year-by-year basis.

Iowa NSF EPSCoR administrators added comprehensiveness to the report guidelines at the time the NSF EPSCoR guidelines were distributed to Iowa participants each year. For example, the 2016 instructions sent internally via email from administrators to contributors assure,

From your materials, [COO] and [PD] will assemble a complete report that will form various appendices for the RPPR report. They will also craft
complete answers to each question below for the overall project from the materials you provide. (Heindel and Kristmundsdottir)

Although these additional explanatory instructions promise the administrators will create a “complete” report, they do not specify that contributors must be comprehensive in what they choose to report up the internal hierarchy. As will be shown later in excerpt 21, administrators explicitly left this choice up to contributors.

However, administrators had promised the NSF greater comprehensiveness during the first-year review process. In a response to the 2012 reverse site visit review panel recommendations, Iowa NSF EPSCoR administrators identified better comprehensiveness in the annual report as a solution to the panel’s perceptions of deficiencies in the grant. For example, in response to a comment that questioned how energy efficiency improvements served the goals of the Energy Utilization platform, administrators promised, “Future annual reports will provide better detail on these efforts than presented in the first annual report” (Iowa NSF EPSCoR "Iowa NSF EPSCoR Rii Track 2 Project Response to Reverse Site Visit Review Panel: Submitted to the NSF October 31, 2012"). In fact, a deficiency in the Year 1 annual report comprehensiveness was so often linked to poor reverse site visit panel perceptions that the introduction to the Iowa NSF EPSCoR response includes a disclaimer,

In preparing the annual report, we had difficulty deciding upon the proper level of detail in describing the technical accomplishments of the research platforms. This reflects, in part, our efforts to detail our progress on specific milestones and metrics, which focused on infrastructure
investments, and keeping the annual report to a reasonable length (on the order of 100 pages). (Iowa NSF EPSCoR "Iowa NSF EPSCoR Rii Track 2 Project Response to Reverse Site Visit Review Panel: Submitted to the NSF October 31, 2012")

This disclaimer shows administrators in the process of learning the difference between the written guidelines and evaluative expectations from NSF agents in terms of comprehensiveness. The main problem stated very clearly here, and discussed in the previous chapter, is how to be detailed while also “keeping the annual report to a reasonable length.” In the first year administrators erred on the side of valuing numeric information and shorter reports. They relied on the situated ideal of creating an inventorial report. In proceeding years, administrators devised a novel technique to handle this dilemma.

So far, this chapter has reviewed how annual report delivery requirements and audience implications in the guidelines and participants’ perceptions of them suggested several specific technical choices that were reasoned numeric, comprehensive, and granular enough to create a good inventorial report. However the reasons were also shown to be in tension, especially when the evaluative audience was considered. As discussed in the previous chapter, after the first year, administrators promised to be comprehensive and detailed so NSF agents could make better evaluations but a concern for concision, so NSF agents could handle the length, persisted. How to enact a numeric and granular comprehensiveness while being concise remained a dilemma. The next section will explore how administrators in the grant worked through these problems.
Administrative decision-making

Administrators both accepted and pushed back against the picture of the report embedded in the guidelines and other NSF-origin texts. This section will set up some of the tensions and complications administrators in particular experienced as they managed their identities and obligations as administrators with the rhetorical scarcity of report requirements.

Perhaps following the guidelines’ use of “text boxes,” Iowa administrators who interacted with the database interface referred to it as “text boxes” and often talked about the report in terms of “tables” rather than thinking of submissions in terms of pages. This seems to indicate they valued numeric information easily granulated into tables and compared for evaluation. However, administrators also problematized the idea that reports ought to be purely understood as granular and numeric or only intended for evaluation. They indicated the challenges of balancing requirements with their administrative obligation to comprehensively support contributor research and activities.

Administrators often expressed frustration when they divulged their wish to fully depict contributor research and activities. Frustration was particularly directed at restrictions on annual report delivery techniques, again invoking rhetorical scarcity. The administrator identity coincided with a desire to use more nuanced techniques and less numerical data than sometimes allowed.

Excerpt 14

Now what I also want to address that, this summer in our narrative, when possible we try to include that or have that in tables just to show that we did these things so as not to just reduce them to these counts. But it’s hard sometimes. Because there is limits to, apparently, what we can.
Excerpt 14 ruminates about an administrator’s intention to push back on the requirement to “reduce” research and activities to “counts.” This shows that the administrator perceived the guidelines as requiring only numeric data, even though the administrator herself would like to report in more comprehensive ways that show “we did these things,” which implies a less granular description. The administrator’s reasoning for maintaining a complete record that does justice to the things “we did” competes with the reasoning that NSF agents should receive a report short enough and numeric enough to be easily evaluated.

These same challenges played themselves out in another administrators’ discussions. In the next excerpt, reasons stemming from the administrator’s leadership position affected his decision-making about what to include.

Excerpt 15

Or an investigator says, ‘you didn’t highlight my area.’ So that’s a challenge. You don’t want to discourage individuals from providing information as well as participating because you’re not giving their information due justice.

As seen in the previous chapter, this administrator explicitly identified the implications of only highlighting some researchers’ projects and not others’ for managing and maintaining buy-in for the annual report system and the grant in general. Here the administrator shows he valued comprehensiveness because he wanted individuals to continue to provide information as well as because he was invested in “giving their information due justice.” This ties comprehensiveness to this administrator’s identity as well as sense of fairness.

Contributors verified that when they did look at the annual report, they valued their own research group’s work being included.
Especially once it’s in its final form I’ve looked over, I’ve paid attention to areas that I know we have faculty that were more involved than others. There’s some areas that we’re more involved than others. I read those over. Mostly looking to make sure that we were well represented, that we are meaningfully contributing, that we’re moving forward.

This excerpt from a contributor first identifies that she reviewed the reports to see if her research group is “well represented” and then took on a self-evaluative purpose. However, like all the participants, this contributor acknowledges she didn’t read the entire report, but only consulted the pieces most relevant to her research group. This indicates that while comprehensiveness works in her favor, she didn’t necessarily value the entire report’s comprehensiveness. She only reviewed her own research group’s information in a granular way. It is also interesting that her markers for evaluation, “meaningfully contributing” and “moving forward” are not specifically numerical markers. Nor are they a ratio evaluation of deliverables met or not met.

Administrators also had to balance report requirements with their administerial obligations to non-EPSCoR people. For example, one administrator decided it was not fair to make non-EPSCoR supported university staff work extra just for the reporting requirements.

Excerpt 17

I mean, I’m not going to have our accounting people and our ITS people sit down and make a specialized report unless I knew that this thing was going to go on for indefinite. But for five years, I mean, you know, we’re not going to revamp our financial reporting systems to accommodate one project.
This excerpt shows the administrator seemed to choose his responsibility to two groups of non-EPSCoR staff, indicated by his use of “our,” over his EPSCoR obligations. However, in this case, the administrator also took responsibility for his EPSCoR obligations independently, which led to significantly more time commitment on his part. So he suggests that he fulfilled his administrator role in both cases.

Contributors who were not EPSCoR administrators often had outside administerial obligations that they had to balance with comprehensive EPSCoR reporting requirements. Since most participants were faculty, most were administrators for their own labs as well as for other grants and programs they were involved with at the same time as EPSCoR. For example, one participant was concerned with intellectual property issues and balancing his EPSCoR obligations with his obligation to his lab.

Excerpt 18

*Uhm, there are parts of the report, parts of the questions that, uh, do seem a little ambiguous in the sense that you don’t know if, given your role in the EPSCoR program, if you should be reporting those. Because there may be activities that you would consider outside of your EPSCoR activities, for example... It could be intellectual. For example, I could see intellectual property, uh, concerns. Uhm, reporting some of the research but having to report some of the other activities in your lab that may be tangential but are not particularly related to that research. And so you may not want to disclose breakthroughs that you are trying to pursue funding for.*

In this case, the participant’s obligations were especially confused because his lab used EPSCoR-funded equipment for research projects and outreach “activities,”
that were not explicitly EPSCoR-funded. Since one of EPSCoR’s goals was to build research infrastructure, this dilemma was experienced by many participants who would benefit from EPSCoR equipment, personnel, or other support on projects not necessarily related to Iowa EPSCoR’s energy theme. The value for comprehensiveness suggests that everything EPSCoR-related support touched should be reported to NSF. However, competing obligations, here the participant cites intellectual property concerns, pushed participants to make choices in what and how to report.

What information belonged or could be included in the text boxes or tables was a reoccurring concern for administrators. They contrasted the restrictions suggested by the text boxes with the relative freedom associated with other techniques. In this excerpt, an appendix is suggested for more flexible reporting delivery.

Excerpt 19

And yes you can include figures and refer to them from the text boxes, and say in Appendix A here is this figure. But I, again, I didn’t want to limit researchers’ descriptions of what they’re doing. Because they’re really, they are all very proud of their accomplishments.

Excerpt 19 identifies the tension an administrator faced between fulfilling the requirements of the text boxes, in this case not being allowed to include figures in the text boxes, and concern with the necessity to cut information from the annual report about work contributors were proud of, suggesting his administerial obligation to EPSCoR participants competed with his conception of a single evaluative reader. This is because the administrator would not be as
worried about the opinion of his contributors if he thought contributors would never see the final report.

The figures contributors regularly sent sometimes showed numerical information in tables, however they also included diagrams of engineering practices, photos of equipment and students, and other non-text and non-numeric visuals. The example on the next page, Figure 3.1 shows a combination of visual and textual information into an infographic. This infographic was used on a research poster and likely also used for a conference talk before the infographic was included in contributor data for the annual report. Visuals like this one with similar histories were common additions to contributor data. They show that contributors also played a role in managing rhetorical scarcity. After all infographics are a way of managing detail with concision.
Figure 1.2c.15: Numerical procedure for wind turbine drivetrain dynamics.

Figure 3.1 Example of a figure used in the 2014 Annual Report Accomplishments Appendix
The figures included in the appendices re-contextualized information provided in the text boxes. They gave a more comprehensive description of projects within the grant. For example, figure 3.1, previous page, shows how descriptive data from several smaller studies completed by Iowa NSF EPSCoR-supported faculty and students (readings of rotor torque, rotor speed, axial alignment, tooth deviation, wind speed, etc.) combined to support the wind energy platform’s larger goal of modeling drivetrain dynamics. Unfortunately, administrators could not request infographics and figures as a standard technique due to annual report text box restrictions. However, like the administrator in excerpt 14 proposed, using the appendix to hold the figures contributors did submit was a technique to manage the rhetorical scarcity of the text boxes.

Administrators didn’t always concede to valuing contributor information over the restrictions of the report guidelines, despite the use of an appendix in years 2-5. This is shown in one interview when an administrator discusses receiving data from faculty that didn’t fit.

Excerpt 20

*There was some people who sent me information that I looked at and I said, ‘you know, this was good but this can’t be part of, say, a table because it doesn’t fall within the parameters of some of these template tables that we were looking for.’*

In this excerpt the administrator discusses numerical information that neither fits the tables nor other portions of the report. This excerpt shows that simply moving information which did not fit the tables or boxes to a separate appendix was not the easy fix administrators wished it to be.
This section has reviewed how administrators worked through the problems of inventoried reporting. These problems had implications for the techniques used as well as the inventoried reasoning through and justification of decisions. The next section will narrow this analysis to one important technique that was used to manage rhetorical scarcity from the viewpoint of one main author/administrator.

**Appendix technique: one administrator’s views**

One participant discussed the appendix technique at length to present it as a way to manage challenges related to rhetorical scarcity. This participant was one of the administrators who spent the most time writing the appendix and he supported its use. The administrator used numerical, comprehensive, and granular reasons to understand rhetorical scarcity in inventoried reporting as well as justify the appendix technique. This section will explore how this administrator understood his communication challenges to be tensions between being comprehensive and contextualizing the information, particularly numerical information, but also facing length and piece-meal delivery restrictions.

This administrator presented the appendix as a technique to manage two practical challenges that created rhetorical scarcity in annual report writing: length restrictions and restrictions on content. These guidelines helped create problems in how to act but they did not always create a binary against inventoried reporting. At times the administrator realized he could provide comprehensive numeric data, comprehensive lists of less contextualized information, and less comprehensive but more contextualized information while still staying within length and other delivery restrictions. He faced similarly
complicated problems when working within content restrictions. The following excerpt shows that his first step in reporting privileged his value for comprehensiveness above all else.

Excerpt 21

The way we organize our annual report is I sent out in March, uhm, requests to all of the platform leaders. ‘Here’s the annual report, the research.gov questions that are answered, and I would like you to send it out to all of your members that are providing input to answer these questions to as whatever detail they want.’ I don’t want to limit if they want to include figures, if they want to include data, you know, I would like them to provide as much information as they would like to.

This excerpt shows the administrator choosing not to place restrictions on the contributors in length or content. He would like to retrieve a large quantity of information from the grant members, however he stops just short of requesting as much information as possible. Instead he asks for “whatever detail they want” and “as much information as they would like.” This again suggests the administrator’s identity influenced his respecting the contributors’ judgments as well as possible time constraints. However, he assumes by “I don’t want to limit” that member preferences would err on the side of sending more information.

Although the administrator seemed to elevate comprehensive reasons for inventoried techniques, he still used the relatively restrictive research.gov database questions that governed the text boxes as information gathering requirements (“Here’s the annual report, the research.gov questions”). In year 2 the Iowa administrative team created templates from the database questions, which were then modified and used through years 3-5 for reporting up the internal Iowa hierarchy of the grant. Although a 1:1 relationship was not
maintained from the database questions to the template questions, as excerpt 21 shows, the template questions stood in for the database questions. Therefore, administrators used the database questions, through the template, to provide boundaries for what information was gathered for the report. These restrictions translated into an alternative understanding of the appendix as just a more comprehensive version of the database text boxes.

Excerpt 22

*I think the way we use our appendix is a storage house. And then the summary of those appendices is more of the report to be read. I think that’s okay. But I think there needs to be an organized central storage house for large projects.*

Excerpt 22 turns the view that the appendix pushes back against the text box content restrictions on its head. Instead of being characterized as limiting numeric “counts,” as in excerpt 14, here the text boxes are characterized as a “summary” and “to be read” while the appendix is framed as comprehensive, the “storage house.”

Viewing the appendix as a separate “storage house” retained a level of granularity for the two portions of the annual report while honoring the administrator’s reasoning that he should contextualize the contributor data in order to do it “justice” (excerpt 15). The appendix is not necessary to understand the database’s text boxes. Likewise, the text boxes are not necessary to understand the appendix. This retains adherence to the granular reasons for single source content management. However, characterizing the appendix as a “storage house” allows the administrator to take free reign in fully contextualizing projects in a comprehensive way. The next excerpt shows the
administrator allowed himself so much freedom that he had difficulty organizing the appendix.

Excerpt 23

But then I take all of the input and write a very large appendix. And that appendix is primarily for the accomplishments section. And in the accomplishments section there are four subsections: 2a, 2b, 2c, 2d and I forget what the differences are, but it’s, you know, specific outcomes, general outcomes, general, you know. And sometimes you don’t know how to differentiate them. But it’s those. And, and sometimes you can attach appendices to those sections. But they typically can be quite [hand gesture to indicate large]. So I write this large appendix for those sections. And then the impacts and the changes in research.gov are providing input in these documents, but then I paraphrase all of that. And then for the accomplishments section I take that big appendix and I summarized the highlights that I want to include in the annual report on research.gov and then we attach the appendix.

This excerpt is slightly less fluent than usual for this administrator, which may indicate his struggle to write the appendix section. This interview took place during the final days of the reporting period for year 5 and the administrator had just, the day before, finished writing the year 5 appendix. He was in the midst of revising and editing. This timing likely also affected the administrator’s variable tense use throughout the excerpts. The next paragraph will piece together excerpt 23.

Although the administrator suggests the appendix is mainly for a single “accomplishments section,” this was actually a series of text boxes in the database’s interface. The subsections the administrator lists, “2a, 2b, 2c, 2d,”
indicate these different text boxes. The administrator implies he faced a choice, to write an appendix for each subsection or to write one single, larger appendix. As he “sometimes [didn’t] know how to differentiate” the subsections, he chose to write one larger appendix that includes these subsections. Although he made this decision he still often referred to the appendix in the plural. The report also had other main sections, “Impacts” and “Changes,” which the administrator saw as providing some input into the appendix. Interestingly, the annual report guidelines emphasize the “Impacts” section over the other sections, as seen in the report guidelines. However, this administrator chose to emphasize “Accomplishments” instead. The value difference between which sections are more important hearkens back to the previous chapter’s discussion of the purpose of giving detail. This difference will also return in the next chapter. In this excerpt, the administrator reminds that he mostly paraphrased Impacts and Changes information in the database. After he was done writing the appendix, he “summarized the highlights” of it for the accomplishment text box sections. Attaching the appendix came at the end of the database interface, even though in practice this administrator wrote the appendix first.

Although the administrator suggested that he chose to write one long appendix rather than several small ones for each subsection because he had difficulty distinguishing between subsections, he still used the subsection text boxes to organize and aid in decisions about what information made it into the appendix, and therefore the report at all, tempering his characterization of the appendix as a totally comprehensive “storage house.”
Excerpt 24

One of the things we really struggle with is how do you organize it so it made sense? And if you actually look at our appendix it starts at section 1.2. And I have a preview that says here’s how the nomenclature is used and it’s going to follow the research.gov accomplishments section. So section 1.1 is your goals and objectives that don’t change from year-to-year. They’re going to be, you can fit those into the 8,000 character count. So we start at section 1.2 and we start at figure 1.2a.1 because that’s actually section 1.2a.

This excerpt shows just how closely the appendix follows the organization of the database text box subsections. It again suggests that even though administrators indicated that information that did not fit the text box requirements could be bumped into the appendix, the appendix did not challenge the content assumptions of the text boxes, just the delivery requirements. All information in the appendix is assigned to a subsection, whether it perfectly fits that subsection or not.

Instead of solving all the problems of text box restrictions on the annual report, the appendix technique instead seems to have replicated many of them. The two major differences between the database text boxes and the appendix are that the administrators included figures and didn’t specify page limits in the appendix. These two choices were justified as making the appendix more comprehensive to handle the challenges of granular data. Although this administrator continually framed the appendix as solving the challenges of length and character count restrictions, he reasoned himself into those extra pages by believing that good inventorial reporting needed to be comprehensive and fully contextualize his contributors’ activities.
Excerpt 25
I think the questions that are asked in research.gov are appropriate but the limitations on what you can enter for a large project is not. I do like the organization of it. Sometimes the questions are a little confusing because they seem to ask the same thing multiple ways, particularly in the accomplishments section. But the limitations that research.gov put on the PI in terms of character count is really hard in very large projects.

This excerpt reiterates the appropriateness of text box organization and content but repeats another administrator’s complaint (excerpt 35) about repetition of information in the text boxes. The excerpt shows that the administrator understands the appendix technique actually only solved the two delivery challenges of page limitations (“character count”) and figure use (“what you can enter”). However, why these delivery challenges are problems, that they create rhetorical scarcity, is assumed self-apparent.

The administrator’s reasoning that maintaining a more comprehensive record that included more context was the way to make a good inventorial report competed with the reasoning that a good report would be short enough to be easily evaluated and granular enough to split into database segments. These dilemmas play themselves out in this administrator’s discussions of the challenges that came along with the appendix technique.

Excerpt 26
And yes I understand that they don’t have time, you know, they don’t want to read 200 pages. I understand that. But there’s a lot of activities going on in these large projects and that’s really, it is in my opinion, if I select one thing to highlight a project manager might come back and say, ‘what did you do in this area?’ This one I didn’t highlight.
Excerpt 26 shows the competing reasons that this administrator suggests are managed by using an appendix. The administrator acknowledges that NSF agents can’t handle full descriptions of all the projects associated with the grant in the reports, “they don’t have time... they don’t want to read 200 pages.” However he also fears those agents hold the expectation that the report is a full accounting of every activity, “a project manager might come back and say, ‘what did you do in this area?’” This fear was justified in the context of the first year’s reverse site visit panel critique. Therefore, this administrator supported the choice to submit more information via the appendix than the annual report guidelines called for.

However, submitting a long appendix with the report, since it was a novel technique, also caused confusion and pushback from NSF agents.

Excerpt 27

Uhm, [NSF agent] had responded to us to say ‘it’s too long you need to paraphrase it and redo it.’ And we said ‘no, look at the text boxes, that’s where it’s paraphrased.’

This excerpt again shows how this administrator re-classified the text boxes, which another administrator critiqued for only being “counts” (excerpt 14), as instead being a paraphrase of the appendix. This reorients the appendix, the full catalog, as the main section of the annual report. The suggestion that text boxes are a paraphrase reiterates the idea that their purpose was to be read by an evaluative NSF agent while the appendix was meant for other audiences. It’s also important to note that this excerpt shows administrators did have the agency to tell NSF agents “No,” which further confirms the reports are truly co-constructed.
Echoing the contributor in excerpt 16, the administrator acknowledges the unlikelihood of the report being read in its entirety, and in the following excerpt again frames the appendix as a technique more suited to being consulted, not fully read.

Excerpt 28

*Yesterday we got an email from our program manager that said, ‘It’s too long, you need to paraphrase it. And I’m in the process of telling them ‘No, this is really how we do it. The paraphrasing is in research.gov. If you don’t want to look at the appendices that’s okay. But it’s one way to capture everything that we are doing in one spot. Because otherwise I don’t know how we would do that.’*

This excerpt shows the administrator acknowledges the unlikelihood of the appendix being read, or even looked over by every NSF agent. Again, the administrator indicates the database text boxes were intended to be the reader-friendly paraphrases while the purpose of the appendix was to be comprehensive, to “capture everything we are doing in one spot.” His ending phrase, “Because otherwise I don’t know how we would do that” shows that he viewed this comprehensive record-keeping a necessity for good inventoriable reporting and also suggests his confusion and frustration that the database interface and NSF agents did not seem to allow or want a full contextualization.

Compounding this administrator’s frustration over NSF agent pushback due to length, this administrator indicated he was uncertain about where the appendix eventually ended up in the reporting system, whether it was read, and who read it.
Excerpt 29

Well we upload the appendix to research.gov, and again I’m not sure whether
NSF is looking or not, and when you download the report it’ll put it in the PDF:
all the text boxes, the products and everything. I’m not sure if it attaches the
appendices to that or not.

This excerpt shows how much of a black box the inner workings of both the
database CMS and the NSF’s upper administration seem to be. The administrator
is unsure of the final arrangement and delivery of the report. The lack of control
over arrangement and delivery is partly function of the database system that was
put in place during Year 2 of the grant and continued to be modified during the
Iowa grant’s remaining 4 years. The administrator is also unsure who might
view the report. Although the administrator reveals in the next excerpt (excerpt
30) that he knew at least some of the individual NSF agents who must read or
consult the submission, in this excerpt he personifies the whole organization
(NSF) instead of referring to individual people. This suggests a lack of control
and knowledge about the full purpose of and audience for the report.

Excerpt 30

What we’ve, we’ve had four program managers from NSF. The first one, when we
first wrote the report in that fashion, so year two, our program manager said, ‘I
didn’t even read the appendix. There’s too much different information.’ Years
three and four was [NSF agent]. I don’t think they read the appendices either. But
our external evaluator has said they are invaluable because it captures everything
and it really helped them put their stuff together.

Excerpt 30 shows this administrator’s final argument for including the appendix.
The one consistent NSF agent who the administration team worked with through
all 5 years of the grant was the external evaluator. Therefore, this administrator
valued her opinion over the opinions of other NSF agents who, although in the hierarchy of NSF agents they held a lot of power over the grant, changed every couple of years. He continued to argue for the usefulness of the appendix because the external evaluator found it useful. And the external evaluator was the one outside person he could rely on to actually read the whole appendix.

This section has delved into one particular technique, appending, that Iowa NSF EPSCoR main authors used to manage rhetorical scarcity. I focused on one administrative main author in particular in this section to show how inventorial reasoning was used to justify but also complicated, the decision to add an appendix. The next section will review the inventory situated ideal.

**What is the inventory ideal? A summary**

So far this chapter has characterized report delivery as tables and appendixes of numeric and textual information destined for databases, PDF documents, Excel spreadsheets, and emails. These choices were complicated because report guidelines, other NSF-origin documents, and participants inconsistently adhered to the three aspects of inventorial reasoning. Examples include reporting via “boxes” being justified as a good way to report numerical information, reporting via appendixes reasoned to be comprehensive, and piecemeal reporting justified through granular delivery requirements for the online system and NSF agent workload. The chapter suggested a main evaluative audience for the reports but also introduced that administrators’ obligations to do justice to their constituents’ information complicated the purpose and audience. Evaluation uneasily existed with numeric comparisons and comprehensive, contextualized information as shown by the grant’s traumatic first year experience and lessons learned from it. The chapter looked at
the appendix, which while it did seem to manage some of the rhetorical scarcity created by the imperfect match of ideals and reasoning, also replicated problems.

The techniques of inventorial reporting are distinctly intertwined. I have found this set of techniques and reasons that justify their use falls most comfortably under an understanding of the report as an inventory, even though the word *inventory* never appears in the corpus. Inventorial understandings of annual reports are explicitly taught in business communication courses and appear in business communication textbooks. For example, one popular business communication textbook prescribes the components of an annual report as,

Cover, Narrative Statements (letter to stockholders from the CEO—functions as executive summary, company overview, mission statement, history), Financial Statements (income statement, balance sheet, cash flow, auditor’s report), References, Appendixes. (Cardon 394)

In this textbook, the “Financial Statements” section most closely aligns with inventorial understandings of what an annual report ought to be and do. The difference is that in the case of Iowa NSF EPSCoR participants discussed the whole report as being inventorial rather than just a particular section. Interestingly, a brief test of this textbook’s prescriptions against the Iowa NSF EPSCoR annual report shows the NSF reports’ required components most closely match the textbook’s conception of a progress report (“Executive Summary, Introduction, Background, Accomplishments, Problems, Future Plans/Timeline, Conclusion, References, Appendixes” (Cardon)) rather than its prescription for an annual report. However, the progress report components don’t explicitly suggest an inventory at all. This suggests the situational ideal that making an inventory is a good way to report may be both a function of this particular
science context as well as an ideal that is codified in annual reporting outside of science.

**Contrasting inventorial ideals**

This chapter has shown how prevalent is the belief that reporting techniques ought to be numeric, comprehensive, and granular. I have argued these reasons add up to the ideal of reporting as inventory. However, the word “inventory” is not used at all in the corpus. Because the word does not appear in the guidelines or annual reports, I was careful not to use it while interviewing participants. Instead, a variety of synonyms emerged that indicated annual reporting is inventorial in this case. In the next section I focus on two understandings that point to the inventory ideal. These capture contrasting attitudes towards the main actions of reporting as a communicative practice that creates an inventory.

When participants focused on the actions of reporting, rather than the ideal content of the report itself, they often described themselves as “keeping track” or “collecting.” These competing secondary situated ideals cast inventorying as a dilemmatic situation. That annual reporting helps researchers and administrators “keep track” of their data and project information was described as a benefit of reporting inventory. However, “collecting” for inventory was portrayed more ambivalently.

**Inventory as keeping track.**

No participant who used the concept of keeping track framed that action negatively. Excerpt 31 shows a contributor’s response to a general question inquiring how they feel about submitting annual reports.
Excerpt 31

Oh they are a good way to put together all the efforts that we’ve had through the year so in that regard it is beneficial. Uhm, they also help me keep track of, of things that still need to be accomplished.

It’s important to note that although the interview question used “submitting” as the operative verb, the contributor instead discussed putting together and tracking report information. This may indicate the contributor mainly conceived reporting as keeping track for an inventory, rather than hitting “send” on an email. Participants almost always discussed reporting actions as occurring prior to sending information up the reporting pipeline unless specifically prompted.

Excerpt 31 also shows the contributor justifying inventory with an assertion that keeping track, both of past and future efforts, is a good in its own right. This contributor repeats this benefit of keeping track later in the interview as well.

Excerpt 32

It is a great way to keep track of what has been accomplished and what still needs to be done. So in that regard it’s beneficial, probably for NSF but certainly for the investigators as well.

Excerpt 32 not only repeats a belief that keeping track is beneficial, but also unproblematically re-asserts that the inventory ought to cover both past and future activities. This tension suggests either confusion or split understandings of the purpose of keeping track.

Excerpt 32 also discusses who this contributor sees as the audience for keeping track. Keeping track was a benefit to “NSF” but also to local faculty “investigators.” Excerpt 31 suggests the contributor herself is included in that group of investigators: “they also help me keep track.” Keeping track here is
shown to be beneficial for both invoked audiences. Administrators repeated the importance of keeping track.

Excerpt 33

Even though I’m not doing any of the writing at least I can keep track of what’s going on and, uh, who’s doing what. And then I, kind of at least, I know whose name to write in, who to ask during the report.

Here the administrator alludes to the circularity of keeping track. The activity of keeping track was forced by the annual report but is also good in its own right, even if just to know who to ask for more information. This purpose is slightly different from the contributor in excerpts 31 and 32’s purpose. While this administrator suggests keeping track is for knowing “what is going on” and “whose name to write in, who to ask,” the previous contributor suggested keeping track is for knowing “what has been accomplished and what still needs to be done.” Although both participants frame keeping track as epistemic, the purpose of that knowing seems more useful for decision-making by the contributor, whereas the administrator valued knowing for the purposes of filling out the report and generally being knowledgeable about the grant.

Another administrator suggested that not being able to keep track was a valid reason to leave the project.

Excerpt 34

He was the primary investigator for the first year and found that it was just not a, something that he could keep track of. And he thought he was just not doing the program any justice.

Here, keeping track presumes a type of knowledge that requires steady, ongoing participation. This is an assumption that complicates understanding annual
reports as the creation and delivery of an annual inventory. Indeed, in this excerpt the administrator suggests not keeping track in an ongoing way justified a PI’s decision to step down from that administrative position. This again links the identity of administrator to the value of “doing justice to” contributors’ work, as was suggested by a different administrator earlier in excerpt 15.

**Inventory as collecting.**

The other main action participants alluded to within the inventory ideal coincided with discussions about participants’ responsibilities during reporting. Particularly, participants identified they were responsible for “collecting” information. Collecting data for the report locates responsibility in a single action and implies a single delivery moment.

Unlike “keeping track,” the collection concept was used in the annual report instructions. For example, “This amounts to no change from previous years regarding data that are collected in Table B” (NSF EPSCoR "Annual Report Instructions"). This instruction grounds the implication that collection has a single delivery moment. Here the method of collection and collection’s delivery is Table B. The instructions imply that Table B is used to collect data every year. Since there is “no change from previous years” the instructions imply that there could be change from year to year, and thus suggest Table B is re-filled from scratch every year. Oddly, this instruction also suggests the audience for collection is Table B. This is because the instructions have no justification of changes or no changes that suggest any other audience than the report components themselves, thus reducing urgency and audience-oriented purpose for collection. The instruction presents collection as a good in itself.
Like keeping track, the responsibility for collection was distributed across the different levels of contributors and administrators, as indicated in the annual report instructions by passive voice. The report guidelines and supporting documents never micro-managed who ought to collect report data. In the case of Iowa, all the participants indicated they felt some responsibility to collect information and a few also stated that they would sometimes pass on that responsibility to lower status members in their research groups, such as postdocs or graduate students.

Contributors and administrators sometimes claimed themselves as the main actor during collection but sometimes mimicked the instructions’ suggestion that the annual report itself was the main collector, or ought to be. This sentiment occurred particularly when participants were asked to describe the perfect annual report. Interestingly, the responses to “describe your perfect annual report” often took on a critical attitude towards the existing collection system.

Excerpt 35

Either explain it to me or eliminate it if it’s just collecting data for collecting data’s sake.

In excerpt 35, the contributor is mainly critiquing the lack of justification for a requirement to submit financial data in a variety of ways. However, the futility implied in “collecting data for collecting data’s sake” suggests a negative theme of collecting as busywork. It explicitly contradicts the instruction’s assumption that collecting is a good in its own right. To combat the busywork aspect of collecting, one contributor suggested an automated system.
Excerpt 36

What it would do is it would collect from all the proposals we are submitting to ASPA and FASTLANE and the grant system of course, and ideally the system would be able to tell who the EPSCoR participants are in some of these proposals and basically collect and gather the data so the investigators can pull from existing databases and determine which ones need to be refined.

Excerpt 36 locates the main collector as an imagined automated system (“it would collect”) but doesn’t completely do away with human interaction. Instead this participant suggests that the faculty involved (“investigators”) could spend their time more wisely by refining database information than re-collecting it themselves. This suggests collection is gathering but does not include manipulating the information during collection. Instead, refining data for the report occurs after collection and is seen by this participant as a higher-level action that can’t be automated.

Excerpt 37

Obviously it’s a lot of paperwork and time commitment for some material that I would hope would have been more automatically collected.

In Excerpt 37 the same participant again suggests automation as a solution to the “paperwork” and “time commitment” of collecting. Although participant accounts of keeping track and collecting both explicitly include time commitment (and implicitly include paperwork drudgery) the time spent collecting is seen as less worthy than keeping track. These excerpts show participants viewed collection for the annual report as a requirement that, if it benefited anyone, only benefited the institution and might be automated without detriment to contributors and administrators.
Imagining reporting as inventory

This chapter has shown inventory, as a situational ideal, is a categorization that persuades people to take documentary actions such as filling in boxes, keeping track, and collecting. Yet within this ideal people experience dilemmas about how best to act. I have reviewed stated and implied worries related to comprehensive record keeping; trepidation over evaluation; questions about the purpose of numerical data; and frustration from granularity and otherwise piece-meal delivery of information. I have also suggested the dilemmas related to purpose and audience influenced how participants understood their main responsibilities for reporting. When participants invoked their responsibility as “keeping track” they were more amenable to portraying the annual report as helpful to Iowa faculty and administrators. When participants invoked their responsibility as “collecting” they were less amenable to describing its local helpfulness.

The initial statement of purpose and audience that characterized the problem of rhetorical scarcity is only partially managed through inventorial reporting.

The taxpaying public and its representatives deserve a periodic assessment to show them how the investments they make benefit the nation. Through this reporting format, and especially this [Impact] section, recipients provide that assessment and make the case for Federal funding of research and education. (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards: Annual and Final Report Guidelines")

This chapter followed participants in focusing on the NSF’s suggestion that the annual reports be an “assessment.” However, this statement also suggests that the annual reports follow reporting trends from business and are a form of
public relations, even persuasive science popularization. The next chapter investigates a second situated ideal that manages this rhetorical scarcity.
CHAPTER 4. REPORTING AS NARRATIVE

This dissertation shows that sometimes the reasons associated with annual report ideals appear to be in conflict and create rhetorical scarcity and uncertainty about how best to act even within an ideal reporting mode. The previous chapters explored the Iowa NSF EPSCoR annual report process as a stakeholder-oriented rhetorical communication where report writers understood both detail and concision to be ideals. Chapter 3 showed that participants used certain types of techniques to manage detail and concision ideals. They justified using this group of techniques by reasoning that numeric, comprehensive, and granular content was valued. I labeled this grouping of techniques and reasoning the inventory ideal. Members of the grant were shown to assume the agency to make choices about appropriate techniques based on this ideal and their preference to give as much information as possible even in the face of explicit requirements.

This chapter will explore Iowa NSF EPSCoR annual reporting that manages rhetorical scarcity to deliver information in ways that work for more distant public audiences than the inventory ideal. Although these audiences are presented as important, likely because they were perceived as possibly skeptical, how exactly to target them remained ambiguous, possibly due to the same misunderstanding that pitted the two reasons for idealizing detail against each other, as detailed in Chapter 2. In order to manage the rhetorical scarcity created by competing ideals of detail and concision for a public audience, both NSF agents’ documents and participants used an ideal of narrative.
First this chapter will establish that the distant and possibly skeptical public audience is linked to narrative. Then, the chapter will explain what narrative means in this case. Reasons for using narrative that will be explored are that narrative creates a coherent report as well as a balanced report. Two unique aspects of this case characterize these reasons.

A distant, possibly skeptical, public audience

The “Impact” section requirements of the NSF EPSCoR guidelines for annual reports explicitly invoke a distant public audience that includes all taxpayers but also specifically mentions policymakers.

The taxpaying public and its representatives deserve a periodic assessment to show them how the investments they make benefit the nation. Through this reporting format, and especially this [Impact] section, recipients provide that assessment and make the case for Federal funding of research and education. (NSF EPSCoR “Research Infrastructure Improvement (Rii) Track-1 Awards: Annual and Final Report Guidelines”)

This explanation of why the reporting format and Impact section is necessary suggests annual reports ought to demonstrate some national benefit from the project and be persuasive enough to justify continued “Federal funding.” This vision creates report goals that are more broadly persuasive than the local granularity of inventorial evaluation. The phrase “show them how the investments they make benefit the nation” broadens the persuasive scope. The report should convince public stakeholders that the entire NSF, or even publicly funded science endeavor, is worthwhile. The choice of verb, “show,” indicates the report ought to be seen as observational proof of benefit for distant public
stakeholders who cannot observe in any other way. It is assumed this proof of benefit acts as an argument for continued funding from public stakeholders.

To fully understand the importance of these public stakeholders, a little context is needed. Although this grant was active during the last of the Obama years, the political climate during that time period was often presented as hostile to science. For example, Senators Coburn and Huckabee’s attack on perceived wasteful spending in science via the infamous “shrimp on a treadmill” was in the news during the first year of the Iowa grant (Greenfieldboyce). EPSCoR as a national program joined many other science programs in being scrutinized in political arenas. The program felt pressure to justify its continued funding, as outlined in Chapter 1.

Concurrently, more and better public science communication by scientists was being advocated both in public forums (such as Twitter and quasi-public science journals) as well as internally. The NSF implemented Broader Impacts Merit Review criteria in 1997, which set the stage for increased attention to the science popularization and the public sphere. During the time of this grant, NSF EPSCoR hired Ninja Communications, Inc., featuring journalists Dan Agan, Joe Schreiber, and Chris Mooney to do a series of public science communication trainings in EPSCoR jurisdictions (Ninja Communications). As well, Alan Alda was invited to speak and leaders from his Center for Communicating Science were invited to give workshops during the November 2015 National NSF EPSCoR Conference (NSF EPSCoR "Collaboration: Advancing the Role of Science in the Service of Society"). As an EPSCoR science communicator, I joined the Iowa administrators in taking part in these direct trainings. The concern for distant public audiences invoked by the Impact section’s introduction should be
understood as part of a larger concern for science popularization and concerted effort to target and persuade public audiences in many areas of the grant program, as well as national science in general, at the time.

In order to target this distant, possibly skeptical, public audience in a way that guided report writers in managing detail and concision, the Impact explanation points to a particular “reporting format.” The reporting format imposed by the NSF EPSCoR annual report guidelines and used by the Iowa grant are summarized in Figure 4.1, below, which also shows the changes to the reporting format and submission procedures during the time of Iowa’s NSF EPSCoR grant.

Table 4.1. Changes to Report Format 2012-2016

<table>
<thead>
<tr>
<th>2012</th>
<th>2013-2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submitted via email as printable PDF.</td>
<td>Submitted via RPPR template and Research.gov interface. Appendices also submitted via email as printable PDF.</td>
</tr>
<tr>
<td>Executive Summary</td>
<td>Executive Summary Dropped</td>
</tr>
<tr>
<td>Detailed Report – no length restrictions</td>
<td>Detailed Report – length restrictions</td>
</tr>
<tr>
<td>Comprised of Accomplishments, Products, Participants/Organizations, Impacts, and Changes/Problems sections</td>
<td></td>
</tr>
<tr>
<td>Report Appendices Allowed</td>
<td>Report Appendices Allowed</td>
</tr>
<tr>
<td>Comprised of extra material from Accomplishments, Impacts, and Changes sections</td>
<td></td>
</tr>
<tr>
<td>NSF Highlights</td>
<td>NSF Highlights</td>
</tr>
<tr>
<td>Comprised of Outcome, Impacts/Benefits, and Explanation sections</td>
<td></td>
</tr>
</tbody>
</table>
The Impact section’s explanation suggests that NSF EPSCoR designed the intended format of the Detailed Report section particularly for a distant, possibly skeptical, public audience. This format (Accomplishments, Products, Participants/Organizations, Impacts, and Changes/Problems) creates a classic narrative structure for the Detailed Report. However, before we dig into this global organization technique, I will explore how participants used the term ‘narrative’ to describe the report. The following exploration shows that both guidelines and participants broadly rely on the term. Therefore, narrative is a salient ideal, not just an imposed report format. However, narrative was not understood in a single way, which suggests possible competing reasons for using this ideal.

Describing ‘narrative’

Unlike the inventory ideal, where the word ‘inventory’ never appeared in the corpus, ‘narrative’ appears in the annual report guidelines. However, the term is never explicitly defined. The guidelines and participants used the term to help distinguish parts of the report format, to characterize the type of material the report includes, and to designate a writing technique. These uses of the term ‘narrative’ suggests narrative is a salient ideal for reporting and like most ideals its meaning is full of tension. The rest of this section will explore these uses of the term in more detail.

The term ‘narrative’ was used to distinguish parts of the report format by characterizing the type of “material” that parts of the report ought to include. For example, the 2012 guidelines distinguish between the first section, an “Executive Summary,” and the second section, a “Detailed Report,” using ‘narrative’ to characterize the material of the “Detailed Report.” This is the first use of the term
in the 2012 instructions: “The Detailed Report contains the narrative and tabular material described below” (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards Annual and Final Report Guidelines"). This description distinguishes between “narrative” material and “tabular material” but explicitly defines neither. In practice, the “tabular material” likely referred to portions that required more inventorial reporting techniques, mostly in completing Excel tables and making lists of products, publications, and participants. This excerpt establishes that narrative is considered a type of material that comprises the report. It also establishes that, in this usage, tabular material is not narrative. Also, the “Executive Summary” which preceded the “Detailed Report” in 2012 is not a section of narrative nor tabular material. This is important, because in business communication textbooks, the Executive Summary or prose front material is considered part of the narrative. (Cardon)

The association between detail and narrative (indicated by “Detailed Report”) and disassociation of summary from narrative (indicated by the exclusion of “Executive Summary”) makes sense in the context of common lay advice to ‘show, don’t tell’ for better audience attention. This advice can be traced back to the early Greek philosophers’ distinctions between diegesis and mimesis. The Greeks were concerned with the audience’s rhetorical experience of the text across these modes. Communication scholars today are still exploring whether it’s true that people are less critical of texts that place the audience as direct witness (showing) versus secondary listener (telling) (Andringa; Keen; Wake). Regardless, this distinguishing shows how the narrative ideal helped report writers manage the rhetorical scarcity created by competing ideals of detail and concision. As discussed in Chapter 2 and seen in Table 4.1, above, in
2012 explicit guidelines for concision were limited to the Executive Summary while the Detailed Report had no formal length restrictions. However, this easy discrimination became more difficult after report guidelines changed in 2013 to delete the Executive Summary and impose word limits on sections of the Detailed Report.

These guideline changes may explain the complication of a technique that 2013-2016 Iowa participants used during reporting. That technique was summarizing material for the Detailed Report. For example, one administrator explicitly labeled the Detailed Report “summary” to distinguish it from the even more comprehensive appendix.

Excerpt 38

*I think the way we use our appendix is a storage house. And then the summary of those appendices is more of the report to be read.*

This excerpt shows that there is some slippage in terms as well as the intended architecture of the report. In practice participants in this case conflated summary and narrative as a matter of practical necessity since the Detailed Report sections after 2012 imposed length restrictions. However, the appendix, as discussed in the last chapter, was both considered and not considered to be a stand-alone section. It included even more narrative and tabular material that could not be summarized in the main Detailed Report sections.

There is also some slipping even in the report guidelines between using the term ‘narrative’ to characterize the material of a portion of the report, and using it as a synecdoche to designate the report as a whole. The next excerpt
complicates the idea that narrative is a type of Detailed Report material by instead using the term to designate the whole Detailed Report.

“As part of the narrative, describe, as appropriate, outreach connections with NSF programs focused specifically on increasing diversity of science and engineering students and faculty through the involvement of women and underrepresented minorities.” (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards Annual and Final Report Guidelines")

Instead of using the term ‘narrative’ to modify a type of report material, here the term is given an article, “the narrative,” which lends a sense of comprehensiveness to the label. Here, narrative is associated with description, which again pushes our understanding of the term towards detail and away from summary or other shorter writing techniques.

Participants also picked up this use of the term as a label for the report. In the next excerpt an administrator uses the guideline’s language to discuss the way she thinks about how to present negative events in the report.

Excerpt 39

_The way the report itself seems to ask for it, and that’s a good point I think, that what the failures were called in the narrative, and I shouldn’t necessarily say failures but changes._

This excerpt shows participants also picked up on the use of the term ‘narrative’ to discuss the whole report. Here the administrator also shows that she is aware of the opportunity narrative provides to use narrative stylistic techniques, such as giving different meaning to negative events, “failures,” by framing them neutrally or positively, “changes.”
The term is also used in the guidelines to designate an organizational and stylistic format for writing even though the stylistic format is not explicitly characterized. This quote from the guidelines likely references both the organizational format summarized in Figure 4.1, above, and narrative stylistic techniques. “In narrative form, report on accomplishments relative to the work proposed for the reporting period” (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards Annual and Final Report Guidelines"). In this excerpt the term ‘narrative’ likely refers to stylistic format as well because it is unassociated with other writing techniques such as describing, detailing, or summarizing. Instead it stands on its own to designate a “form” of reporting.

This section has shown that narrative is an important concept for reporting in this case. It is more than just an imposed organizational schema. I have also shown it likely includes stylistic techniques, is used to characterize a type of material in the reports, and often dominates as a concept so much the term stands in for the report itself. The narrative ideal is shared by local participants and embedded in institutional documents. The next section will discuss the first reason I found for using the narrative ideal, that a narrative creates coherence. This reason is used to justify the global organization imposed by the NSF EPSCoR guidelines. It became particularly salient to the Iowa grant likely due to the failure of their first submitted annual report in 2012.

**Coherence as a reason for narrative reporting**

The techniques of narrative discussed in this section show the joint nature of report writing between funder and reporter. Not only do the NSF guidelines require narrative conceptually, the NSF report requirements and interface design the reports’ narrative frameworks. These frameworks ultimately present the
Iowa project in positive, pre-determined ways. This section will review how coherence correlates with this imposed narrative framework.

Coherence is an important reason for using narrative that one administrator in particular described as a way to manage the rhetorical scarcity created by competing detail and concision ideals. The following two, nonconsecutive, excerpts demonstrate the importance of coherence for one of the main authors from 2013-2016.

Excerpt 40

*And so again when you read the appendix, again, it has to be a coherent story. And if I talk about one activity in excruciating detail and then just touch base on the other ones it’s, that’s also not balanced. So I try to find a balance that sounds semi-coherent. That coherent thing is, it has to be able to read well.*

The administrator’s explanation for how he decides the level of detail to include shows writing a “coherent story” to be a way that manages this problem. The administrator defines coherent story as “able to read well” in prose. In fact, this administrator described his own reporting role in terms of coherence.

Excerpt 41

*Uhm, my role I think is the primary author, or I take everyone’s input and try to put a coherent story around it. So it’s a, it’s a cheerleader to make sure everyone does provide input. But then it’s a… to use that input and try to use as much as I can in its original form but then to make sure it all sounds in a coherent fashion.*

The ideal for the authorial position of a report in this case is that the “primary author” ought to be assembling the “input” of multiple voices, framing those voices to “put a coherent story around it,” and remixing those voices to ensure the report “sounds” coherent.
So far, this administrator has demonstrated that coherence is a reason for reporting via narrative. But what exactly is coherence? The administrator does not give a satisfying definition. However, coherence has a long history as a narrative value in communication scholarship, being a relevant concept from Aristotle’s *Poetics* that a story should have a beginning, middle, and end (Halliwell). Since then, coherence has been developed by scholars of narrative as a main principle for assessing the rationality of a narrative through its probability (Fisher; Lucaites and Condit). Scholars suggest that coherence is obtained through a “canonical schematic structure” which is a formalized organization, or “meaningful relations,” a “causal network” between a narrative’s elements (Goldman, Graesser and Broek). So with coherence a narrative “reads well” or makes sense because there is either an imposed organizational structure or an internal structure that gives meaning to the elements in a narrative.

Participants justified the use of several techniques by coherence. The two main techniques were the development of a single narrative voice and logical relational consistencies in organizational format. In narrative theory there are two competing ideas for defining a narrative, the first is that a narrative is a “text in which an agent tells a story” (Bal 119). The second is that a narrative is a “semiotic representation of a series of events linked in a temporal and causal way” (Landa). Both of these definitions of narrative play a role in the coherence reasoning by NSF guidelines and participants.

In this case, a single, trustworthy, omniscient narrator was created out of many texts that were requested and mined for report information. One way this narrative voice was created was through the use of a question/answer format.
The three prose-heavy sections of the Detailed Report, the Accomplishments, Impacts, and Changes/Problems sections, are written in Q&A format. Figure 4.2 (below) shows the sub-questions asked in the Accomplishments section for all the years of the grant.

**Table 4.2. Accomplishments Section Sub-Questions**

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the major goals of the project?</td>
</tr>
<tr>
<td>What was accomplished under these goals?</td>
</tr>
<tr>
<td>What opportunities for training and professional development have the project provided?</td>
</tr>
<tr>
<td>How have the results been disseminated to communities of interest?</td>
</tr>
<tr>
<td>What do you plan to do during the next reporting period to accomplish the goals?</td>
</tr>
</tbody>
</table>

The Q&A technique acts as a frame story for the annual report. In narrative theory the frame story is the contextual situation for the narrator (Hikel). In this case, the questions allow the NSF as an institution to stand in for a distant, possibly skeptical, public, creating a frame story for the report that presents the local grant with an opportunity to create a single voice in order to answer questions for the public. This is especially shown through the final question in Table 4.2, which creates a singular “you” for the narrative voice of the project. The guidelines’ questions are explicitly framed by the guidelines as what such audiences “deserve” to know. Contextualizing the annual report content as answers is a technique that allows Iowa administrators to create coherence.
through a single, trustworthy, omniscient narrator even though the report began as polyperspective and multivocal.

At the same time, the overall framework of Q&A creates a coherent, temporal narrative schema that establishes what is (Accomplishments and Impacts) and then what will be (Changes). This is visualized in Figure 4.3.

Figure 4.3. Temporal global organization of Detailed Report and Appendices

The Accomplishments section asks projects to first identify their goals and then explain how their activities, results, outcomes, professional development, dissemination, and continuing plans satisfy those objectives. Starting with goals creates a backstory for the narrative. That is, it sets up the logic of past events that add meaning to or explain the current circumstances. The Impacts section requires projects to answer questions about the project’s current impact on academic disciplines, human resources, various infrastructure, and “society beyond science and technology.” Finally, the Changes/Problems section requires projects to divulge changes in approach, reasons for the changes, any further anticipated problems or delays, and plans to resolve the problems. This section inverts the expected narrative logic of problems followed by changes. This inversion in the section’s title and order of questions within the section de-emphasizes problems and reminds that this narrative is set up to be positively persuasive.
The organization of questions in the Detailed Report imposes a coherent beginning, middle, and end as the report moves from goals to current status to plans for the future. Coherence is seen in the movement of questions within the sections as well. For example, the Impacts section moves from questions about impacts on near academic disciplines to all of society outside science and technology, creating coherence in the schema of local to global. Highlights and Appendices also follow the Detailed Report’s basic organization: a coherent narrative arc of accomplishments to impacts. Report Appendices followed the same structure as the Detailed Report, even maintaining the numbering conventions. The local choice to maintain the Detailed Report’s organization in the appendices suggests the power of the report’s narrative coherence.

This section has shown that coherence was invoked as a reason for using narrative techniques. Specifically, coherence was built through the narrative’s voice and its logical presentation of events as embedded in report requirements at the section level. Techniques of Q&A and a defined organization gave control to the NSF guidelines for creating coherence, which seems to closely mirror classic and scholarly definitions. The intertwining of institutional power with imposed canonical coherence is exemplified by a negative case, the unsuccessful 2012 annual report.

Lack of coherence in an unsuccessful narrative: the 2012 case

The first Iowa NSF EPSCoR annual report acts as a counterpoint to successful interpretations of narrative, particularly adherence to coherence reasoning, because it did not pass scrutiny in large part due to this reasoning. A Reverse Site Visit panel report to Iowa NSF EPSCoR after its first year and Iowa
NSF EPSCoR’s written response to that report indicate writing a coherent narrative report was a main source of contention.

A 2012 “reverse site visit” brought several Iowa NSF EPSCoR administrators and faculty to NSF Headquarters in Washington D.C. to present their progress and plans after the first year to a panel of NSF agents. Although organizational lore suggested that the visit and presentations went well, the visit resulted in a document that criticized and proposed changes to the grant. The local administrators then wrote a response to those proposals. Some of the NSF agents’ proposals directly discussed the first annual report. As well, some of the responses also discussed annual reporting.

The Reverse Site Visit documents obliquely refer to the narrative aspects of the 2012 annual report when they critique the report’s specificity and articulations. For example, one of the panel response’s bullet points suggested, “Specify the challenges and strategies for overcoming the technical aspects of research planks. The objectives and barriers should be more clearly articulated in future reporting and presentations” (NSF EPSCoR Reverse Site Visit Panel). From this excerpt, it seems but is not completely obvious that the specificity and articulation required alludes to narrative and detail ideals. The terms “narrative,” “coherence,” and “detail” never occur in the text. Instead, the techniques, “specify,” “explain,” and “clarify” are often used.

Here reasoning that invokes coherence is suggested a couple different ways. Firstly the organizational format of “challenges” followed by “strategies for overcoming” suggests that same positive storyline seen in the Detailed Report’s sections. The pairing of “objectives” and “barriers” also creates coherence in that temporal link of meaning between intent and present reality.
The Iowa NSF EPSCoR administrators interpreted this bullet point to be a critique of their report’s narrative function. The following excerpt is their direct response to the above panel critique bullet point.

In preparing the annual report, we had difficulty deciding upon the proper level of detail in describing the technical accomplishments of the research platforms. This reflects, in part, our efforts to detail our progress on specific milestones and metrics, which focused on infrastructure investments, and keeping the annual report to a reasonable length (on the order of 100 pages). Ultimately, we decided to communicate technical progress as lists of publications, presentations, and proposals rather than providing narrative that encapsulated the research contained in these scientific communications, which we acknowledge obscured the challenges and strategies of the research platforms. In the future, we will summarize the scholarly work that is an outcome of the EPSCoR investment and challenges, which we will include in next year’s annual report. (Iowa NSF EPSCoR “Iowa NSF EPSCoR Rii Track 2 Project Response to Reverse Site Visit Review Panel: Submitted to the NSF October 31, 2012”)

This excerpt shows how the Iowa participants interpret a coherent narrative. The memo sets up a distinction between communicating via “lists” and narrative, a distinction that mimics the Detailed Report guidelines’ distinction between “tabular material” and narrative. The excerpt points out the coherent aspects of narrative that were lost by mainly using lists, that narrative could have “encapsulated the research” and therefore detailed the “challenges and strategies of the research platforms.” This mea culpa seems to invoke both the detail ideal
(“encapsulated”) and coherence reason for narrative (“challenges” and “strategies”) together. For a solution to this perceived deficiency in their report, the Iowa NSF EPSCoR administrators promise to “summarize” the scholarly publications and presentations in the future. This promise adheres to the ideal of concision, but had the potential to run afoul of the RSV report’s request for specific articulations, as well as the Detailed Report guidelines’ repeated requests for detail.

The dilemma faced by 2012 administrators now becomes clearer. They were challenged by the conflict between detail and concision ideals. As a result, they chose to manage the dilemma by constructing the report based on the inventorial ideal, using techniques such as lists. Relying only on inventorial techniques and reasoning was rejected. The annual report required the narrative ideal as well to create coherence.

**Coherence and balance reasoning in tension**

The previous section provided an exemplification of reasoning for the narrative ideal because it creates coherence by telling the story of a time when allegiance to detail, concision, and inventory ideals were deemed insufficient. The result of relying on only three of the four ideals was a “revise and resubmit” judgment and documented criticism from the Reverse Site Visit panel. After 2012 administrators still struggled with narrative coherence, as shown by the main narrative writer’s remarks, which I will reprint here:

Excerpt 40

And so again when you read the appendix, again, it has to be a coherent story.

And if I talk about one activity in excruciating detail and then just touch base on
the other ones it’s, that’s also not balanced. So I try to find a balance that sounds semi-coherent. That coherent thing is, it has to be able to read well.

This description of the appendix suggests coherence is a reason for ideally writing the report as a narrative, but it is in tension with another reason for writing the report as a narrative, something the administrator calls “balance.” Across his reasoning through coherence, the administrator suggests tensions between balance and coherence. “I try to find a balance that sounds semi-coherent,” suggests balance is not naturally coherent. Nor is coherence naturally balanced.

This administrator imports his attention to balance from his work promoting the grant in other ways, such as presentations to industry, legislators, even other local administrators and donors. In my communication position in the grant, I often worked with this administrator to ensure balance across the number of news stories and website features, in internal newsletters, and other promotional materials. This administrator attempted balance in the amount of narrative attention given to “activities,” which is a term he applied to all the hierarchal levels of the grant, from single experiment to research area platforms. Tension in the narrative ideal stems from the difficulty of achieving enough, but not too much, detailed description of projects, balance between emphases on projects, and sentence-to-sentence progressive coherence in the same paragraph (“it has to be able to read well”).

To bring the two strains of reasoning for using narrative together, the administrator suggests coherence is a narrative frame for the report data, not an internal logic. This suggests the administrator feels he has a certain level of
agency in deciding how he frames the reports. I will reprint Excerpt 41 here to further explore the administrator’s perception of his choices.

Excerpt 41

_Uhm, my role I think is the primary author, or I take everyone’s input and try to put a coherent story around it. So it’s a, it’s a cheerleader to make sure everyone does provide input. But then it’s a… to use that input and try to use as much as I can in its original form but then to make sure it all sounds in a coherent fashion._

Although the administrator doesn’t use the word “balance” here, ideally acting as “a cheerleader to make sure everyone does provide input” achieves a type of initial balance across the projects in creating fairly equal pools of faculty submissions. In this excerpt, “to use that input and try to use as much as I can in its original form but then to make sure it all sounds in a coherent fashion” suggests tension stems from balancing fidelity to the mid-level faculty’s submissions with developing a coherent narrative voice. It also suggests the administrator is adhering to the canonical definition of coherence, which leaves some room for agency open for him at the sentence level.

**Balance as a narrative value**

So far I have relied one administrator to explicitly contrast coherence with balance reasoning. I will argue in this section that balance is also a significant reason for writing the report as a narrative, even though most participants just refer obliquely to it. For example, the next excerpt shows a lower level participant who invokes balance from a negative perspective.
Yeah, well, sometimes it was just big zeroes in some of the cells. And, and there may not have been enough opportunity to report on the extensive efforts we made so it just made it look like, huh, they didn’t do anything.

Here having “big zeroes” is perceived as imbalance. The participant worries that the report might not have provided enough opportunity to describe effort, rather than just results. Compounding this worry, this participant’s projects were mostly completed by year 3 of the grant, again potentially giving the impression that nothing was being done, when in reality the project was complete. This participant adheres to balance: he wants a more equal representation of his projects than “big zeroes,” but rejects balance achieved through quantitative, inventorical means. He would like to link past effort to the cells that record zeroes, suggesting that this is an example where balance and coherence are working together to forward the narrative ideal.

Participants often invoke balance in the guise of obtaining better coverage. The next excerpts explore this link first from an administrator’s and then several contributors’ perspectives.

So I will go and look at our news, events, and things like that to make sure and see if that’s been captured and that we have it in there somewhere, particularly if there’s some event that I, that faculty may or may not have thought was important to add but I think, you know, really, something we should include in here because we did this. So I feel like my role is to try and make sure we’re capturing all the salient points because, because faculty and the people who send us reports may not always think that. They'll take what they think are the main points and they may omit something not because they, you know, just because
they are like, ‘there are so many things I have to pick a few and these are the ones I pick. Now and that’s maybe more from the, on the broader impacts and sort of the events kinds of sides because with the science, obviously that’s, you know, we know that the science is what it is. I don’t really look for any other kind of science. But you know, for the, for events and things that faculty kind of did sort of extraneously, you know, the outreach and broader impacts and those kinds of things.

This administrator describes her role as ensuring the report contains “all the salient points” rather than just “main points.” She believes salient points are everything “we did.” This suggests she is looking to add to the input from faculty because she perceives their input could likely be inadequate or imbalanced. This administrator, too, feels she has some agency in determining the level of detail and framing the narrative can include. In particular she believes faculty may overlook contributions in “outreach and broader impacts” which she believes they perceive as extraneous to their “science.” Therefore, she seeks to rebalance the broader impacts and events “sides” because to the report these are salient, even though she believes the faculty doesn’t consider them main activities.

Although a quick laugh and firm “no” was the most common answer to my interview question asking whether non-administrative participants actually read the finished annual report, follow up questions suggested that if participants consulted the finished annual reports, they did so to ensure that their own projects were represented fairly. They also assumed that all the information they provided would be used in the annual report.
NSF’s requests are pretty thorough. They pretty much cover everything. You’ve got multiple opportunities to present, you know, they ask about the same thing many different ways. So I’m at least thinking about the reports I submit for my projects. So there’s no excuse for something to not get included in the report if it’s something that you actually did on your project.

This excerpt shows the assumption of a contributor that the annual report is flexible enough to include any information a contributor might choose to submit. Her belief that the reports “cover everything” and that there is “no excuse” for something a faculty member “actually did” to not be included again suggests that coverage and detail is linked to balance reasoning for narrative in this case. Most participants agreed that the annual reports ought to cover as much as possible from as many projects as possible. Some participants even reported checking the finished report to ensure their own projects were included.

Especially once it’s in its final form, I’ve looked it over. I’ve paid attention to areas that I know that we have faculty that were more involved than others.

There’s some areas that we’re more involved than others. I look those over. Mostly looking to make sure that we were well represented, that we are meaningfully contributing, that we’re moving forward. So I’ve definitely consulted it after-the-fact. Yes. Often? No. Not really.

This excerpt suggests that not only does the contributor expect the network of contributors indicated by “we” to be represented, but that they are well represented enough to evaluate whether the group is “meaningfully contributing” and “moving forward.” As this excerpt begins to suggest, the balance reason in this case is not always linked to an outside audience. It
suggests contributors may have written their input for the local rhetorical situation of self-evaluation or self-promotion rather than for the public audience’s assessment. This difference in rhetorical situation and audience, combined with the main report writer’s preference to use faculty input in its “original form” and balanced across “activities” as much as possible, created a dilemma for writing the report narrative that could not be managed by using only a coherent narrative organization.

**Parallel organization technique to manage balance**

The sub-section levels of the Detailed Report are where local control was asserted. Within the sub-questions, Iowa administrators chose to consistently organize answers by platform, plank, and project. This is visualized with examples in Figure 4.4. The repetition of platform, plank, and project breaks from the NSF-imposed temporal narrative organization of past successes to future plans.
Figure 4.4. Parallel organization of sub-questions

This figure 4.4 shows the pattern of parallel sub-question organization chosen by Iowa administrators. This pattern is characterized by borrowing the grant’s team hierarchy. Because faculty, students, and staff were sorted into research and broader impacts teams by project, planks, and platforms, borrowing this hierarchy ensured the narrative created balanced coverage.

The following Figure 4.5 (next page) is an example of the coding for platform, plank and project.
BioEnergy (BE)

Long-term monitoring of the Clear Creek (near UI) and Big Creek (near ISU) BAER sites, and at the UI’s Cedar River Natural Resource Area Biomass Research Site will continue to improve understanding of flow, energy, and nutrient transport, as well as plant and wildlife community dynamics.

Building upon previous experiences with the BAER sites and furthering collaborations between the UI power plant and area farmers for energy crop production in on-farm research sites, demonstration planting will begin at UI and then expand to collaborating farmers.

Biochar impact on soil water retention under field conditions will be quantified. Impacts of bioenergy cropping systems and biochar amendments on soil nutrient levels, biomass yields, and greenhouse gas emissions will be quantified.

https://reporting.research.gov/rppr-web/rppr?execution=e1s14

6/1/2014

The catalysts developed during Year 3 will be tested in Year 4 in both in situ and ex situ fast pyrolysis conditions to determine their effectiveness. Work will also continue to improve the instrumentation and testing procedures under relevant biomass conversion conditions (pyrolysis and gasification) for different biomass feedstocks, with the goal of understanding the basic physics and chemistry of these processes.

Novel techno-economic analysis frameworks will be developed to incorporate uncertainty parameters in the analysis; this will be used to evaluate innovative approaches to economic and environmental biofuel and biopower production, including duckweed as a potential biomass fuel source.

Work to increase the yield of furan-2-carbonitrile will continue with a focus on using biomass-derived materials as the feedstock. Additional conjugated polymers are currently being prepared to evaluate the performance of these materials in organic solar cells.

Figure 4.5 Coding for platform, plank, and project
Figure 4.5 codes the 2014 Detailed Report’s sub-question that asks about goals for the bioenergy platform. The platform is labeled by a subheading in the text. The page break in this image happens to fall between the two planks in the platform (the first plank is shown in cool colors, the second plank is shown in warm colors), making the designation easy to see even though there are no subheadings or other indications of the plank switch. Each new color is a new project or set of projects.

Sub-sections like the figure above include a high level of specificity in naming, but do not include a high level of detail about the projects themselves. Platforms are consistently labeled through subheadings, though the planks are not labeled through headers. However, the answers fairly consistently use the same organization of planks throughout the Detailed Report sections. Figures 4.6 and 4.7 (next pages) show the high occurrence of these patterns, which appear as short red diagonal lines.
Figure 4.6. Occurrence of platform and plank pattern in 2013 Annual Report narrative sections
Figure 4.7. Occurrence of platform and plank pattern in 2015 Annual Report narrative sections
Figure 4.6 and 4.7, above, were created by coding the platform and plank occurrences in the narrative sections (Accomplishments, Impacts, Problems/Changes) of both the 2013 and 2015 annual reports. These codes were then extracted in order to a spreadsheet and each platform and plank was assigned a numeric value based on the order of first occurrence.

The figures show balance at the sub-question level because the order of platforms and planks are usually maintained. This can be seen through the repetition of both blue (platform) and red (plank) diagonal patterns. The figures also show balance is being created in the narrative through the fairly even number of occurrences of each plank and platform in each section of the annual reports. Since the planks are often not labeled, only readers who are highly familiar with the project may perceive this parallel organization, again suggesting that achieving balance is a local reason to adhere to the narrative ideal which stems from the local rhetorical situation and audience.

For another example of coding, Figure 4.8 (next page) is a typical excerpt from the 2014 Accomplishments section. This excerpt answers a sub-question that asks what “Major Activities” were accomplished in 2014. This excerpt is from the Energy Utilization platform answer for the Building Science plank.
The community laboratories in the Columbus Community High School in Columbus Junction, IA, and the Interlock House at Honey Creek Resort State Park, are fully established and operational. A third community laboratory was identified at Iowa Lakeside Laboratory, which is a field station for Iowa’s state universities; a cabin has been identified for energy improvements. Two new faculty joined the Building Science plank and will focus on sustainable school design and energy loss in residential buildings in Iowa small towns.” (Iowa NSF EPSCoR, 2014)

Figure 4.8. Parallelism in one plank

The answer shown in Figure 4.8 relies on plank association for paragraph-level organization and project association for sentence-level organization. Again, a high level of knowledge about the grant is needed to understand when a new sentence or phrase is describing a new project. For example, in this excerpt, the three warm color codes are all community lab projects. However, the blue color-coded projects are not. To an outsider, however, it is plausible that new faculty studying sustainable school design and small town Iowa residential buildings would do so through community labs.

Details about the science involved in these projects are assumed to be known by the reader or unimportant enough to provide further explanation. For example, in the excerpt in Figure 4.8 there is no explanation given for what a community laboratory is or the research done through them, though there is explanation about the place identified for the third community laboratory. This
excerpt shows detailed naming of places that were important for this plank in 2014 as it finalized the placement of its community labs.

The final sentence in Figure 4.8 summarizes in very general terms what the two new faculty plan to research. Although it may seem a stretch to consider two new faculty joining the project to be a “Major Activity,” this third sentence makes the paragraph seem more robust. It shows one way the balance reasoning led to practical writing techniques, here balancing the given detail between types of projects in a single plank.

Balance is related to the performativity of narrative in that it reveals the mediation of the narrator (Berns). Achieving balance is a reason to use narrative, but balance doesn’t just automatically happen in a narrative. In the administrators’ discussions of balance they reveal that they more or less adhere to balance reasoning by controlling the subsections’ detail. Analysis of the Energy Utilization subsection (Figure 4.8, above) also suggests balance was carried out through manipulating the level of detail included in sentences about individual projects. The coded image of Bioenergy goals (Figure 4.5, above) suggests balance was also implemented through internal parallelism that allows easy comparison of the level of detail in a section. The manipulation of detail to achieve balance sometimes pits the ideal for giving detail against the narrative ideal but also sometimes allows the narrative ideal to better fulfill the ideal of giving detail.

On the next page I have provided a 2014 “Impacts” section excerpt. This excerpt answers the sub-question, “What is the impact on other disciplines?” under the “Impacts” section of the “Detailed Report” body. The excerpt shows
coding for the naming technique, which I will argue was also used to manipulate the level of detail included in a sentence to achieve balance.
The Reliability Analysis and Multidisciplinary Design Optimization (RAMDO) software that is being developed can be used by researchers in other disciplines to carry out optimizations.

The efficient methods for solving nonlinear mixed-integer optimization problems that are being developed can be used in a variety of problems that arise from the risk-averse stochastic programming formulations.

Energy Utilization (EU)

The Green Community Campaign could impact public policy and marketing related to challenges of communicating information about new technologies. Managing the logistics of working to recruit participants indirectly through industry partners can also be applied to many other disciplines.

The research and infrastructure developed with the architects in the Building Science plank have already had a significant impact on projects developed within Mechanical Engineering and Electrical and Computer Engineering, which lead to a joint NSF CyberSEES proposal. The data analysis from this project can also be used by “big data” researchers.

Figure 4.9. Coding for naming technique
The figure above shows the end of the Wind Energy platform and the full Energy Utilization platform’s answer to an Impact section’s sub-question about the program’s impact on other disciplines. Detailed naming is shown to be important. The long complex noun phrases, typical of scientific writing, suggest acceptance of scientific writing norms as well as use of the technique to include more detail in less space. The excerpt allows a bit of projection in the final sentence, perhaps making the paragraph seem more robust and therefore balanced in visual length with the paragraphs that surround it. However, scientific details that answer what the “research and infrastructure” is exactly, what the “significant impacts” were exactly, and how “‘big data’ researchers” might use the analysis are not included.

To summarize the balance reasoning of the narrative ideal presented so far, parallel local organization was justified by helping create balance between how projects, planks, and platforms were presented in the reports. I suggested balance was a local reason for using narrative that was not shared by NSF agents as demonstrated by institutional guidelines. I explained that this reasoning likely existed due to a rhetorical situation that report writers and contributors were aware of but the NSF did not acknowledge; pressure from local contributors to cover all projects fairly, possibly for internal assessment or self-promotion. Instead, the guidelines required a temporal organization to create narrative coherence and a positive, persuasive presentation for distant, likely skeptical, public audience. Although coherence was a value Iowa participants shared, creating balance through naming and parallel organization won out at the sub-question level, even while the global organization retained a more canonical temporal narrative structure.
The examples from this section show general consistency across Detailed Report Sections for how balance was achieved through narrative. Although detailed naming is used, explanation is noticeably absent. Subsections use a parallel organization borrowed from the grant hierarchy to form pattern-like coverage across answers.

**Tensions over ‘story’ allow for successful balance reasoning**

So far this chapter has shown an ideal referred to in the guidelines and top administrators as “narrative” used coherence and balance justifications to manage the rhetorical scarcity brought about by competing report ideals of detail and concision. Guidelines explicitly suggested the narrative is written for a distant, public, possibly skeptical audience, though the Iowa administrators’ acknowledgement of a secondary local audience likely influenced narrative reasoning and techniques in this case. These characteristics are slightly different than the lay understanding of narrative, which generally means ‘story.’ Although top administrators sometimes equated narrative with story, resistance to conceiving the report as a story helps explain the successful incorporation of balance reasoning.

Local administrators’ additions to an annotated version of the national NSF EPSCoR guidelines demonstrate their use of ‘story.’

Plank leaders should compile the responses from individual researchers, and then platform leaders should compile the responses from each plank into a coherent story. From your materials, Asrun and Ted will assemble a complete report that will form various appendices for the RPPR report. They will also craft complete answers to each question below for the
overall project from the materials you provide. (Heindel and Kristmunsdottir)

The instructions above, written in blue text to indicate they are local additions, are more personal in tone than the NSF EPSCoR instructions but still take on a directive stance. The instructions indicate that the Iowa administrators were comfortable re-labeling the narrative as a “story” though the terms “responses,” “answers,” and “materials” are used more frequently. This excerpt also shows that story reasoned to be coherent but that coherence is ideally to be crafted by platform leaders rather than the top administrators. This contradicts the acknowledgement in excerpt 41 by one of the administrators that his role was ultimately to put a coherent story “around” input from platform leaders. The mismatch between instructions and what ultimately happened suggests the coherence reason for using narrative reporting was either not understood or rejected by contributing faculty.

The language used by non-administrative participants supports this. Generally, participants referred to the narrative in more naturalized, objective terms such as “summary,” “data,” or “description.” During interviews, two participants specifically objected to the use of the term “story” to describe the annual report.

Excerpt 46

Okay so I don’t really create stories. I don’t consider them stories in the annual report. But it’s basically reporting on what we have done. So I’m writing it right now so it’s pretty fresh in my mind. We basically remind report readers what we’ve promised in our strategic plan and deliverables, and then describe what we’ve done to either meet or not meet those in our duties in particular here. So I
don’t consider it a story. I guess I consider it documentation, description, not story.

This excerpt shows a participant’s reaction to my question, “Where do the data, the stories, the drafts that you work with for the annual report come from?” The question did not intend to elicit a strong reaction against the term, “story.” For this participant ‘story’ connotes something other than documenting or describing. Also, this participant never used the word “narrative” during the course of the interview. This suggests story or narrative may connote something either nefarious, too subjective, or unscientific in this situation that reminding, documenting and describing does not. However, this participant shows allegiance to narrative coherence reasoning in the progressive logic of reminding what was promised then describing what was done. She also suggests a single narrative voice created from polyphony in “We basically remind report readers.”

However, the idea of story is so entwined with descriptive techniques that later in this same interview this participant voluntarily conceded to writing “sort of mini-stories” or “kind of stories” when she explained how she reports work with small seed grant projects.

Excerpt 47

And then we describe who it was, all junior faculty members, why it was important for them to do this, and how it could advance their career, and that kind of thing. So in that case there are sort of mini-stories… And he’s awarded several of those, and again, those are kind of stories about what those seed projects were. They are very short descriptions but they do at least give the report reviewer or reader some basis of what was done.
This excerpt shows that, at the very least, how to define narrative techniques and reasoning in this case is contentious. The participant suggests character is important, “we describe who it was,” which is a classic narrative element that did not end up being exemplified in the annual reports. However, are “very short descriptions” that “give the report reviewer or reader some basis” stories? By the middle of the interview this participant is no longer sure. This participant’s status as a mid-level administrator may explain her reconsideration of ‘story.’ As discussed earlier, mid-level administrators were explicitly charged to “compile” responses from their platform participants “into a coherent story.” (Heindel and Kristmunsdottir) As well, the use of “narrative” was pervasive in the report guidelines and often used in the top administrators’ speech. As a mid-level administrator this participant would have been well exposed to the narrative ideal and associated reasoning.

Another participant also had a firm negative initial reaction to the same question. He went on to consider whether he wrote stories.

Excerpt 48

Well I think mostly we stuck with numbers. Now when you say did I write any stories, occasionally we would get requests, I don’t think they were part of the annual reports though, that we would get requests for the newsletter or other publications like that. So I don’t think, we didn’t, any stories for the actual annual report.

Although this participant acknowledges that there are stories within the grant project about his work, and did later remember that these newsletter and publication requests usually came from me, as simply a participant faculty researcher he was enough removed from the top administrators to not know that
some of the publications I wrote were consulted by administrators in an attempt to fill in the gaps, as well as reformulated for annual report “NSF Highlights,” as discussed in Chapter 2 and Appendix C.

However, later in the interview this participant conceded that he supplied information to the platform leader for a draft of “summary.” He reports that although his research team (which included the platform leader) experienced failure, he did not feel they were pressured to frame the summary in a positive light.

Excerpt 49

*We told the truth, actually, about part of our, one of the, one portion of our project failed miserably due to a variety of issues. And we were just honest about that. So it wasn’t very positive in that respect. And other parts were much more positive.*

This excerpt shows that this participant considers summaries able to be positive or negative, which suggests he does not think about them as purely objective data despite the assurance, “We told the truth.” Although his experience of the report may have mostly been as an inventory, these excerpts show the participants did not necessarily know about or agree with the necessity of narrative coherence or storytelling in the annual report. I have argued that balance helped fill that gap.

**Narrative in public science**

So far my inquiry into the use of narrative in this case has mostly avoided the context of science popularization. I made this choice because GPT is a grounded theory and I wanted to give space for participants and advice texts to create the ideal of narrative as it was understood in this context. Yet it would be remiss not to remind that science popularization is an unavoidable part of the
context. It is associated with both narrative techniques and a pro-science persuasive attitude. Although explicitly tracing the influences of science popularization techniques on annual reporting is outside the scope of this dissertation, it is definitely an area for further scholarship.

I have hinted that I believe influences from science popularization are neither all good nor all bad in annual reporting. As I mentioned in the literature review, proper use of narrative as a strategy, technique, and ideal generally in science writing is widespread and debated. Prickett claims that science disciplines’ use of narrative in research articles “stems less from an innate love of literature than from a widespread belief that it might solve problems of their own” including “the problems of subjectivity and pluralism” that fill the modern world “with conflicting descriptions and contradictory explanations” (Prickett 3). He leans on Lyotard in making the argument that science views narrative as a technique that can bring clarity and personal benefit to muddy empiricism. Although my context is not the science article nor science popularizing texts, we still see that in science annual reporting via narrative participants cautiously accepted that the ideal they meant by narrative managed some rhetorical scarcity problems and beneficially narrowed the set of possible audiences.

This dissertation’s final chapter will review and reframe the analysis more explicitly into the GPT framework. It will do so to set up a structure that allows me to give normative advice. After presenting this advice, I will conclude by speculating about the opportunities this research presents.
CHAPTER 5. CONCLUSION

Summary

This dissertation began with a question: what is it about annual reporting in institutional science that causes angst? I wanted to use my embedded position in a science grant context to start answering that question in a longitudinal and qualitative way. At the same time, my commitment to engaged rhetoric scholarship led me to choose theory and methods that could provide practical insight for the frustrated annual report writer, report solicitor, or advice-giving scholar.

I used grounded practical theory (GPT) as a metatheoretical, empirical approach to redescribe the communicative practice of annual reporting in institutional science. Because GPT is a grounded theory, I took an inductive approach to writing the data analysis. Chapters discovered and explicated categorizations through the participants’ input and the institutional texts’ explicit and implicit designations and then added to and refined those categorizations as descriptions became more robust. This chapter will leverage the normative aspects of GPT. However, to get to the point of giving good advice, the next section will review and re-place the analysis into GPT’s distinct three levels. The reassertion of GPT’s theoretical framework will simplify and standardize, allowing some generalizability for the findings of this case.

Problem level reconstruction

I identified rhetorical scarcity (Applegarth) as one broad designation for the main problem participants faced in this case. I initially chose to borrow this
concept because it allowed me to explore why participants seemed to experience frustration. Applegarth suggests a possible binary for inquiry:

relative to prior possibilities embedded within a genre, does the genre change in the direction of greater capaciousness and flexibility, extending the ways in which the genre can be taken up and inhabited? Or does the change move in the direction of a kind of hardening of norms into absolute requirements, or a retrenchment into narrower limits and more severely delimited constraints? (Applegarth 455)

My findings suggest that rhetorical scarcity in this case does not always fit the negative connotations in the binary or even the binary of “flexibility” versus “hardening” at all. Instead rhetorical scarcity sometimes combats uncertainty to give more clarity in decision-making and confidence in action. I’ve shown the participants in this study did chafe at rhetorical scarcity, but also fought uncertainty.

My findings do fit Applegarth’s conclusion that, “Genre users can narrow the purposes, audiences, and available arguments of a genre by drawing firmer boundaries around a smaller center, manufacturing a situation of greater rhetorical scarcity” and, like in economics, that scarcity can increase a rhetorical resource’s perceived value (475). Participants in this case were shown to re-invent annual reporting for their particular context. They interpreted some requirements more strictly than others in order to manufacture rhetorical scarcity that helped serve their purposes. It’s important to note that scarcity seems to increase the perceived importance of both the rhetorical resources that scarcity pushes communicators towards and the rhetorical resources that scarcity makes
off-limits. Therefore, the problem of rhetorical scarcity informs both positive and negative judgments of communicators when they describe their experiences.

Applegarth’s metaphor reminds that these rhetorical resources are “not inherently limited; rather they are constructed within genres as available or unavailable, appropriate or inappropriate” (Applegarth 475). In this case I traced and historicized the participants’ co-construction of rhetorical scarcity as frustration-causing mismatches between rhetorical resources perceived to be available and appropriate for use and invocation. These mismatches did not simply pit NSF institutional guidelines and agents against Iowa participants. I showed that often participants justified and institutional texts embedded similar competing ideals and justifications for good techniques to use.

In Chapter 2 rhetorical scarcity manifested as practitioners grappling to create reports that were concise enough to be read-able but also detailed enough to be useful. These ideals lent themselves to a normative question: read-able by whom and useful for what? From the guidelines I identified at least three types of possible audiences – evaluative, low-information, and skeptical – that suggest several possible rhetorical situations for the annual report. Participants, therefore, needed to choose the situated ideal that articulated the best audience and techniques to fit the purposes of that audience. At the same time, they needed to mediate the expectations of secondary audiences. In this situation of uncertainty, we saw participants giving reasons for managing the problem by choosing one technique over another and, by extension and directly, choosing one situated ideal over another for this instance of the genre.

Chapter 3 showed the management of rhetorical scarcity through a third ideal I named inventory. When assuming that an ideal report should function
like an inventory, participants’ main problem became how to best handle the recording and presentation of as much information as possible for evaluation. Here again, the problem linked back to uncertainty in targeting the best of many possible evaluative audiences.

Chapter 4 showed the management of rhetorical scarcity through a fourth ideal that participants often referred to as ‘narrative.’ When participants viewed reports as a narrative, their problem manifested as a need to write a coherent narrative for public consumption that still presented the grant’s many projects in a fair and balanced way. Like the other ideals, narrative also did not solve the problem of audience, but did suggest an appropriate hierarchy of audiences. Participants tried to manage the expectations of possible audiences, particularly the two extremes of local internal and distant public audiences.

My findings for the problem level in this case show that in a co-constructed genre, such as annual reporting, problems of rhetorical scarcity may come about due to internal or external disagreements about where rhetorical scarcity should lie. In other words, if co-creators disagree about the hierarchy of ideals for a genre or if they do not grade ideals and hold more than one ideal simultaneously they may police the genre to adhere to multiple models simultaneously. This potentially creates frustrating problems when it comes time to make decisions about who to target as an audience, what the purpose is, and what techniques to use.

**Technical level reconstruction**

I identified many techniques that participants chose to help fulfill their obligation to create annual reports. Because the purpose of this scholarship is normative, I focused on techniques that seemed interesting as a choice because
participants discussed or questioned the choice of technique, because the choice was contradicted by institutional guidance in some way, or because the choice seemed non-standard or not required by other participants’ understandings of annual reporting. Many of the techniques discussed fit all of these categorizations.

In Chapter 2, I explored a technique that was used to manage the rhetorical scarcity created by sometimes competing ideals for detail and concision. That technique was highlighting. I showed that justifications for using highlighting as a strategy incorporated perceptions that the technique alleviated the problem of giving more detail, particularly for accomplishments. As well the technique was perceived as creating a more concise report since report writers were forced to choose only a few projects to highlight.

My discussion of this technique featured the co-created nature of the technical level. Even though ultimately report writers seemed to have some agency to make technical level choices, techniques such as highlighting were suggested or required by institutional guidance texts. However, I also showed highlighting was criticized by participants who felt the technique potentially left too much out of the reports for particular audiences. As well, I discovered that the summary technique competed with highlighting to create concision and achieve more coverage for particular audiences.

Chapter 3 showed participants using many techniques related to the inventory ideal. Most non-main author participants viewed the first and main action of inventorying as both keeping track, which they greatly valued, and collecting information, which they valued less. To help organize and add clarity to Chapter 3 I sorted techniques of writing the report and delivery by the
categories of reasoning that justified their use. Techniques were justified by reasoning that granular, numeric, and comprehensive reporting created good inventorial reports.

Reporting piecemeal was an example of a granular technique. Piecemeal reporting caused overlap and repetition in reporting, which ran afoul of some participants’ perceptions of the report as a singular comprehensive record. Using databases and spreadsheets, a technique that participants referred to as “filling in the boxes” achieved high levels of granularity but also was a means of numeric reporting. Including a PDF appendix to database submissions was shown to be a controversial technique that achieved a more comprehensive means to report while also allowing for numeric reporting, but pushed back a bit against granular reporting even while creating another “piece” for piece-meal delivery.

Imagined techniques that audiences used to read and evaluate the reports were also important factors at the technical level of inventorial reporting because these imagined techniques influenced participants’ decision-making about which techniques they should use during reporting. For example, report guidelines characterized evaluation as a comparison of “what was to be done” to “what was actually accomplished.” This “deliverables” frame for evaluation seemed to lead participants to choose numeric reporting techniques. Complicating this decision, however, institutional agents rejected local reliance on numerical reporting, and greatly reduced the inventory ideal’s power in the first year.

Chapter 4’s premise was that in order to target a distant, possibly skeptical, public audience, the reports were strategically created to conform to techniques of a narrative ideal. Categories of justification for using narrative techniques included coherence and balance. By discussing how the term
“narrative” was used in the data, I showed the ideal was understood as being comprised of some techniques that are traditionally associated with narrative, such as creating an omniscient narrator and framing an event positively, but was less closely linked to others, such as describing and characterizing.

Organizational techniques related to the narrative ideal were also in tension as they created and managed rhetorical scarcity. Coherent global organization, established mostly by institutional guidelines, created rhetorical scarcity through a temporal framework of past/present/future. Yet the local report writers resisted this scarcity by writing balanced sub-sections that leveraged parallel organization in the form of platform, plank, and project repetitions across the temporal questions. Here we saw two organizational techniques were used to create narrative organization, even though these two techniques embed very different assumptions about who is the most important audience for narrative.

Even balancing techniques at the word-level, such as naming, were used to manage the problem of rhetorical scarcity in the narrative ideal. For example, long, complex, noun phrases typical of scientific writing nominalizations allowed writers to present more detail Concisely. However, the technique is not completely friendly to the distant, public audiences that a coherent narrative was imagined to target.

Finally, I discovered that some participants were not comfortable with narrative as an ideal, particularly when techniques of narrative were presented as “story.” Participants at lower levels of the grant used more objective and naturalized terms in the ideal, such as “summary” or “description.”
Philosophical level reconstruction

GPT’s philosophical level is important because it allows us to see the dilemmas that participants encountered due to sometimes conflicting situated ideals. That is, while the situated ideals helped participants decide and justify their decisions about what audience is best and what techniques to use in order to manage rhetorical scarcity, holding situated ideals simultaneously and differently grading the ideals into hierarchies sometimes contributed to rhetorical scarcity. This dissertation identified four main situational ideals: that annual reporting should be detailed, should be concise, should be inventorial, and should be narrative. I showed that rhetorical scarcity was managed through these ideals. They worked as ideal models of reporting participants alluded to when praising or blaming communicative decisions.

Rhetorical scarcity, the problem, is also understood through the philosophical level. Aspects of rhetorical scarcity were both praised as necessary restrictions and blamed for participant frustration. Chapter 2’s problem of rhetorical scarcity manifests at the technical level as a problem writing reports that adhere to page and word count restrictions but that also give specifics about projects. But at the philosophical level this problem is understood as sometimes competing beliefs about good reporting. Good reports ought to be detailed but good reports also ought to be concise. I showed that participants both justified and argued against the highlighting technique by reasoning through these beliefs that reports should be detailed and concise. This chapter also showed that it was possible for the reasoning itself to potentially cause misunderstandings.

Chapters 3 and 4 forwarded the philosophical level by using the situated ideals of inventory and narrative as organizing principles. Chapter 3 explored how guidelines and participants justified inventorial reporting because good
reports were seen as numeric, comprehensive, and granular. That annual reports ought to be comprised of numeric information was initially strongly held by Iowa administrators, though the grant’s leadership scaled back their beliefs after the 2012 annual report’s numeric list techniques were deemed insufficient. Yet I discovered that numeric reasoning was still used by the institutional descriptions of evaluation, which characterized evaluation as a comparison of past goals to present accomplishments.

That inventorial reporting created good, comprehensive reports was shown to influence participants to choose techniques that allowed more content about more different projects to be reported. That reporting should be comprehensive was also suggested by the guidelines, though local participants drew on this reason to see reporting as an inventory more often to justify non-institutionally required choices such as the appendix.

The inventory ideal’s reasoning also included granularity for good report delivery. Comprehensive reporting seemed often at odds with the idea that reports ought to be granular, that is, the parts of it can be segmented, read and submitted to audiences piece-meal. Granular reporting was imposed mostly due to institutional pressure. Some participants did not seem to understand the level of granularity embodied in the report writing and submission process. Others protested the timing of submissions as well as the lack of control, oversight, and even basic knowledge of which audiences saw which pieces of the report.

Chapter 4 identified reasoning for the narrative ideal. The reasons for narrative reporting included creating good, coherent, and balanced reports. Global organization and narrative voice techniques were justified through coherence reasoning. Coherence was imposed mainly through institutional
pressure and was taken up as a reason to use narrative locally due to the grant’s failure to pass its first annual report. Coherence and the local reasoning of creating balance through narrative were shown to be uneasy bedfellows. Balance was demonstrated mainly through the parallelism technique. This technique borrowed the grant’s hierarchy to organize responses at the paragraph and sentence levels. Balance was imposed mostly due to local expectations of fairness, though administrators also justified the technique by pointing to evaluative institutional audiences.

The situated ideals I identified at the philosophical level are a function of the situation, not of individuals, though sometimes individual identities, when those identities interplayed with the situation, affected how individuals reasoned through the ideals and how strongly they adhered to or resisted the ideals. This means the ideals are likely to return in similar situations and can be used to create some normative advice.

In the next section I will develop suggestions for practitioners, institutional agents, and engaged scholars. In giving advice, I will perform similar argumentative moves as the participants, moving back and forth between proposing techniques and linking those techniques to communicative ideals I have identified. This section will model the belief embedded in grounded practical theory that good decision-making attends to both the practicalities of how to act while also reflecting on why people should act that way (Tracy Colloquium 134). Ultimately this advice is not designed to prescribe how practitioners and agents act, but to help inform better reflection during decision-making about annual reporting.
Advice

This dissertation has shown that in this case annual reports really were co-constructed. Institutional guidance and local participants often held similar ideals about what makes for a good report, even though sometimes reasoning for those ideals and the hierarchy of those ideals differed. However, the administrators in this case had a relatively long learning curve for developing their strategy. This is typical of short-term interorganizational, interdisciplinary alliances that organize outside of traditional institutional management structures, (here, faculty’s home universities). These lean project teams are named “all-edge adhocracies” by Spinuzzi. He posits that “because all-edge adhocracies are geared to be nimble and reactive, coalescing around a temporary project, they tend to be weak at strategy” (All Edge 33). Spinuzzi claims this is especially true for strategizing “steady, repeated, efficient operations” (All Edge 187). He reminds that because these project teams are designed to be “reactive and tactical” all members must learn basic project management skills, such as those portrayed in annual reports, “how specialists will contribute, on what time frame, with what measures of success” (All Edge 186). Therefore, the advice below is not only relevant for institutional agents and current science grant annual report writers, but also should be reflected on by those who hope to participate in institutional science in the future. These reflections will push those involved with report writing to make explicit, informed, and purposeful choices.

The advice boils down to interrogating ten potential ideals for annual reporting and deciding the appropriate hierarchy for them. Of course, this dissertation only identified four ideals. That is because in the case of Iowa NSF
EPSCoR, participants and guidelines created a fairly consistent hierarchy between possible ideals that elevated four and created complete models of them but graded down other possibilities into reasons. Although I suggest reflection inform explicit ranking of these ten ideals, I expect more ideals might be gleaned from the specific situations of other cases. The ideals I suggest reflectively ranking are:

1. Annual reports should be detailed.
2. Annual reports should be concise.
3. Annual reports should be inventorial.
4. Annual reports should be narrative.
5. Annual reports should be numeric.
6. Annual reports should be comprehensive.
7. Annual reports should be granular.
8. Annual reports should be coherent.
9. Annual reports should be balanced.
10. Annual reports should be argumentative.

The next short sections are a review of these ideals, informed by this dissertation’s case. The sections are followed by a figure that places the ideals in likely relation to each other in order to facilitate reflection and decision-making.

**Annual reports should be detailed**

This dissertation showed a concern for detail articulates with evaluative audiences. If your report writers or evaluators are reasoning that there are not enough specifics or chafing against restrictions that don’t let them tell the whole story or report the nuances, it’s likely they are working within the ideal for detail.
**Annual reports should be concise**

This dissertation showed a concern for concision was a concern for all-too-human report readers. If your report requirements have length restrictions or you worry that evaluators won’t have time to read the entire report, the concision ideal has been invoked.

**Annual reports should be inventoriable**

This dissertation pulled the ideal for reporting as inventory apart and showed many possible aspects of it. Generally, however, if your report writers and contributors are reasoning that reporting is good for its own sake, or for keeping good records, or that recording is knowing, it’s likely they are functioning in the inventory ideal.

**Annual reports should be narrative**

This dissertation also dissected a narrative ideal for reporting. If reasoning around reporting invokes storytelling or giving nuance about the situation, it is likely participants are valuing the narrative ideal.

**Annual reports should be numeric**

Now this list turns to potential ideals that were only viewed as reasons in Iowa NSF EPSCoR’s case. However, according to how corporate annual reporting has changed over time, numeric reporting was the original ideal, and may still be the core of many annual reporting situations that deal with finances.

**Annual reports should be comprehensive**

This dissertation folded comprehensive reporting under the inventory ideal, however it could easily articulate with many of the other ideals, including narrative. That reports should be comprehensive shows itself as an ideal when people complain or worry that a report is incomplete in some way.
**Annual reports should be granular**

This dissertation mostly considered granularity an ideal of reporting delivery, rather than as a full ideal for the rhetorical situation. To turn this into a full ideal, report participants would eagerly contribute to databases or point out the opportunities to freely copy sections of reporting for many potential purposes and audiences.

**Annual reports should be coherent**

Coherent reports in this dissertation were shown to follow a temporal narrative structure to create logic. However, temporal coherence is not necessarily the only type of coherence that could be idealized. Any prosody that logically structures reporting could be evidence of the coherence ideal.

**Annual reports should be balanced**

In this dissertation I made the claim that reasoning the report should be balanced was tied to the local context. However, this was only surprising because achieving balance was linked to the narrative ideal. As an ideal of its own, balance is likely very common in annual reporting as administrators attempt to fairly represent the work of their projects.

**Annual reports should be argumentative**

I have included argumentation as a potential ideal even though this dissertation did not end up focusing on argument as an ideal or as reasoning. The usefulness of seeing argument as an ideal is questionable in a field influenced by argument’s use as a god term. However, in situations where inventorial, archival, and epistemic purposes are forwarded, invoking argument as an ideal could throw a wrench into otherwise well-functioning report processes.
The next page shows Figure 5.1, a table designed to help strategic reflection about possible ideals. The figure lists each of the ideal’s potential purposes as well as normative judgments about what other ideals it might combine with well or poorly.
Table 5.1. Strategic reflection on possible ideals

<table>
<thead>
<tr>
<th>Ideal</th>
<th>Purpose</th>
<th>Likely combines well with</th>
<th>Doesn't play well with</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detail</td>
<td>Evaluative, Archival</td>
<td>Inventory, Narrative, Comprehensiveness, Balance, Argument</td>
<td>Concision, Numbers, Granularity, Coherence</td>
</tr>
<tr>
<td>Concision</td>
<td>Evaluative, Readability</td>
<td>Narrative, Numbers, Granularity, Balance</td>
<td>Detail, Inventory, Comprehensiveness, Coherence, Argument</td>
</tr>
<tr>
<td>Inventory</td>
<td>Epistemic, Archival</td>
<td>Detail, Numbers, Comprehensiveness, Granularity</td>
<td>Concision, Narrative, Coherence, Balance</td>
</tr>
<tr>
<td>Narrative</td>
<td>Epistemic, Readability</td>
<td>Detail, Concision, Coherence, Balance, Argument</td>
<td>Inventory, Numbers, Comprehensiveness, Granularity</td>
</tr>
<tr>
<td>Numbers</td>
<td>Epistemic, Archival</td>
<td>Concision, Inventory, Comprehensiveness, Granularity, Balance</td>
<td>Detail, Narrative, Coherence, Argument</td>
</tr>
<tr>
<td>Comprehensiveness</td>
<td>Epistemic, Archival</td>
<td>Detail, Inventory, Narrative, Numbers</td>
<td>Concision, Granularity, Coherence, Balance, Argument</td>
</tr>
<tr>
<td>Granularity</td>
<td>Evaluative, Readability</td>
<td>Concision, Inventory, Numbers, Balance</td>
<td>Detail, Narrative, Comprehensiveness, Coherence</td>
</tr>
<tr>
<td>Coherence</td>
<td>Epistemic, Readability</td>
<td>Narrative, Argument</td>
<td>Detail, Concision, Inventory, Numbers, Comprehensiveness, Granularity, Balance</td>
</tr>
<tr>
<td>Balance</td>
<td>Evaluative, Archival</td>
<td>Detail, Concision, Narrative, Numbers, Granularity</td>
<td>Inventory, Comprehensiveness, Coherence, Argument</td>
</tr>
<tr>
<td>Argument</td>
<td>Evaluative, Readability</td>
<td>Detail, Narrative, Granularity, Coherence</td>
<td>Concision, Inventory, Numbers, Comprehensiveness, Balance</td>
</tr>
</tbody>
</table>
The above figure makes the mostly intuitive decision-making of experienced administrators in the case of Iowa NSF EPSCoR visible. We can see why administrators had to choose different techniques to achieve all their ideals of concision, detail, inventory, and narrative. These ideals often did not combine well together and so created rhetorical scarcity.

**Review**

This dissertation’s peek into the business of science finds extreme order and messiness, a desire to persuade the public and to remain true to scientific objectivity, existential fear but also a level of blasé and casual resistance to the power of NSF agents to influence the science of the grant.

The unique combination of methods I’ve used in this dissertation have given insight for how a business genre is translated in a different context, potentially informing what scholars know about how the genre functions and its trajectory. Ultimately, I redescribed annual reporting as a practice through which science administrators and their institutional agents negotiate the potential ideals of the genre.

This dissertation points to many possible avenues for further research. For example, Miller and Fahnestock’s question reinterpreted for annual reporting asks whether and how annual reporting affects science. This question assumes that reporting is not ‘doing’ science, an assumption that is already starting to be unpacked by Walker, Herndl, and Cutlip for other communicative genres. This assumption should be unpacked for annual reporting and, if found true, the influences of reporting on science (whatever we define that as) could be discovered. On the other hand, I expect reporting has a less clearly defined
relationship with science than the binary assumes. An activity theory or network theory analysis could show how this works.

Indeed, I began this dissertation believing this would be the type of inquiry I would complete. However, I found that in order to perform a method such as genre system mapping, I needed to start finding the edges. I had to dig into what annual reporting actually was. My commitment to engagement turned this question into considering what annual reporting ought to be. My attention to practitioner frustration allowed me to realize that reliance on genre in this case amplified the problem; the concept was not a solution in the face of uncertainty.

I expect my inquiry into the business of science will continue to grapple with the boundaries of science popularization and the internal norms and practices of communicating science. The mixing of Mertonian norms and norms from science popularization in these annual reporting practices initially made me think that a giant struggle between incommensurable worlds was embedded in annual reporting. However, this debate only surfaced occasionally in my talks with practitioners, who were much more concerned with their practical task of completing reports in the most beneficial way possible for their audiences and purposes. This finding supports Goodwin’s supposition that, “scientists and ordinary citizens should be able to figure out what communicative activity is appropriate on a particular occasion, without waiting for philosophers to definitively solve the puzzle of values in the scientific process” (Goodwin 153). Practitioners muddle along regardless and sometimes oblivious to the possible worlds colliding that make their work frustrating. Positive engagement for communication scholars starts with making those practitioners’ work less frustrating.
That I saw rhetorical and practical concerns trumping philosophical ones in this case both pleases and concerns me. How much of what I have seen is the result of my training in rhetorical scholarship and pedagogy? That I saw my own expertise area as both the main concern and the solution for engaged advice creates skepticism and suggests multi-disciplinary scholarship may be needed in this area.

Finally, my reliance on and extension of Applegarth’s concept, rhetorical scarcity, shows the possibility for this concept to be instrumentalized. It names what was previously not named; not just in reconceiving the spatial metaphors of genre theory in economic terms, but in capturing the feel of manufactured frustration; the practitioner’s sense that the constraints on a genre are not all fixed at the same strength. Understanding genre ideals and constraints as an experience of rhetorical scarcity creates empathy for the practitioner. This empathy ought to spur scholars into creating more useful scholarship that moves beyond description and beyond our pedagogical inclination to give prescriptive lists of best practices. Rhetoric scholars should not only help our participants understand the situation they are working in, but help our participants influence their situation. The advice I have given in this chapter represents the first reflective steps and choice-making needed to help both report writers and institutional agents better negotiate and co-create annual reports.
Bibliography


APPENDIX A. STAGES OF AIDA METHODS

The stages of AIDA I have used in this study are (1) naming the practice, (2) categorizing the participants, (3) conducting semi-structured interviews, (4) collecting documents, (5) transcribing interviews, (6) coding interviews, (7) coding annual reports and supporting documents, (8) describing the rhetorical context, (9) identifying situated ideals, and (10) reflecting on practices.

(1) Name the practice

The focus unit of GPT according to Tracy is a communicative practice. She defines practices as “referring to activities that occur in an identifiable place among specific kinds of people” and communication practices as “communicative forms that cut across sites” ("Reconstructing" 306). The first move of action-implicative analysis is to define the communication practice. In this dissertation’s case, the practice is annual reporting. I define annual reporting practice as the yearly gathering, organizing, writing, and sharing of data, summaries, and stories for the purposes of expressing an organizational history, keeping records of what the organization has determined to be important, building public and stakeholder relations, reviewing by both internal and external stakeholders, and sometimes receiving feedback and determining adjustments in strategy. Because GPT views all communication practices as positioned (embedded in individuals’ identity contexts and subject to interpretations influenced by those contexts), it shows the possibility for dilemmas in every practice.

(2) Categorize the participants

The second move of GPT methods is to get “a handle on the interactional problems from the points of view of the main categories of participants” (Tracy
"Reconstructing" 306). This means categorizing the people involved based on their position in the practice.

For IRB permissions I chose to categorize interview participants into two classes: main authors and contributors. Main authors are mainly administrators; the project director, principal investigators and staff members who completed the bulk of the writing, were responsible for the content of the entire annual report, and who were named as “Project Director,” “Principal Investigator,” “Chief Operating Officer,” or “Submitting Official” on the published annual reports. The interview data combined with the published annual reports makes this class identifiable. In the IRB documents I name these participants. However, treating participants as a class lends a little bit of anonymity, or at least uncertainty, to the interview data.

Contributors are those faculty researchers and staff who submitted their data to the main authors, but were only responsible for a relatively small portion of the annual report directly related to their particular research or broader impacts projects. Although lower status people such as postdocs or graduate students were also likely contributors, this dissertation focused on faculty and staff participants only. The data collected and analyzed made this class partly anonymous.

To capture the full context of interaction, there is a third class: NSF agents. NSF agents are those paid volunteers who act as institutional advisors and reviewers. This class includes the NSF EPSCoR section head, other top NSF EPSCoR administrators, program reviewers from other universities, and NSF program officers. For this dissertation I did not complete interviews with anyone in this class although I did analyze documents from them. However, treating
them as a class and the rotating nature of these positions over five years makes NSF agents partly anonymous.

(3) Semi-Structured Interviews

The third move of AIDA is to complete interviews of the participants in order to gain a broader understanding of the problems from their points of view. I completed interviews of ten participants who were Iowa NSF EPSCoR annual report main authors and contributors from 2012-2016. I interviewed participants between March and June 2016, which was a time that included the final report submission period so Iowa NSF EPSCoR annual reporting was fresh in their minds. I interviewed two main authors, six contributors, and two participants who did not fit neatly in these categories, but who I treated as contributors so I could give them the benefit of higher anonymity. Two participants were located at the UI, two at the UNI and six at ISU. I asked questions that both elicited stories and captured attitudes towards the annual reporting expectations. Most interviews took between 45 minutes to 1 hour. Please see the attached question guide that was approved by the IRB (Appendix B). Questions were informed by my situated experiences and longitudinal knowledge. Interviews were recorded on an iPad voice recording application and deleted after transcription.

(4) Collect documents

The documents of this case helped me gain a more complete understanding of annual reporting practices and challenges. I first gathered NSF EPSCoR annual report guidelines from 2012-2016 and Iowa’s complete annual reports from 2012-2016. In this document pool were copies of the first year’s rejected annual report and revision. There were many publicly available documents that supported the annual reporting process beyond NSF EPSCoR
guidelines as well. These include documents that supported a “reverse site visit” of Iowa faculty to the NSF Washington D.C. offices, documents from the “site visit” of NSF agents to Iowa, and formalized memo exchanges after Iowa NSF EPSCoR’s first 2012 annual report was deemed insufficient by NSF agents and required revision. The Iowa NSF EPSCoR administrators also created a set of templates and guidelines for dissemination and use within the Iowa project. I was able to obtain all of these documents. What I did not request were personal emails between participants or between NSF agents and Iowa administrators. Although these also would have been a fascinating source of information about the annual reporting processes, I relied on the interviews for this information in order to better protect the anonymity of contributors.

(5) Transcribe interviews

I was required by IRB to send the interview transcriptions to my participants. Therefore, I did not only transcribe the interesting moments of interviews, as Tracy suggests in her explanation of AIDA methods (“Reconstructing” 310). Because of this sharing I also did not completely fulfill traditional transcription methods of discourse analysis out of linguistics, which retains every nonfluency as indicative of conversational work, as described by Tracy (Colloquium 14). Past experience with my participants gave me insight to a particular level of transcription that would not embarrass them or give them cause to complain during the transcription check. I did indicate instances of nonfluency (for example, “uhm” or repetitions) where the nonfluency was sustained to indicate discomfort or combined with another nonverbal cue. I also did transcribe repairs. However, I did not retain quick, habitual nonfluencies. I transcribed interviews into Word documents and then sent those documents to
participants for a transcription check. Only one participant requested that I redact a section of the interview to help maintain relative anonymity, which I did. No participants requested that I change any of the interview transcripts.

(6-7) Code interviews and documents

AIDA traditionally uses discourse analysis as the coding method. Tracy defines discourse analysis as the “study of particular segments of talk or text where excerpts are used to make scholarly arguments” ("Reconstructing" 302). Under this definition, most types of textual and interview transcript analysis could be discourse analysis, the definition also leaves room for texts beyond interviews and she encourages documents and other data be used to fill the gaps in a GPT framework. However, Tracy notes that her particular habits of discourse analysis stem from linguistics. This influence was a change I made in my use of AIDA methods. My habits of discourse analysis stem from rhetoric. Therefore, I treated texts as discourse – part of a conversation between NSF agents, Iowa NSF EPSCoR administrators, and contributors.

Using Atlas.ti software, I began by coding interview transcripts for incidents of positive, negative and mixed assertions about annual reporting practices. These codes informed my identification of situated ideals. A pilot study I had completed on one year of guidelines had already informed my coding of possible situated ideals, though the interviews complicated the view of situated ideals I had gleaned from the guidelines significantly.

I then performed rhetorical analysis in instances where the situated ideals were brought into focus. The rhetorical analysis included codes for global-level concerns, such as audience, purpose, and context, as well as rhetorical techniques used, such as types of organization and word choice. This rhetorical analysis led
to the sets of tensions this dissertation describes. I used constant comparison techniques as described by Corbin’s qualitative research handbook to differentiate codes (73-74).

I also used Atlas.ti software to code the texts in order to maintain the same set of codes as the interview transcripts and to more easily use constant comparison. I coded the documents using the framework of situated ideals gleaned from the interviews. The rhetorical analysis helped me tie philosophical level situated ideals to technical level choices. So it informed my identification of the problem level dilemmas.

To ensure I also was sensitive to the socio-cultural nature of annual reporting, I also coded interviews and the documents for grand narrative analysis, as described by Boje’s narrative methods handbook. Boje describes an essentializing analysis as juxtaposing “local stories with official narrative” (38) in order to see conflict in grand narrative appeals to essentialism. Because essentializing analysis focuses on a specific type of appeal, this narrative method is easily folded into a rhetorical analysis. This essentializing analysis brought together the interview coding and coding of texts.

(8) Describe rhetorical context

Tracy describes GPT’s AIDA method as “also ethnographic” and cites several example studies that gather documents and ethnographic observation to help build the GPT framework (“Reconstructing” 309). As already mentioned, I was embedded in this context for four years, making this a longitudinal study. Yet, I still needed to recreate the annual report situation at the time of gathering data for the report as well as the report writing time. I recreated the annual report situation through GPT’s three levels of thick description informed by my
situated experiences, interview and document content and analyses. The dissertation chapters use these recreations to contextualize the rhetorical choices made by the participants.

(9) Identify situated ideals

Tracy explains that within AIDA’s theory building, the starting point for developing rhetorical norms is to identify the communicative practice’s situated ideals. She defines situated ideals as, “participants’ beliefs about good conduct that can be reconstructed from discursive moments in which they praise and criticize” (“Reconstructing” 314). I think of them as models of good practice that participants hold. Making light of situated ideals at a level slightly more removed and generalized than a traditional rhetoric case study is key for the usefulness of GPT. I have gleaned situated ideals by giving interview participants space to praise and criticize, recognizing reasoning for ideals from guidelines, praise/criticism from supporting documents, and identifying reasoning for ideals that are embedded in the strategic writing techniques.

For this dissertation I identified one main problem. This is that report writers experienced rhetorical scarcity. What makes the tension of this problem interesting is how it was managed. I found participants created two, often competing, ideals that attempted to manage the rhetorical scarcity created from the conflicting ideals of concision and detail: annual reporting as an inventory and annual reporting as a narrative. These are highly complicated ideals through which I found more techniques that manage their tensions.

(10) Propose and reflect on practices

Tracy expresses that there is difficulty in making normative judgment conclusions because advisors must prioritize between effective practices and
moral reasoning. The three-level framework of GPT ought to guide wise reasoning about which choices are more or less useful in surprising ways. She claims the normative goal of GPT isn’t necessarily to judge practices or situated ideals as good or bad, but to guide deeper reflection about why practices exist and how to employ them more usefully (Tracy "Reconstructing” 316). Therefore, proposing practices isn’t about proposing new practices, but adds a step of rhetorical, careful, informed, decision-making in front of practices and/or reflection during and after practices.
APPENDIX B. QUESTION GUIDE

Semi-Structured Interview Questions Guide Approved by IRB
Participants: Iowa NSF EPSCoR 2012-2016 Annual Reports’ main authors and contributors
Principal Investigator: Sara Parks

1. What years did you contribute to the Iowa National Science Foundation Experimental Program to Stimulate Competitive Research annual report?
   a. What was your role in contributing to the report(s)?
   b. Did your role change over the 5-year span of the grant?

2. Please describe the procedures or steps you generally used to complete your work on the annual report.
   a. Where did the report data, stories, or drafts you work with come from?
   b. Did you work on completing the report individually or as part of a team?
   c. Did anyone have to approve the report before you submitted it?
   d. Where did the report go after you completed your work on it?
   e. Approximately how long did you tend to spend working on the annual report?
   f. Did you consult any person or document for advice or supplemental procedures before or during your work on the annual report?
   g. Did you ever change what and how you reported due to changes in the guidelines over the 5-year span of the grant?

3. Have you ever read or consulted the annual report of a grant you were not participating in? If so, why?

4. Have you ever read or consulted a full Iowa NSF EPSCoR annual report? If so, why?

5. In general, how did you feel about submitting annual reports?

6. Why do you think the NSF asked you to report about your project every year?
7. What would the perfect annual report look like? Can you describe its features?

8. What were the easiest and hardest parts of the grant to write, in your point of view?

9. Did you ever consult the reporting guidelines from the NSF?
   a. Did you consult other guidelines, such as those from another member within Iowa NSF EPSCoR?
   
   b. Some participants have told me that the report requirements didn’t fit the information they thought they should be reporting. How did the reporting requirements fit your project?
      i. (If a problem is identified) Did you do anything to solve this problem or make the report fit your project better?
   
   c. Some participants have told me some of the ways questions are framed in the guidelines made them uncomfortable. What do you think about that?
      i. Some participants have reported struggling with the requirement to report narratives. What is your experience?
      
      ii. Some participants have reported struggling with the requirement to report positive narratives. What is your experience?
      
      iii. Some participants have reported struggling with the requirement to write in non-specialized language. What is your experience?
   
   d. Did you ever feel like you had to delete things from your report? Due to the requirement to limit report text?
      i. How did you choose?
   
   e. Are there any other challenges you faced in reporting?
      i. (If so) What did you do to solve this problem or make the report fit your project better?

10. The NSF is increasingly urging scientists to present their science to public audiences. What do you think about this?

11. Do you consider the annual reports to be public or private?

12. Do you prefer the portion of the report that is spreadsheet-driven or the portion that requires you to write paragraphs?
13. Is there anything that you feel is important about annual reporting in the sciences, or your work on the annual report specifically, that I have not asked about, or that you feel I need to understand?
APPENDIX C. NSF HIGHLIGHTS

NSF Highlights were individual pieces of text and accompanying photos or video that described a specific finding or activity in the grant. In the context of the informal usage of highlighting as a technique to manage rhetorical scarcity, formalizing the technique seems like it could be a deft move, simply an extension of how NSF agents already treated the reports. However in practice, consideration of NSF Highlights as a main part of the annual report was never fully integrated. NSF Highlights were always supplementary, even written by a different group of contributors than the other portions of the report. This appendix will first define NSF Highlights and how they were written. Then it will review the reasons why the formalization of highlighting into NSF Highlights was an uneasy fit for the NSF EPSCoR annual reports.

The next excerpt is an abridged official description of an NSF Highlight according to the 2012 guidelines.

A Research and Education Highlight is a crisp, one-page summary with an interesting and informative image highlighting the NSF-funded work... We plan to use these highlights to illustrate the work that EPSCoR supports. They might be used in NSF documents and presentations or posted on NSF web pages for example. The text and graphics should capture the essence of the activity you wish to highlight. The graphics are particularly important and can include images or photographs. The text and graphics should be at the level of a press release, explaining briefly and in non-technical language what has been accomplished and why it is
significant. (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards Annual and Final Report Guidelines")

Although this excerpt labels the highlights “Research and Education” all participants referred to them as “NSF Highlights.” The reason for this is likely because the idea and guidelines for Highlights originated from the national NSF office, not the EPSCoR office. The 2013 guidelines reference NSF Office of Legislative and Public Affairs Highlight Guidelines from September 4, 2011, making NSF Highlights a relatively new section of the annual report. This genealogy also shows the public relations roots of NSF Highlights.

The description of a Highlight as a “crisp, one-page summary” was taken at face value in the Iowa grant until the 2014 report time period at which point the Iowa NSF EPSCoR external engagement team received national-level examples of NSF Highlights. These showed text a half page in length and comprised of three distinct sections: outcome, impact/benefit, and explanation. Each of these sections was labeled with a marginal callout in the examples. These labels formalized advice from the original guidelines that suggested a good Highlight, “describes the outcome in a sentence or two,” “describes the impact and benefits in a sentence or two,” and “provides additional explanation of the outcome and its impact” (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards: Annual and Final Report Guidelines"). This organization mimics the organization of the Detailed Report sections. The specification of these sections pushed NSF Highlights towards the organizational techniques of narrative coherence, which are discussed in Chapter 4.

Annual report guidelines framed NSF Highlights as part of the annual report submission. In fact, the 2012-2016 guidelines included the following
warning in bold face font, “The annual report will not be approved until the highlights are received at NSF” (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards Annual and Final Report Guidelines"). This warning suggests that NSF agents were determined to ensure Highlights were considered a part of the annual reporting process. It also suggests there was resistance to seeing the Highlights as just another part of the report.

So far, NSF Highlights seem like they might have been seen simply extensions of the Detailed Report and therefore appropriate and easy to add to the annual reports. However, the NSF Highlight guidelines were an extreme argument for reporting as science popularization. They do not leave any wiggle room to include strategies of internal reporting. For example, the 2013 guidelines list audiences for Highlights that include (as a bulleted list):

“Congress, other federal and state policymakers,” “business and industry,” “general public,” “all viewers of NSF’s ‘Science, Engineering and Education Innovation’ (SEE Innovation) website at www.research.gov/seeinnovation,” and “NSF speeches, reports and other websites.” (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards: Annual and Final Report Guidelines”)

Later in the same guidelines list is a bullet point that explicitly specifies, “DO write for a public audience. DON’T write the way you do when publishing in science journals. The public is interested in high-level impacts/benefits, not deep science.” (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards: Annual and Final Report Guidelines") Of course, “the public” is likely not the actual audience of the SEE Innovation website, NSF speeches, reports, and other NSF websites. And although, as my analysis shows, these are the same
audiences the main annual report guidelines mentions, these guidelines build a stronger expectation that Highlights would actually be used in public contexts than the other main portions of the annual report.

Likely due to these differences, NSF Highlights were treated differently in Iowa NSF EPSCoR. Unlike other sections of the report, the Iowa External Engagement team of which I was a member handled writing, gathering graphics, and submitting Highlights in ways that bypassed the usual reporting hierarchy. For example, I sent drafts directly to the top administrators for feedback, bypassing three levels of intermediaries. After their approval, and the approval of the mid-level administrators, I submitted finalized Highlights directly to the top-level administrators, again bypassing intermediaries. This may have been a function of my physical proximity in the office and working relationship with the top administrators. However, it may have also been a function of the differences in possible timing for submission of the Highlights. Highlights were submitted twice a year rather than just once a year. They were regarded as extremely granular. NSF agents treated Highlights as a-contextual segments of graphics and text that could be traded out and shared in a variety of documents and modes, therefore keeping the Highlights with their year’s annual report was not considered important.

In practice for Iowa NSF EPSCoR Highlights from 2014 on, I wrote the statement of outcome, usually created from the lede of an online article I’d written, followed by one statement of benefit, usually created from a quote by a researcher or activity participant in the original article, and then copied two paragraphs from the introduction of the article, usually verbatim, as the explanation. News and feature story text from the grant website occasionally still
needed editing to adhere to the strict sentence style requirements. “DO write short, straightforward sentences that articulate a single point. DON’T use long sentences with multiple clauses. DO use simple language. DON’T use complicated scientific terminology” (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards: Annual and Final Report Guidelines"). For the website, our External Engagement team identified our most likely audience to have some college education and an interest in energy science of various sorts. Therefore, we consistently tended to write at a higher level, with longer paragraphs, structurally varied sentences that used subordination and coordination, and precise word choice. We did not usually shy away from using scientific terms as long as we also defined those terms. This means Highlights were often written at a lower grade level than even Iowa NSF EPSCoR’s website content.

I also would sometimes need to create or choose a different visual to include. The main instruction for illustrations was that they should “show research in action” (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards: Annual and Final Report Guidelines"). This requirement, taken literally, was often impossible since much of the project’s research involved black-box technologies that at best resulted in pretty but hard to decipher graphs and charts. For example, these technologies took measurements of invisible bioenergy gasses and chemicals, wind farm impacts, modeled energy markets, and measured building design materials. Therefore, I fell back on my science journalism training to instead interpret this requirement as asking for photos of people doing an action. This interpretation also helped me fulfill the guideline to include “illustrations anyone can understand” (NSF EPSCoR "Research
Infrastructure Improvement (Rii) Track-1 Awards: Annual and Final Report Guidelines”.

Although using photos of people (rather than illustrations of research) seems like a commonsense solution, I always questioned that decision due to the specifications of what a good Highlight should “show” which included (again, as bullet points), “an exciting outcome of an NSF-supported project,” “transformative results,” “impacts of this outcome, especially benefits to society, economy, industry, nation, region, science & engineering” (NSF EPSCoR "Research Infrastructure Improvement (Rii) Track-1 Awards: Annual and Final Report Guidelines”). After all, scientists and engineers posing by the instruments of their lab are not outcomes, impacts, results, or benefits to society.

Chapter 2 argued that highlighting was a strategy used in this case to manage the problem of rhetorical scarcity. However, after formalization, the NSF Highlights seem to have taken on a life of their own and become almost a self-contained practice outside of annual reporting, even though institutional requirements consistently referred to NSF Highlights as a section of the annual report. It’s important to note that during the Iowa grant’s “no-cost extension,” a sixth year in which the program was allowed to continue spending its leftover funds and fully wrap up, the NSF announced that for FY 2017 the NSF Highlights would be replaced with “NSF Impacts.” The changes were announced via a NSF Project Director Listserv October 4, 2016.

The label change from “Highlights” to “Impacts” suggests stricter policing of the argumentative situated ideal of NSF Highlights. It is an intentional change that minimizes the value of science for its own sake as well as values for fundamental research. The technical changes will include a stricter and reduced
word count for the stories (150 words) and greater attention to national and
global security as well as national and global economy. Although these changes
reflect the post-normal science trajectory already exhibited by report guidelines
from 2011-2015, they were likely also implemented in response to the political
and cultural pressures of the 2016 election.
APPENDIX D. IRB APPROVAL

Institutional Review Board
Office for Responsible Research
Vice President for Research
1100 Ferguson Hall
Ames, Iowa 50011-2017
515-294-3136
FAX 515-294-9007

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IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Date: 11/23/2015
To: Sara Beth Parks
449 Ross Hall

CC: Dr. Jean Goodwin
308A Carver
Dr. Michael Dahstrom
215 Hamilton Hall

From: Office for Responsible Research

Title: Challenges and Opportunities in NSF Annual Reporting Part 1 of 2: Interviews

IRB ID: 15-623

Approval Date: 11/23/2015
Date for Continuing Review: 11/16/2017

Submission Type: New
Review Type: Full Committee

The project referenced above has received approval from the Institutional Review Board (IRB) at Iowa State University according to the dates shown above. Please refer to the IRB ID number shown above in all correspondence regarding this study.

To ensure compliance with federal regulations (45 CFR 46 & 21 CFR 56), please be sure to:

- Use only the approved study materials in your research, including the recruitment materials and informed consent documents that have the IRB approval stamp.
- Retain signed informed consent documents for 3 years after the close of the study, when documented consent is required.
- Obtain IRB approval prior to implementing any changes to the study by submitting a Modification Form for Non-Exempt Research or Amendment for Personnel Changes form, as necessary.
- Immediately inform the IRB of (1) all serious and/or unexpected adverse experiences involving risks to subjects or others; and (2) any other unanticipated problems involving risks to subjects or others.
- Stop all research activity if IRB approval lapses, unless continuation is necessary to prevent harm to research participants. Research activity can resume once IRB approval is reestablished.
- Complete a new continuing review form at least three to four weeks prior to the date for continuing review as noted above to provide sufficient time for the IRB to review and approve continuation of the study. We will send a courtesy reminder as this date approaches.

Please be aware that IRB approval means that you have met the requirements of federal regulations and ISU policies governing human subjects research. Approval from other entities may also be needed. For example, access to data from private records (e.g., student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. IRB approval in no way implies or guarantees that permission from these other entities will be granted.

Upon completion of the project, please submit a Project Closure Form to the Office for Responsible Research, 1100 Pearson Hall, to officially close the project.

Please don’t hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.