(RE)MAKING/(RE)MARKING: GENRE AND MARKUP IN THE WRITING CLASSROOM

A dissertation presented

By

Kevin G. Smith

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ABSTRACT OF DISSERTATION

Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in English in the College of Social Sciences and Humanities of Northeastern University
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ABSTRACT

This dissertation presents the study of a novel approach to rhetorical genre studies (RGS) pedagogy through a framework I call *explicit collaborative modeling*, which asks students to use networked, digital writing practices—schema building and text encoding with eXtensible Markup Language (XML)—to study, represent, critique, and produce a range of writing genres. The project rests at the intersection of three conversations: rhetorical genre studies, digital writing, and the digital humanities. At this intersection, this study asks: What can this novel form of digital writing reveal about how students make and make sense of genre knowledge? What can we learn about genre by interfacing with it through XML? What can we learn about this writing technology by using it to represent genres?

The dissertation seeks to answer these questions by drawing on qualitative data gathered from students’ individual and collaborative writing, interviews, and reflective teaching journals to examine how students used XML to literally mark and remark upon their writing as they worked to make and remake their understandings of genres in the classroom. Doing so, this project intervenes variously to the three fields identified above. It advances explicit collaborative modeling, a novel RGS pedagogy, that serves as a way to explore the effectiveness of RGS pedagogies writ large. The study offers collaborative and individual case studies of students and examines the affordances and limitations of explicit collaborative modeling as a tool for developing genre knowledge and facility and for making visible key tensions in genre work. Though this approach uses XML and schema building, this model is not meant to be prescriptive, but rather serve as an example that indicates one way RGS teachers might put students’ conceptual understandings of genres in conversation with one another. By advancing this pedagogy, the study extracts pedagogical insights for RGS teachers and teachers of writing more
broadly. The principle contribution in this regard is the pedagogical concept of *procedural design*, an approach to teaching that recognizes the rhetorical role of procedures as they are enacted in the writing classroom and seeks spaces to invite students to intervene in them.

The project provides situated, process-oriented views of how students—individual and collaborative—negotiate their understandings of genres through the writing technologies of XML encoding and schema building. Doing so, the project adds to the literature in writing studies and digital humanities on the ways in which technologies (whether acknowledged or unacknowledged and digital or analog) mediate rhetorical possibilities for students, and how students work to negotiate their individual and collaborative writerly positions and identities within the mediated spaces of writing classrooms.

This study is held together by an approach to teacher research that is supplemented with rhetorical theories of usability and participatory design. I argue that these supplements to teacher research can enable researchers to better examine the technologies introduced into their classrooms and to leverage them to facilitate the goals and ethics of teacher research. As digital tools and environments become increasingly ubiquitous, as screens and interfaces become increasingly invisible, it is crucial for writing studies scholars to spur awareness and critique of these systems if we are to effectively prepare students to participate in and shape new environments for communication.
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Introduction

Interfacing with Genre

“One way teachers can help students … is to make genres analytically visible to students so that students can participate within and negotiate them more meaningfully and critically” (Bawarshi 141)

“We live in an age of markup … Markup is text. Markup is communication. Markup is writing” (Dilger and Rice xi)

“[T]he act of encoding is indeed an act of making sense, creating conditions of intelligibility” (Flanders “Rhetoric” 248)

“We’re actually remaking our chosen genre” (Daniel, Interview 2)

This dissertation presents the study of a novel approach to rhetorical genre studies (RGS) pedagogy through a framework I call explicit collaborative modeling, which asks students to use networked, digital writing practices—schema building and text encoding with eXtensible Markup Language (XML)—to study, represent, critique, and produce a range of writing genres.

The project rests at the intersection of three conversations: rhetorical genre studies, digital writing, and the digital humanities. At this intersection, this study asks: What can this novel form of digital writing reveal about how students make and make sense of genre knowledge? What can we learn about genre by interfacing with it through XML? What can we learn about this writing technology by using it to represent genres?

In answering these questions, this project intervenes variously to the three fields identified above. It advances explicit collaborative modeling, a novel RGS pedagogy, that serves as a way to explore the effectiveness of RGS pedagogies writ large. The study offers collaborative and individual case studies of students and examines the affordances and

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1 All students are referred to pseudonymously in accordance with study protocols, as approved by Northeastern’s Institutional Review Board (IRB# 16-02-19).
limitations of explicit collaborative modeling as a tool for developing genre knowledge and facility and for making visible key tensions in genre work such as that between genre convention and genre variation. Though this approach uses XML and schema building, this model is not meant to be prescriptive, but rather serve as an example that indicates one way RGS teachers might put students’ conceptual understandings of genres in conversation with one another. By advancing this pedagogy, the study extracts pedagogical insights for RGS teachers and teachers of writing more broadly. The principle contribution in this regard is the pedagogical concept of *procedural design*, an approach to teaching that recognizes the rhetorical role of procedures as they are enacted in the writing classroom and seeks spaces to invite students to intervene in them. Theoretically, procedural design contributes to RGS through the introduction and development of the concept of procedural rhetoric (Bogost) in genre research, which supplements RGS theories of genre—especially digital genres—through attention to the contextual form of genres, an aspect of genres that are often elided in RGS accounts (Devitt “Refusing”).

The project contributes as well to literature in digital humanities on the expressive and interpretive qualities of XML, a topic of considerable attention in the text encoding community. It builds on and pushes forward a small body of work that considers the rhetorical capacities of markup (Conatser; Desmet et al; Flanders “Performative”; Renear; Piez) and pushes this literature forward through systematic study of the use of authorial markup—markup for the *production* of texts—in the writing classroom. Drawing on Collin Brooke’s dynamic conception of interface, the project provides situated, process-oriented views of how students—individual and collaborative—negotiate their understandings of genres through the writing technologies of XML encoding and schema building. Doing so, the project adds to the literature in writing
studies and digital humanities on the ways in which technologies (whether acknowledged or
unacknowledged and digital or analog) mediate rhetorical possibilities for students, and how
students work to negotiate their individual and collaborative writerly positions and identities
within the mediated spaces of writing classrooms.

In this introduction, I first orient readers to the three conversations that this project enters.
I offer an overview of rhetorical genres studies, which enables me to locate the potential role of
markup for supplementing critical genre awareness approaches to genre pedagogy. I situate this
project within writing studies scholarship on digital writing practices, describing how my project
contributes to recent literature on pedagogical approaches responding to the proliferation of
networked, distributed writing practices in digital environments. I offer overviews of two
important terms in this study—ecology and technology—before turning to the digital humanities,
where XML has been long used by text encoding scholars as a practice of mimetic
representation. In this scholarly tradition, markup makes meaning by (re)presenting already-
existing texts, inscribing upon them the interpretations of the agents of their creation. Adapting
XML markup for the production of texts, rather than the representation of already-existing texts,
pushes notions of textuality that have developed in the digital humanities toward an emphasis on
the process, rather than reception of encoded texts; this shift necessitates supplementing our
understanding of markup with new conceptual frameworks.

Rhetorical Genre Studies

My understanding of genre is patently rhetorical. Since Carolyn Miller’s groundbreaking
1986 article, “Genre as Social Action,” genre theorists have disavowed the notion of genre as an
ossified set of formal characteristics, and turned to the idea of genre as social action, as “typified
rhetorical actions built in recurrent situations” (Miller 159). The work that has followed Miller is generally referred to as rhetorical genre studies, or RGS (see Weisser et al. for an overview of the “five premises of RGS”). Central to this conception of genre is that genres, as typified responses to recurrent rhetorical situations, are deeply embedded in social contexts, and that because rhetorical situations only ever appear to recur—situations “are never precise duplicates of previous situations” (Weisser et al.)—genres are not static responses or forms, but are dynamic. Catherine Schryer represents this dynamism well when she argues that genres are “stabilized-for-now … or stabilized enough sites of social and ideological action” (108). Genres vary based on the “material and dispositional factors” in a given situation (Weisser et al.). As well, genres change over time based on contextual factors—shifts in technology, values, etc.—as well as human choice, and larger social, political, and economic factors (Applegarth).

Genres, then, are both a form of action, “typified ways of acting within recurrent situations,” and a unit of analysis: “[genres are] cultural artifacts that can tell us things about how a particular culture configures situations and ways of acting” (Bawarshi and Reiff 78).

This understanding of genres has been enormously influential in writing studies. Pedagogically, RGS scholars have debated the merits of explicit versus implicit approaches to teaching genre (see, for example, Freedman; Williams and Colomb; Coe “Teaching”). Do students learn a genre, as Aviva Freedman argues, implicitly, as a “dimly felt sense” of the genre that develops through “the performance itself,” the process of composing, receiving feedback, and revising the genre (104; 107)? Or is it more productive for genre learners to be introduced explicitly to rhetorical conventions and patterns that recur in genres (Swales)?

My pedagogical

2 See Bawarshi and Reiff pp. 110-122 for a comprehensive overview of this debate in RGS.
framework is a synthesis of these approaches; it follows Amy Devitt in her call for teaching critical genre awareness, an approach that recognizes the usefulness of explicit mapping and analysis of typified genre conventions, while grounding rhetorical conventions in the values and assumptions of the communities that use them. She advocates for teaching “meta-awareness of genres, as learning strategies rather than static features” (*Writing Genres* 104). As Anis Bawarshi argues, this form of critical genre awareness is designed to make genres “analytically visible” to students, and thus open to critique and change. He writes, “I argue that teachers can and should teach students how to identify and analyze genred positions of articulation so that students can locate themselves and begin to participate within these positions more meaningfully, critically, and dexterously” (Bawarshi 146).

One of the key contributions that Bawarshi makes to the study of genre is to define genres as “rhetorical ecosystems” (81). Genres, he writes, are “typified rhetorical sites or habitations in which our social actions and commitments are made possible and meaningful as well as in which we are rhetorically socialized to perform (and potentially transform) these actions and commitments” (81-82). In doing so, Bawarshi argues for a distributed notion of invention—a process where writers are acted upon as much as (or sometimes more than) they act. This is not to say that individual agency does not exist in this invention process, but merely that agency is mediated by—and mediates—the genres we inhabit; thus, the parenthetical “(and potentially transform)” in Bawarshi’s definition (82).

His larger project in *Genre and the Invention of the Writer*, which I hint at above, is pedagogical: to bring this understanding to the space of the writing classroom to teach students to recognize, adapt to, critique, and transform the “actions and commitments” that they are socialized to perform within genres. Although it is not the focus of his work, Bawarshi’s
definition of genres as mediators of social action leaves open the possibility for other forms of mediation that can be useful for understanding mediation as it works in classrooms. He writes, “Our actions with others and with our environments, therefore, are mediated not only by physical conditions but also by rhetorical conditions …” (81, my emphasis). In other words, genres are part—an important part—of unpacking the puzzle of distributed invention, but not the entire picture. We might look, as well, to theories of distributed writing that take technology—or, more accurately, information technologies—as the primary mediator. Lloyd Scott DeWitt offers another account of distributed invention, one that explicitly considers networked technologies. He writes,

Network-supported writing facilities provide access to particular emerging technologies that allow for a blending of the cognitive with a social vision of invention … Because of the dynamic nature of the computer and its ability to branch information interactively, the Web and other types of hypertext enable students to access and construct texts in an associative, intuitive way. (49)

In my view, XML can serve as a form of “network-supported writing” (49) that can animate Bawarshi’s pedagogical framework. Because XML requires classification, taxonomization, and explicit rule-stating, it offers a way to trace students’ understanding and use of genres. And because XML makes meaning not simply by annotating a text, but by making associative connections within what has been called a “larger textual ecology” (Wernimont and Flanders), I argue that it has the possibility to make materially visible the inner workings of genres in a way that is more explicit than in other RGS pedagogical approaches. In this way, XML has productive possibilities for representing the dynamics of rhetorical genres through explicit modeling.
RGS theorists have noted the productive values of constraint. Richard Coe writes, “form is both constraining and generative—or, better said, generative because constraining” (Coe “Arousing” 156; see also, Devitt Writing Genres). The pedagogical approach offered in this study (Outlined in detail later in the introduction) was modeled on the principle of productive constraint: that XML-based writing could animate the generative tension that Coe identifies. By asking students to explicitly and collaboratively model their conceptual understandings of genres as actually-existing XML schemas, I hoped to foster the kind of “productive unease” (Flanders “Productive”) that DH scholars claim formalizing knowledge in digital representations can foster. Using the framework of genre ecologies, this project offers an account of this distributed form of writing to unpack how students develop, represent, draw on, and transform genre knowledge as they work to represent and produce writing genres.

As I indicate above, Bawarshi’s conception of genres as ecosystems does not preclude the mediative role of technology, but it is possible that it obscures it, renders it secondary to the social and cognitive mediation of genres as metaphorical locations. I want to suggest that genres are very much also material locations—that is, they take form. And that this form is important to account for when accounting for distributed invention processes, particularly for digital genres. To remedy this—to more fully equalize these forms of mediation—I look to procedural rhetoric, which, I argue at length in chapter 2, provides a vocabulary to address the contextual form of genres (Devitt “Re-fusing”). As students’ composing practices continue to diversify and move into networked spaces, these contextualized accounts of form are especially important.
Digital Writing (Studies)

It is not a stretch to assert that there has been a fundamental shift in students’ reading and composing practices in the last thirty-odd years, “so profound that it is justifiable to speak of a revolution in the landscape of communication” (Kress 9). In the 2009 NCTE Report Writing in the 21st Century, Kathleen Blake Yancey offers three challenges currently facing teachers of writing in light of this shift: “developing new models of composing, designing a new curriculum supporting those models, and creating new pedagogies enacting that curriculum” (8). To a certain extent, writing studies has been up to the task. There is no doubt that the range of genres produced in composition classrooms has increased dramatically to include a wide range of digital—podcasts, videos, ePortfolios, web sites—and analogue—comics, ballet shoes (Shipka)—multimodal artifacts.

This expansion of the kinds of writing we ask students to do in classes has yet to fully examine XML markup as a form of writing. Despite Dilger and Rice’s claim “We live in an age of markup” (Dilger and Rice xi), relatively little work in writing studies has examined XML outside of its role in technical communication (Applen and McDaniel; Sapienza; Battalio; Beam; Ribidoux).3 In terms of markup, HTML has been much more popular as a scholarly focus, with many scholars theorizing HTML as a semiotic resource for student composing (Maurciello, Pagnucci, and Winner; Doherty; Norton, Segaard, and Duin; Gresham; Rea and White; Turnley), as a cultural artifact (see Dilger and Rice, From A to <A>: Keywords of Markup), and as mode of scholarly argument (Eyman and Ball; see the online journal Kairos for many examples of

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3 Two exceptions to this are Trey Conatser’s “Changing Medium, Transforming Composition” and Desmet et al.’s “<emma>: Re-Forming Composition with XML.” These examples are important for my own pedagogical approach, and I take them up in more detail in the next section.
web-texts authored in HTML). This is important work, as HTML is clearly an integral part of writing and reading in digital environments and thus an important aspect of the expanded work of composition. Yet, the focus on HTML—and, I would argue, other forms of writing that are directly linked to the display of texts (and objects)—may also reveal a privileging of phenomenological forms of digital objects and elide their complexly layered materiality. XML, by contrast, may be invisible in a digital object or system. It lies beneath the phenomenological objects we interact with on our screens; though it may be invisible, it still structures our possibilities for interaction. For example, XML markup may be the mechanism by which data is interchanged across projects. Although the texts that facilitate this interchange may be invisible to users, these kinds of texts are important to understand as rhetorical (Applen and McDaniel), in both their creation and use.

In this study, XML provides a rich example of distributed, digital writing that contributes to recent work in computers and writing and technical communication wherein scholars have been reframing the literate activities of students under emergent conditions of networked, collaborative, distributed writing (e.g., Nicotra; Johnson-Eilola; Ridolfo and DeVoss; Porter; Boyle). Many of the writing practices that underlie these networks look very unlike essayistic genres, even when compared to the expanded genre repertoires of classrooms like those described above. Krista Kennedy argues that many of these writing practices have not been taken up in composition because they don’t much look like writing, and they may be invisible to users of networked environments. She writes, “[G]ood information architectures, carefully constructed taxonomies, and usable navigation elements such as metadata, and strategic links are largely unnoticeable when done well, as is filtered information that has been recomposed with more attention to rhetorical effectiveness than to demonstrating the sort of original authorship most
often valued in university writing” (176). More importantly, “we do not often really consider these forms of composition to be fully formed, essential writing skills that are vital elements of digital writing courses” (176). Failing to notice and failing to value these skills does our students a disservice. When we fail to recognize the “social, networked nature of contemporary writing” (176), we may miss or elide the rhetorical skills employed in the creation of these often-invisible texts. Jason Alexander and Jacqueline Rhodes offer a similar critique of the way new media has been brought into composition classrooms in support of “traditional essayistic literacies” (46). This tendency is characterized by a desire to understand new media and new modes of communication through the traditional goals of composition programs, rather than contend with them on their own terms. “This focus, however understandable, fosters a techno-inclusionism that always positions technology and technologically enabled media platforms in the service of print-based composition—to the point where such a view becomes instantiated as disciplinary prerogative” (49-50). In short, if we really seek to prepare students for their future composing lives, a position articulated in the “NCTE Definition of 21st Century Literacies,” then a series of questions arise: How do we prepare our students to be flexible and critical consumers and producers of digital writing in distributed, networked environments? Given the invisibility of much of the rhetorical work of digital environments, how can/should we (re)orient our students’ relationships to technologies? What can this engagement teach us about our pedagogical approaches to digital writing?

These questions push us to find ways to better understand “the often-invisible compositional skills that transform an informative website that contains words and images into a useable, accessible, unified text with searchable content” through classroom practices (“Textual”
Simply teaching students to compose single-authored, digital texts elides the “labor of curating that work: the basics of project management, information gathering and filtering, strategic linking, metadata management, and basic site architecture” (177). Likewise, it behooves us to pay attention, to borrow a phrase from Cynthia Selfe, to the complex and mediating roles that technologies play in the composing environments of classes, whether or not those are networked and distributed. The exigence that Kennedy outlines is, I think, only part of the story. Her call for exposing and addressing this elided form of writing labor and set of rhetorical skills is only made more pressing by trends in hardware, software, and interface design. These trends see computation not only as distributed and networked—and so, fundamentally different from essayistic writing—but also as increasingly ubiquitous, increasingly invisible, and increasingly embedded and embodied (see, for example, Boyle; Brown Jr.; Brock and Shephard; Emerson; Bratton; Easterling). Lori Emerson offers a lucid overview of this position:

[C]ontemporary claims about ubiquitous computing (ubicomp) as the definitive technological innovation of this century—supposedly, the third wave of computing, which replaces desktop computing and whose devices are seamlessly embedded throughout our everyday environment—consistently tout the invisibility of its interfaces as providing us with a more natural, more direct, inherently better way to interact with our computers and more generally with the world around us. Without attention to the ways in which interfaces are anything but invisible in how they frame what can and cannot be said, however, the contemporary computing industry will continue unchecked in its accelerating drive to achieve the perfect black box not only through the latest

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4 See also Kennedy’s monograph, *Textual Curation*, which deals in more detail with how distributed authorship refigures notions of authorial agency.
ubicomp devices but also through parallel developments, such as so-called Natural User Interfaces, Organic User Interfaces, and even the now widely prevalent multitouch interfaces. All of these interfaces share a common goal underlying their designs: to efface the interface altogether and so also efface our ability to read, let alone write, the interface, definitively turning us into consumers rather than producers of content. (3)

The disappearance of the interface is important, given that the interface has been the locus of much work in Computers and Writing scholarship since Cynthia Selfe and Richard Selfe examined the politics of computer interfaces, describing interfaces as maps of capitalism and class privilege (486). More recently, Collin Gifford Brooke has described interfaces as “where technology and rhetoric meet” (xiii), positing a more dynamic, less static understanding of interface that takes into account changes since Selfe and Selfe. Brooke writes, “Rather than viewing the interface as the boundary or contact point between people and machines, I follow W. J. T. Mitchell… in suggesting instead that interfaces are those ‘ever-elastic’ middles that include, incorporate, and indeed constitute their ‘outside’” (24). In this view, interface is a reciprocal dynamic that both structures and is structured by social and material contexts and by individual actions. Although Emerson seems to have a less dynamic ideal of an interface—she wants it to be visible, readable, writable—she makes a persuasive case for electronic literature as disruptive and defamiliarizing to these trends, calling attention to the material existence of interfaces and hardware through subversion and glitch. Interfacing with digital objects should not just be relegated to a few actions—the ability to “View Source” for example. Rather, we should recognize that technological shifts create new, unexplored rhetorical situations, new forms of rhetorical engagement with dynamic, ubiquitous—yet obfuscated—interfaces. These
forms of engagement may be increasingly important as technologies are continually privatized and black-boxed.

By addressing the gap in digital writing scholarship of XML as a writing practice, this project advances the project of reorienting our conceptions of the future work of writing studies. Through case studies of groups of writers and individual writers composing within (and shaping) genre ecologies, this study allows unique insights into collaborative and distributed writing.

Ecology and Technology

As is likely clear to this point, I use the language of ecology in this project, which has different significations in different communities (even within writing studies). It bears some elaboration on how and why I use it in this project. I find ecology to be a productive framework for understanding of markup as developed and deployed in writing classrooms because markup always exists in interrelation with other texts and social formations about and through which it expresses meaning. This understanding of markup is characterized by Jacqueline Wernimont and Julia Flanders, who write, “The role of markup is to instantiate, to bring into communicative reality, the encoder’s ideas and beliefs about a textual ecology that is oriented towards a particular textual artifact but not limited to representing that artifact” (260). In this sense, ecology denotes the set of texts, what Wernimont and Flanders call “paratexts,” which are connected through the use of markup. A similar sense of ecology is deployed by many writing studies scholars studying forms of distributed, networked writing. Like Krista Kennedy’s account of distributed authorship in Wikipedia, what she calls textual curation, markup-based writing “requires a broader conceptualization of textual organization that moves outside of individual texts … and into the new ecologies they exist within” (177).
Explorations of the evolving work of digital composing are tied, of course, to long-standing conversations in computers and writing and rhetoric and composition writ large, but they also tend to draw on studies of organizational and workplace writing in technical communication, where notions of single-authorship have long been complicated by the uptake of information technologies by organizations (Spinuzzi Network). As Kennedy outlines, these Writing Studies scholars have developed a vocabulary for describing the kind of distributed workflows and forms of writing that take place within them, including “document borrowing,” “layering,” and “textual coordination” (Jones; Geisler; Slattery as qtd. in Kennedy “Textual” 178). These are complex systems of writing which coordinate a range of genres, assemblages that Spinuzzi and Zachry describe as “genre ecologies,” a concept that figures centrally in my theorization and analysis of XML-based writing tasks in composition.

The metaphor of ecology is also commonly used in writing studies in a wider sense, often used to describe the complex, interconnected and relational aspects of writing processes (Weisser; Eyman). This use can be traced to Richard Coe’s “Eco-Logic for the Composition Classroom” and later Marilyn Cooper’s “The Ecology of Writing,” which explicitly broke from process-oriented models of writing instruction to emphasize “dynamic interlocking systems which structure the social activity of writing” (Cooper 368). My own deployment of ecologies is particularly influenced by the concepts of information ecologies and genre ecologies. Nardi and O’Day use the term “information ecologies,” which they define as “a system of people, practices, values, and technologies in a particular local environment. In information ecologies, the spotlight is not on technology, but on human activities that are served by technology” (49). Like many deployments of ecology in writing studies, Nardi and O’Day use ecology metaphorically to emphasize the dynamic and interrelated relationships between actors in complex systems. Their
use of ecology influences mine in three ways: 1) it enables a “systems-based view” of the environments and relationships that result in the completion of a complex task (writing); 2) it focuses on human activities served by technologies, and thus can be employed at multiple scales; and 3) it refigures authorial agency from being located in a singular author to being distributed across mediated relationships with humans and objects (Eyman 88). These aspects of an ecological framework shift thinking from “technology as tool to technology-in-use” (Eyman 88).

In addition to Nardi and O’Day, I draw on Spinuzzi and Zachry’s concept of “genre ecologies,” which they define as “an interrelated group of genres (artifact types and the interpretive habits that have developed around them) used jointly to mediate the activities that allow people to accomplish complex objectives” (172). The supplement to information ecologies provided by Spinuzzi and Zachry is that it more precisely names the ways that mediators (genres, in their terminology) interact, overlap, and intermediate one another. What genre ecologies offers to my conception is the idea that, from the “perspective of activities” (Spinuzzi 115), genre ecologies are at once distributed, contingent, but also relatively stable. This enables me to examine relatively stable assemblages at different scales of analysis, a methodological approach also forwarded by Doug Eyman: “digital ecologies can be identified as micro-ecologies (as in the work/portfolio of a single individual), midrange ecologies (which contextualize the work of collaborators, departments, research groups), or macro-ecologies (institutions, fields, disciplines, nations)” (89-90).

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5 This use of ecology is different from the way that Bawarshi uses ecology as a metaphor to describe genres themselves (as described above). In some ways, these represent different scales of analysis, as “genre ecologies are good at describing aggregate effects of genre assemblages” (Spinuzzi 115), while Bawarshi’s interest is in how users of genres are articulated by genres in individual performance and how individual performances articulate genres. These two views are not mutually exclusive, but reflective of different analytical concerns.
Following Eyman and others (Brooke; Nardi and O’Day; Spinuzzi), throughout this dissertation, I use the term ecology at different scales, employing a scoping lens to focus on different activities at three levels—the class: method design (chapter 1), classroom design (chapter 2); the collaborative writing group: schema design (chapter 3, chapter 4); and the individual writer (chapter 5). The lens of ecology allows me to move between these scales while remaining cognizant that a focus on one particular scale does not eliminate the mediations occurring at other levels.

The concept of ecology has also been critiqued in writing studies. Most recently, Hannah J. Rule has argued that the expansive scales at which ecological frameworks operate—as well as the decentered agency of humans—has resulted in a turn away from “seeing the material situatedness of writing on a radically local or composing process scale” (404). Rule joins others who have critiqued ecological frameworks for their naturalization of power dynamics through evolutionary language (Trimbur) and their relatively scant attention to actual texts, broadly conceived (Gallagher).

Chris Gallagher looks to Colin Brooke’s conception of interface as “imperfectly bounded encounters where users, technologies, and contexts intersect” (Brooke 200), which Gallagher takes to be locative—the interface is where these encounters happen. This conception is useful for my project, because, while I retain the language of ecology, I do focus on texts of various kinds—the collaboratively-produced schemas, the individually authored XML documents—which, to take Gallagher’s language, perform their contexts. Even in a distributed ecology, we “have much to learn from texts” (Gallagher 5) about the distributed processes by which texts are produced, circulate, and read. In chapter 5, I adopt this language of interface to talk about particular texts in the wider ecology in which students composed.
This brief discussion of ecology also relates to my deployment of the term *technology* in this project. To be sure, I am invested in the various affordances and limitations of digital technologies for the making of meaning through writing. But I also understand writing itself as a materially mediated technology. As Collin Brooke and Jeffrey T. Grabill put it, “Writing has always been a technology for thinking and communicating,” one that is shaped by the tools and media we use to produce, circulate, and consume it (32-33). Much work in writing studies has responded to shifts in our communicative environments spurred by digital technology by looking to specific tools and media for how they “shape what we are able to write and the ideas we can express, and condition[s] the expectations of those who read our writing” (33). Shifts in digital technologies call attention to connectivity and networked relations, which are central as well to ecological understandings of writing and activity.

This is the sense in which I deploy the term technology: to try to unpack “the affordances of particular technologies (and environments), those features that permit certain actions (while perhaps limiting others)” (Brooke and Grabill 33). XML, as a writing technology, certainly has affordances and limitations. But I also want to be clear that the ecological framework I outline above requires attention not just to XML and the specific tools that I offer to students as they compose in XML, but also to the “unofficial and ad-hoc” genres and tools that students coordinate to get work done in these courses (Spinuzzi and Zachry). Thus, my use of technology is not limited to the material means of digital writing practices, but, at times, will also refer capaciously to other material technologies that mediate students’ practices: pens, paper, sticky notes, and so on.
A focus on activity and interconnection is especially useful as the deployment of XML as a writing technology for the production of texts in these courses is a significant shift from previous uses of markup in the Digital Humanities for the mimetic representation of texts.

**Digital Humanities**

The bulk of theoretical and practical work with markup languages in the humanities has taken place around a subset of the digital humanities (previously humanities computing) called text encoding. Text encoding scholars use markup in digital representations of texts. The markup itself describes the texts—everything from poetry, prose, drama, music, manuscripts—and facilitates the digital preservation, representation, and exchange of those texts, usually according to common guidelines called the Text Encoding Initiative (TEI). The TEI began development in 1987 as the Poughkeepsie Principles, nascent standards for the growing number of scholars working to digitize literary texts (Schreibman; Renear). The TEI arose as scholars sought to leverage markup to augment the increasing drive to digitize texts, given the increasingly low barriers to doing so. Rather than simply scanning and uploading texts, scholars wanted to create mechanisms to make the texts comprehensible to computers to facilitate their access, exchange, display, preservation, and analysis. Over the past 30 years of engaging with markup in the representation of texts, text encoding scholars have theorized the role of markup and this method of digital representation. The aim here is not to provide a comprehensive history of text

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6 The Text Encoding Initiative (TEI) is a set of guidelines for the “preparation and interchange of electronic texts for scholarly research” (TEI-C). It is a set of standards, expressed in XML, that scholars can use to represent Humanities texts in a digital form. While the TEI provides a set of guidelines, it is also fully extensible—projects can add, modify, and remove elements from their custom schemas.
encoding—many of these exist\(^7\)—but to highlight how these DH practitioners have understood markup to be a method of textual (re)production that relies upon creating and applying explicit classification schemes to produce and exchange knowledge. I mean to bring these understandings into contact with writing studies scholarship in order to consider how these understandings of markup are relevant to the adaptation of markup to the production of writing.

Marking a text is not a neutral act of objective description. It requires interpretive and self-reflexive decisions on the part of the encoder. The formal constraints of XML (and other modes of digital representation) are not merely restrictive to these representations, but are seen as productive. Julia Flanders has described the process of digital representation of texts as one of “productive unease” (“Productive” n.p.), where the tension arising in the process of representing an object in digital form forces an encoder to make self-conscious interpretive decisions. Flanders is drawing on and responding to John Unsworth’s claim that digital representation practices force us to grapple, very reflexively, with the fact that our representations are merely surrogates—that is, strategic representations—because they must be expressed in a way that is understandable to a computer. Representations, then, are “subject to verification—for internal consistency, and especially for consistency with the rules we have stated” (Unsworth n.p.). Flanders responds to this claim directly, writing,

The word verification stands out here, sounding very cut and dried, threateningly technical, a mental straitjacket, but in fact the key phrase there is “the rules we have

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stated”: it is the act of stating rules that requires the discipline of methodological self-scrutiny … [A]s our tools for manipulating digital models improve, the model stops marking loss and takes on a clearer role as a strategic representation, one which deliberately omits and exaggerates and distorts the scale so that we can work with the parts that matter to us. (para. 23)

Flanders draws attention to the (often implicit) interpretive moves required in any representation, but also to how the process of formalizing that representation requires explicit rule-stating.⁸

Marking texts, then, is “a distancing, a translation which, like any translation or transmediation, provides a view into (and requires an understanding of) the deep discursive structures of the original expression” (Flanders para. 11). Flanders writes that wrestling with this productive unease “registers for the humanities scholar as a sense of friction between familiar mental habits and the affordances of the tool, but it is ideally a productive friction, an irritation that prompts further thought and engagement “(n.p.). For Flanders, the goal of digital representation is not accuracy, but reflexivity, a self-conscious understanding that our representations are, as John Unsworth claims, surrogates.

⁸ The distortion and exaggeration Flanders refers to here has also been called deformance, a portmanteau of deformation and performance—by other DH scholars (McGann). In his book, Reading Machines, Stephen Ramsay argues that deformance breeds a “critical self-consciousness that is difficult to achieve otherwise” (34), taking a similar argumentative tack as Flanders. This notion of productive constraint is not limited to text encoding in DH scholarship; it cuts across methods and is often called upon—under various labels—to define what it is that DH practitioners have in common, whether they have to know how to “code,” and “who’s in and who’s out,” to borrow Stephen Ramsay’s titular phrase. Bethany Nowviskie describes this form of knowledge production lucidly in the realm of visualization as “productive resistance in the materials” (cite). Across methods, these approaches recognize that, “conceptual understandings are deepened and enriched by practices of production” (Hayles and Pressman xv, my emphasis).
The adaptation of markup to writing studies, where the concerns of the field favor rhetorical production over mimetic description and representation, is a significant change from the central activities of most digital humanities practitioners using and theorizing markup.9

Markup theorist Wendell Piez, for example, suggests that markup is “a complex type of rhetoric working in several directions at once, often in hidden ways. [Markup is] ‘rhetoric about rhetoric.’ That is, markup languages don’t simply describe ‘the world’ — they describe other texts (that describe the world)” (Piez 162-163). In this formulation, there is an implicit definition of rhetoric as expression—markup languages are rhetorical because they express views about texts; texts are rhetorical because they express views about the world. Thus, markup is “rhetoric about rhetoric.” This separation of the rhetoric of texts—they express views about the world—and the rhetoric of markup—they express views about a text—implies that markup does not express views about the world directly. The addition of markup may destabilize the text in terms of adding interpretative metadata, but it stops short of affecting the text itself. This view cannot account for markup for textual production because it too narrowly defines the rhetorical capacities of markup. No useful distinction can be made between rhetoric and “rhetoric about rhetoric.” Markup is rhetorical, no qualifier is necessary.

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9 There has been considerable interest in the semantics of markup languages at recent TEI (Ciotti and Tomasi; Eide) and DH conferences (Sperberg-McQueen Marcoux, & Huitfeldt), most of which has centered around formal approaches to modeling semantics to explicate the meaning of markup (Sperberg-McQueen, Huitfeldt, Renear). A related thread of markup research has examined the rhetorical and expressive capacities of markup (Flanders “Rhetoric”; Flanders & Fiormonte), growing out of an understanding of markup as not merely descriptive, but also interpretive and, indeed, performative (Renear). Though Wernimont and Flanders have discussed the potentials of authorial markup to expand our shared notions of scholarly communication, markup in this authorial realm remains rarely used and even more rarely studied in a systematic way.
Piez is working from a hermeneutic position, assuming that one possesses stable texts to which markup is applied *a posteriori*. This is understandable, given that the dominant use of markup in the Humanities is in its application to an extant text or set of texts. Using markup for textual *production* represents a difference in kind from the central activities of text encoders in DH, a difference that is naturally rooted in the disciplinary concerns of writing studies. Julia Flander has argued as much, locating authorial markup as a site for interrogation, suggesting that, “[I]t crucially amplifies our understanding of the rhetoric of markup, and the kinds of meaning it can carry (“Rhetoric” 249). However, because the dominant practice of text encoders remains the representation of existing texts, “[The] authorial dimension to markup systems like the TEI is unfamiliar, little used, obscure” (249).

Previous uses of markup in writing courses include Trey Conatser’s use of XML in a first-year writing course at Ohio State University and the development of <emma>, a proprietary markup-based writing application developed for use at the University of Georgia. In these iterations, markup functioned as a top-down system for authoring texts. That is, the documents that defined the tags and the rules for their use—a schema or Document Type Definition (DTD)—was created either by the instructor (Conatser) or by a research team developing the tool (Desmet et al.). In either case, for each writing assignment, the instructors would determine the “tags required for the assignment” (Desmet et al. 28). Fundamentally, these approaches ask students to *analyze* their texts according to the designated markup schema. By my reading, however, these approaches retain an unnecessarily narrow view of the rhetorical possibilities of using markup in writing courses by excluding the schema/DTD as a potential site of rhetorical *production* for students. The difference in the approach developed for this project is that students do not simply markup their texts, but also design the markup schema, inventing and defining
available tags and the rules for their use. Thus, there is a bi-directional mediation between the texts and markup; schemas, in this view, function as situated rhetorical structures—animated by and animating the texts and genres they enact. My approach seeks to value the rhetorical skills involved in modeling schemas in a distributed writing system.  

**Overview of the Pedagogical Approach**

This overview is designed to give the broad strokes of the pedagogy. In the chapters that follow, I will ground the processes described here in specific examples drawn from across the two classes. For additional detail, course materials for both courses are included in appendices to this dissertation (Appendix B and C), including syllabi, assignment prompts, and other documentation.

These classes were taught in consecutive terms, Advanced Writing for the Technical Professions in the 7-week Summer II 2016 session and First-Year Writing the Fall 2016 semester. These courses share a set of eleven learning goals as defined by the Northeastern University Writing Program (see course material in Appendix B and C). Both courses drew upon Rhetorical Genre Studies (RGS) to enact these goals. Students used markup in a set of assignments that moved them through different genres of writing, genres chosen by me and

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10 For their part, Desmet et al. do recognize this approach as a possibility. The anonymous instructor described in their case study expressed interest in developing a class based around <emma> where students would take part in modeling: “His writing class will become an ongoing discussion of the rhetoric of the essay. Once the class develops a definition of a writing genre, they will work to express that definition in terms of an XML DTD. In this way, the act of marking up and parsing essays will express and enact the class’ agreed-upon rhetorical values. As assignment goals change with each essay, tag sets will also evolve as the group conscience dictates” (39).
genres chosen by them, while drawing upon theoretical readings on genre drawn from RGS.

While the approaches to the courses were different, as outlined below, the workflow for the markup-based assignments were the same in the two courses.

Broadly speaking, the work of each markup assignment was to 1) work collaboratively in groups to study and analyze the genre; 2) in groups, identify and define salient components of the genre to develop a genre model, expressed in the schema file and supporting documentation; 3) produce individual examples of the genre that use the components included in and that conforms to the rules outlined in the schema file; 4) collaboratively reflect on and make necessary changes to the schema file that reflect changes in our shared understandings of the genre; and 5) make revisions to individual examples of the genre. Figure 1 shows a fuller workflow specifically followed for the markup projects in both courses, broken up into group and individual phases (though, in practice, these phases overlapped).
Both classes followed this workflow for projects 1-3 (Table 1). Additionally, both classes began project 1 with a genre of my choosing that was researched as an entire class: annotated bibliographies for AWD and genre analysis essays for FYW. I give more detail about each of course below.

<table>
<thead>
<tr>
<th>AWD</th>
<th>FYW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project 1 - Annotated Bibliographies</strong></td>
<td><strong>Project 1 - Genre Analysis</strong></td>
</tr>
<tr>
<td><strong>Project 2 - The Modeling and Production of Genres</strong></td>
<td><strong>Project 2 - The Modeling and Production of Genres</strong></td>
</tr>
<tr>
<td><strong>Project 3 - The Production and Revision of Genres</strong></td>
<td><strong>Project 3 - The Production andRevision of Genres</strong></td>
</tr>
<tr>
<td><strong>Design Journal Entries</strong></td>
<td><strong>Google Community Posts</strong></td>
</tr>
</tbody>
</table>

*Table 1: Abridged course schedules (note: markup projects are bolded)*

*Advanced Writing for the Technical Professions (AWD)*

AWD is a required writing course at Northeastern for all students that, according to the NU Writing Program, “focuses on writing in the disciplines…students learn how writing and

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11 The one exception was project 1 in AWD, which did not have an official draft and peer review process. Instead students were asked to reflect on their own writing in comparison with a peer’s annotated bibliography after the assignment. In this design entry, they were asked to imagine potential changes they would make to the class schema and their own writing.
research function in their specific disciplines” (Advanced Writing n.p.). This particular section of AWD was focused on technical professions, designed for students with majors in the College of Engineering and College of Computer and Information Science. Because of this focus on research and writing in the disciplines, we began the semester by researching and completing annotated bibliographies related to a disciplinary research question students were asked to develop through a series of reading responses and other informal writing. Along with foundational readings in Rhetorical Genre Studies, I asked students to read examples of annotated bibliographies. Over two class periods, we developed and refined a set of components and definitions that would make up the schema (Figure 2 below shows an early sketch of the model from our first collaborative design session).

![Image of a chalkboard with a diagram labeled 'Initial data model for annotated bibliography schema']

Figure 2: Initial data model for annotated bibliography schema

Once our schema model was refined, I wrote the code for the actual schema file using RelaxNG, a language for building XML schemas. The schema codified the work we produced
collaboratively in class and “validated” their individual documents through Oxygen, the text editor we used as a class. Validation here means that if they were to violate some agreed upon rule of the schema, say by using an element we did not define as a class, they would get an error warning and message. In practice, these errors look a lot like the familiar color-coded underlined warnings Microsoft Word uses for spelling and grammar. Though the students had access to the schema file and we talked through what it looked like, they were not required to write the XML schema file. Some curious students would read the schema file and ask questions about it, especially the Computer Science and Computer Engineering students in AWD, but the bulk of students’ interaction with the schema was through their individual documents.

Project 2 asked students to work in smaller groups of 3-5 to choose their own genre to research, model, and produce. There were five groups in AWD. The genres they selected were: public initiative proposals, educational scientific blog posts (termed ‘edutainment blogs’ by the research group), feasibility reports, and cover letters for job applications. This list of genres reflects the requirement that groups “select and research a genre that is (broadly) relevant to your discipline” (AWD Assignment 2 Prompt), aligning the course with the Writing Program’s articulation of AWD. All of the students in this course had been on at least one co-op, a 6-month, full-time work experience. A central feature of Northeastern’s focus on experiential learning, the co-op program sees students “alternate semesters of academic study with semesters of full-time employment in positions related to [their] academic and/or career interests” (“Overview” n.p.). Students drew on these experiences in choosing and researching genres, discussing writing experiences in class, and designing the schemas. Professional contexts as well as the more advanced standing of AWD students influenced the selection of readings—I selected several
RGS and writing studies articles which specifically took up writing in professional contexts and writing in Engineering.

The same genres from Project 2 were also used for Project 3, and that project asked students to shift to a genre that had already been researched and modeled by another group, to produce an individual example of the genre, and to collaboratively revise that genre model as they adapted it to new rhetorical situations. Throughout these projects, students completed design journal entries which asked them to reflect on their writing, reading, and use of XML. Due to the short Summer Session, there was no final reflective paper in AWD, though students were assigned an extended design journal entry that asked them to reflect on the course as a whole in similar terms as project 4 of FYW.

First-Year Writing (FYW)

Again, the workflow for the three markup writing assignments was the same as for AWD—students moved back and forth between collaborative schema design and individual writing in XML. Since FYW students are enrolled in majors across the university, no specific disciplinary context or set of contexts is the focus of the class. As a result, the genres studied and produced in the class were less obviously related to specific disciplines and tended more toward general academic and public genres. We began with a genre analysis essay, which was designed to lay a foundation for a Rhetorical Genre Studies approach to the study of student-selected genres. Genre analysis was both an object of study—we collaboratively created a schema that identified the components of a successful performance of this genre—and a method of analysis—students used their individual examples of genre analysis essays to interrogate a range of genres through an RGS lens. Examples from the case study students in FYW included genres analyses of historical change in features of musical theater handbills, video game discussion boards, cereal
boxes, and hip-hop lyrics, and an essay linking the evolution of hip hop lyrical style to broader social and political shifts in the United States.

Projects 2 and 3, like in AWD, asked students to work in smaller groups to research and produce genres. The genres this class selected were movie reviews, satirical articles, op-eds, and resumes. This selection was likely influenced by the assigned course readings from *Scenes of Writing (SoW)*, a textbook written by RGS scholars Amy Devitt, Mary Jo Reiff, and Anis Bawarshi. While the concepts covered in *SoW* are roughly analogous to those covered in the RGS readings I selected for the AWD course, *SoW* is specifically geared towards first-year writing courses, and thus focuses largely on genres that students are likely to have encountered before. This change was also made in response to feedback I received from AWD students about the difficulty of some of the core theoretical RGS readings assigned.

A difference in the FYW approach was that there was time in the 14-week semester to dedicate a major project to reflection, rather than an informal reflective post. This allowed students to receive feedback on drafts of their reflections which was not possible for AWD.

**Overview of the Study**

In order to study these courses, I developed a teacher research study which gathered and analyzed data from several sources: a survey administered at the beginning of each class that gathered demographic information, students’ previous experiences with markup, and self-assessments of students’ writing and technical abilities; students’ XML (including version/process histories) and reflective writing; collaborative writing generated in the development of genre models; the class schema files (including version/process histories); and qualitative and discourse-based interviews with nine students (five in AWD and four in FYW).
In chapter 1, I unpack the methodological approach to the study of these two courses and describe the research site and participants in more detail, including how a genre ecologies framework enabled me to involve students in the co-design of the official genres of the course—the Oxygen text editor, the course site, visualizations, GitHub, and so on.

**Chapter Overview**

Chapters 1 and 2 make connected arguments that respond methodologically and pedagogically to the complex and mediating role that technologies play in writing courses. In chapter 1, I describe my teacher research methodology and describe the research sites, participants, data sources, and analysis. Drawing on a genre ecology framework, I trace how my methodological stance afforded opportunities to redesign the official genres of the course through the identification of “ecological niches” (Spinuzzi and Zachry), where I could intervene in the official genres of the course based on students’ experiences and to bolster pedagogical goals. These niches were identified by examining the “unofficial and ad-hoc” genres (Spinuzzi and Zachry) students recruited to mediate their writing tasks. Speculating on the implications of this emergent outcome of my methodological stance, I look to theories of rhetorical usability and participatory methodology to argue for ways of engaging students as explicit co-designers of the technologies of digital writing classrooms as a matter of methodological stance.

In chapter 2, I develop the pedagogical concept of procedural design by building into RGS theory attention to procedural rhetoric. Procedural rhetoric asserts that rule-based processes—procedures—both computational and analog, can be rhetorically persuasive. Procedural design, then, is an approach to pedagogy that requires a heightened sensitivity to the role of procedures in writing classrooms with the goal of inviting students to notice, build,
manipulate, and critique the designed (digital) writing spaces of the writing classroom. I extend Bogost’s notion of procedural rhetoric to develop a vocabulary and a framework for understanding the contextual and rhetorical form of genres, an oft-discarded aspect of genre in rhetorical genre studies (Devitt “Re-forming”). I demonstrate the potential of procedural design by reading across data from the two courses of my study, which invited students to work as procedural designers.

In chapter 3, I zoom in on the collaborative writing group as a social formation within the genre ecology of the courses. Drawing on two case studies of groups engaged in the modeling of genres, I argue that schema design enabled students to negotiate a fundamental tension in genre use—the dialectic between genre convention and variation. Schemas provided mechanisms for students to articulate alternative writerly positions and negotiate them with respect to the shared conception of the genre as modeled in the schema. I trace the multiple ways that schemas were recruited to coordinate group writing tasks in two cases—as artifacts, tools, and locations. These cases reveal how these groups of students took up the schema as a mediating genre in multiple ways.

Chapter 4 extends and qualifies the findings of chapter 3 by exploring alternative ways that schema design was and could be taken up by students. In particular, I develop two cases wherein students recruited resources from previous schema designs to model new genres. In both cases, students make decisions that reflect their conceptions of genres and approaches to modeling. Comparing the two cases—one of which, I outline, is more successful than the other—helps me to articulate the conditions under which schema design was a productive activity, and under which, by extension, RGS pedagogy is productive. From chapters 3 and 4, I extract pedagogical insights from the rhetorical practices of writers working with and through
XML. As well, I argue that explicit modeling can help genre teachers and researchers to trace students’ development and repurposing of genre knowledge across classroom contexts.

In chapter 5, I zoom in further and offer individual views of two students—Maddie and Zoe—and their experiences in these classes. Doing so allows me to trace similarities and differences between how these writers interface (in Brooke’s sense of the term) with genres using XML. In this chapter, I argue that XML writing is not just one thing—technologies are not static tools. The distributed nature of writing in these courses reveals that schemas and encoded writing were recruited differently based on a range of contextual differences: the genres being produced, the structure of the assignments, the other genres in the ecology, and the prior genre experience of students. It also reveals the importance of individual identity and prior genre knowledge on students’ uptake of XML writing. In light of this, I call for more individual, situated studies of mediated writing processes over time to better trace the dynamic role(s) of technologies in the genre ecologies of our classrooms.

In the conclusion, I work to unpack the pedagogical implications of this study for RGS teachers and teachers more broadly. The extensibility of this approach depends not on teachers of all kinds taking up XML, but on abstracting pedagogical principles and recommendations by which we can facilitate the kinds of insights that, in the best cases, my students came to in this study. I argue that distributed forms of writing—beyond better positioning students for their future composing lives in increasingly networked spaces—are uniquely positioned to aid in this task.

A Note on the Digital Appendix and on Terminology

The dissertation is supplemented by a Digital Appendix (DA), titled, “Markup in the Writing Classroom” (http://markup.kevingeraldsmith.com/). This site contains final, de-
identified versions of all student XML writing, links to collected documentation (names and definitions for tags) for FYW and AWD, and links to my GitHub repository, which contains freely available and adaptable XML, XSLT, HTML, CSS, PHP, and JavaScript files generated in the two courses and used to build the DA, which is very similar in structure and layout to the course sites built for the two classes (which are private). When it is necessary for the argument I am making, I provide a link to the DA, but I encourage readers to explore beyond those instances. Those who do may have a better sense of what the genre ecologies of these courses looked like, and what it was like to work in these classes.

Throughout this dissertation I use the terms genre model and schema somewhat interchangeably. A genre model refers to a set of texts—a prose documentation file sometimes called a pseudo schema (containing written definitions and usage rules for all schema elements, attributes, attribute definitions for a given genre) and an XML template file (containing an XML skeleton of the schema for students to use as starting points for their individual compositions). Together, these documents were used by me to create the class schema file, written in a schema language called RelaxNG. The documentation elements included in the schema file, which the students could access but did not edit directly, are coextensive with the prose documentation included in the pseudo schema. Thus, when I refer to schema, I am referring to the set of elements, attributes, and attribute values defined in the pseudo schema. The template file was used to demonstrate the structure of the schema and any implicit rules to me and to guide writers through the use of the schema. Often, the template files include comments that further explain the schema and guide users in their usage (see green text in Figure 3). When I refer to “schema design,” I am referring to the process of composing the genre model.
Figure 3: Excerpt of a template file for movie review genre in FYW
Works Cited

Advanced Writing in the Disciplines.” *Northeastern Writing Program.*


Chapter 1
Designing Teacher Research

In this chapter, I overview the contexts, participants, and methods out of which this research grew. Consonant with a teacher research methodology, the methods of data gathering, visualization, and analysis were simultaneously aimed at explaining student’s experience—“understanding of the phenomena observed” (Crowson 169)—and aimed at improving practice. Teacher research is inherently flexible when it comes to method: “what matters for teacher-researchers is less their learning of a method than their understanding of a point of view about observation that holds regardless of method” (Knoblauch and Brannon “Knowing Our Knowledge” 22). Rather, method design is a flexible process that is both derived from theory before the study begins and emerges from working the dialectic of research and practice. This is an important point, because the argument I make in this chapter grew out of a willingness to reframe research methods—and outcomes—to improve practice. As the study proceeded, I became increasingly aware of—and adapted my methods to—the potential and actual role of students in the (re)design of the writing ecology with which they worked. This draws on Clay Spinuzzi and Mark Zachry’s framework of “genre ecologies,” which they define as “an interrelated group of genres (artifact types and the interpretive habits that have developed around them) used jointly to mediate the activities that allow people to accomplish complex objectives” (172). This framework, developed for technical communication, is helpful to me here in that it focuses on the ways that mediators (genres), including “ad-hoc (unofficial) genres,” are coordinated to complete complex tasks (Spinuzzi and Zachry 177). This study involved the development and deployment of a novel form of writing for students, introducing new technologies and genres into their writing processes. The framework of genre ecologies enabled
me to identify patterns in how students took up XML—and what unofficial genres they recruited to coordinate their writing—and, eventually, prompted me to expand my research methods (interviewing especially) as a way to invite students to interrogate the official genres of the class. In this way, they helped to identify “ecological niches” (Spinuzzi and Zachry 177), places for tactical intervention into the genre ecology. I argue in the final section of this chapter that this methodological orientation, which draws on participatory design research (Spinuzzi), can be instructive to teachers of writing integrating new and novel technologies into their pedagogical designs by incorporating students’ voices and knowledge into pedagogical designs as a matter of methodological stance.

I foreground my methodology for two reasons. The first is that, given the complex (and likely unfamiliar) set of texts and software involved in markup-based writing, it is necessary to outline the sources of data, methods of analysis, and my positionality as a researcher-designer in these classes. Second, by attending closely to the rhetorical capacities of textual technologies in this study, I was able to leverage the affordances of those technologies to discover new sources of data, engage students in data analysis, and allow the study to become collaborative in ways that I did not anticipate. I think that outlining this approach has implications for future designs of classroom-based teacher research studies, especially those that engage new or novel modes of writing, because it provides a model for how we might approach changes to our classroom brought on by the introduction of new kinds of writing.

In order to capture and analyze the data produced in these classes, I designed a teacher research study. In designing this study, I looked to Marilyn Cochran-Smith and Susan L. Lytle’s *Inside/Outside: Teacher Research and Knowledge* and their follow-up *Inquiry as Stance: Practitioner Research for the Next Generation*. Following Cochran-Smith and Lytle, I define
teacher research as “systematic, intentional inquiry carried out by teachers about their own school and classroom work” (Inside/Outside 23). Some unpacking of this definition will provide insight into the design of my study.

Teacher research is “systematic.” It requires that data gathering is ordered and recorded in written form (Cochran-Smith and Lytle Inquiry 24), including documentation from the teacher’s “inside perspective their own questions, interpretive frameworks, changes in views over time, dilemmas and recurring themes” (Cochran-Smith and Lytle Inside 44). This points to the key epistemological difference in teacher research when compared to other research paradigms: that the privileged position of the teacher researcher allows the research to look “from the inside out” (Cochran-Smith and Lytle Inside x) to create knowledge “not reproducible through other kinds of research paradigms” (Goswami and Rutherford 2). Fundamentally, teacher research leverages the unique emic perspective available to teachers in their own classrooms and schools as they co-construct knowledge with students (Inside 43; Goswami and Rutherford 2). Thus, I employed systematic forms of data gathering—collecting student individual and collaborative writing, interviewing and surveying students (more on these later in the introduction)—along with continual self-reflective journaling.

Teacher research is “intentional.” This simply means that teacher research is planned, as opposed to unplanned, or “spontaneous” (Cochran-Smith and Lytle Inside 24). This does not mean that insights about teaching must be planned; intentionality means teaching must be deliberate (Boomer 5), but does not preclude the methods and questions from changing. The data sources briefly mentioned above were selected from a wide range of possible data sources—in early versions of this project, I considered audio or video recording of group schema design
sessions as well as the possibility of gathering screencast data—*before* entering the classroom. Yet, as we will see, those methods were open to revision.

Finally, teacher research is “inquiry carried out by teachers about their own school or classroom work” (24). Cochran-Smith and Lytle suggest that teacher research proceeds from and/or is generative of questions that “reflect teachers’ desires to make sense of their classroom experiences” (Cochran-Smith and Lytle *Inside 24*). Teacher researchers seek to make sense of their practice and share it with others. So, while my study is certainly rooted firmly in the particular—these students, these courses, this institution—it also seeks to make this local knowledge public because it can speak to wider conversations that I think may be useful to teachers and researchers of writing and digital technology.

I align myself with teacher research for a few reasons. First, my study sought to understand the perspective of insiders, teachers and learners, as a way to improve practice. As I will demonstrate later in this chapter, methods of data collection were aimed at explicating phenomena and also aimed at the continual refinement of classroom practice. As Cochran-Smith and Lytle write of practitioners researching their classrooms, “There are not distinct moments when they are only researchers or only practitioners. Rather these activities and roles are integrated and dynamic” (*Inquiry* 95). It is impossible to separate these roles in my mind and it is impossible to separate them in the reporting of research. As a result of the dual role the teacher researcher inhabits, there are important critiques of teacher research (Cochran-Smith and Lytle identify six). The “ethical critique” of the position of the researcher is perhaps the most obvious and pervasive, and deserves attention. This critique stems from the dual position of the teacher researcher and suggests that when teachers engage in research, “they inevitably face conflicts of interest that jeopardize the best interests of their students” (47). This view, in particular, sees the
procedures of informed consent and freedom from coercion “extremely difficult” (47). Some—including Cochran-Smith and Lytle—view the dual position of the teacher researcher as enabling an enhanced view of teaching practices and thus a boon to research; they would answer the ethics critique, in part, by locating as a strategy to “safeguard traditional approaches to knowledge generation … and preserve the hegemony of outside expertise” (47). These responses may be true, but the ethical critique also calls for an explicit accounting for positionality and how I dealt with what Helen Dale calls “dilemmas of fidelity” (77) in the course of this study. I begin to account for mine in the next section.

**Locating the Teacher Researcher**

Here is a common text in classroom-based studies, a course description (this example is from my FYW course):

As a class (together and in groups), we will undertake a shared collaborative project that will help us in the tasks of analysis and production: we will develop a system of markup that leverages our growing understanding of genre(s) to analyze, describe, and prompt effective writing. We will do this using XML (eXtensible Markup Language), which will allow us to define a set of tags and rules for using those tags in our writing. Though XML is designed to be intuitive and easily readable by humans, there is no doubt that, for those of you who have no experience with writing XML, there will be a technical learning curve. This effort, though, will be fruitful in that it will allow us to develop an explicit, shared vocabulary for analyzing and producing genres, a vocabulary that will enable us to communicate more effectively in a range of situations and contexts. (Course description excerpt from FYW syllabus)
Full of promise and potential (not to mention first-person plural pronouns), this description expresses a view of the course, albeit one that is decidedly limited by perspective (it is my view) and temporal context (it was written weeks before I had interacted with any one of the FYW students).

Here is a second text that offers a different perspective, my own thoughts after meeting with a dissertation committee member to discuss the ongoing study:

I met with Julia after class to discuss the schema, student files, and adjusting the approach for the upcoming FYW section in the fall … She was very excited about the project and approach and kind of reinvigorated me after what felt like a bit of a slog the past 8 weeks or so. After the meeting, I talked with [a library staff member] about what tools were best suited for creating a database for making queries on the student writing. After some discussion, she recommended that I try BaseX, and if I find that I am leaning more towards eXist, to ask her to show me how it works (because it is more complicated). (Teaching journal entry)

This example was written around the same time period as the syllabus course description. It is a kind of data that is less often collected or reported on in classroom-based research. In this excerpt, we get a different view of the course than from the syllabus, more personal and less sure of itself. We also catch a glimpse of the many actors involved in designing the approach to FYW and the research more broadly, some human—Julia Flanders, a dissertation committee member, Ashley Clark, XML Applications Programmer for the Digital Scholarship Group at NU—and some not—the schema and XML files from AWD, BaseX.

Finally, here is a third perspective on the course, from Tara, a case study student, as we began the first major writing project for the class:
Yeah, I was like so overwhelmed [laughs]… It seemed like a foreign language to me, I had no idea what you were talking about. It seemed pretty daunting. And it still kind of… I mean, after today, and actually being able to work in [markup], [it] seems less daunting, and I feel like I'll be able to write a draft in it. But yeah, first day I was like, "I'm not going to be able to do this" [laughs]. But now I feel quite a bit better. (Tara, Interview 1)

This final quote is excerpted from an interview I conducted with Tara, one of four case study students from FYW. As a teacher researcher, I take seriously the emic perspectives of students like Tara throughout the study. By treating each of these three views as data points to be analyzed, reflected upon, and acted upon, we gain crucial information about the course, about my positionality, and about students’ experience. Yet, choosing which students to represent and how is also, ultimately, up to me, as is the arrangement and presentation of that data. With this in mind, I include in this dissertation a range of students’ views in the course, including those that were critical of the pedagogical approach. And while I tried to recruit students from a range of cultural, linguistic, and technical backgrounds, I was limited by which students volunteered and agreed to participate in interview for this research. Given this limitation, I do not claim generalizability for the study, nor representativeness of the makeup of the classes based on interview participants, as I will discuss in more detail below.

My approach to gathering data leverages the insider position of teachers and students in knowledge creation. It rests on the assumption that “those who work in particular educational contexts and/or live in particular social situations have significant knowledge about those situations” (Cochran-Smith and Lytle Inquiry 42). My study sought to gather data that would help me understand these perspectives in more detail. This data gathering included collecting student writing, administering a demographic survey, conducting semi-structured and discourse-
based interviews, and, of course, participating in and observing the classrooms as the instructor.\textsuperscript{12} In addition, teacher researchers also “systematically document from the inside perspective their own questions, interpretive frameworks, changes in views over time, dilemmas, and recurring themes” (42). For my study, this meant keeping a descriptive and reflective teaching journal and retaining notes and artifacts from the course. I call on this full range of data throughout this dissertation in order to give as full view as possible into these classes. Finally, teacher research affords an ethos of collaboration with students, honoring their insider position in the classrooms as well as the teacher-researcher. This ethos, of course, influences methods of data gathering culled from ethnography (the teaching journal, akin to the field notes of the ethnographer, and the participant interviews), data analysis (I used a form of Grounded Theory to allow categories of analysis to interactively emerge from the data), the reporting of results (in chapters 2-5 I try as much as possible to represent students in their own voices as I offer three scales from which to view the classes: a view of the courses, a view of writing groups, and a view of individual writers), and the pedagogy itself (teacher research is, first and foremost, a reflective and responsive form of research aimed at improving practice).

Even listing the three views of the FYW course above brings to mind other views of the course—from the other students in the course, for one. Some of these were captured and some were not. Just as any account of research is necessarily a view from somewhere, teacher researchers must account for their positionality and how that positionality affects data collection, analysis, and reporting. As critical and feminist empirical research has shown, “no action is free of some ideological position and ideological implications; that is to say no action—including

\textsuperscript{12} I outline my methods is more granular detail later in this chapter.
empirical research—is without a social context that bears upon its potential and results” (Addison and McGee 1). This understanding of positionality insists that the researcher's “personal history, attributes, and assumptions should be included as part of the 'data' for a study” (Herrington “Reflections” 54). Gesa Kirsch and Joy S. Ritchie call this a “politics of location” that acknowledges our multiple positions and asks us to continually critically examine how our research is performed and how our positionality is “implicated in our research questions, methodologies, and conclusions” (9).

This is especially true of classroom research; as Ellen Cushman explains, while the classroom can be a successful location of activism, “the very power structure of the university makes it difficult to establish and maintain dialogue and solidarity” (19). That is, teachers are always already in a position of power in classrooms that may be disavowed, but is ultimately difficult to avoid. In the end, assignments were handed in (to me), grades were assigned (by me), and so on. This power dynamic in the study classrooms was underscored by my identity as a white, male PhD student in the English department. These identity categories, which were self-evident and/or explicitly brought up by me, likely reinforced perceptions of credibility and authority that the position of instructor engenders, authority and credibility which enabled me to introduce a novel writing pedagogy most students were not expecting. This is not to say that there was not push back—students in both AWD and FYW had questions and hesitations with regard to the approach. Take, for example, this excerpt from my teaching journal, written immediately after the first AWD class meeting:

Finn asked whether the “curriculum was different for other sections of AWD.” This question followed my explanation of the “Permission Form for Written Work” that I handed out. This is an excellent question and one that I should have anticipated. I
certainly anticipated it in my IRB application (and in my meetings with Neal [the Director of the Northeastern University Writing Program]), where I made a point to explain that the course’s structure still aligns with the learning goals of the Writing Program. In retrospect, I should have included this on the permission for writing form.

What the question got at—what made me uncomfortable in that moment—was the idea that the students are lab rats; that they are beholden to the whims of my research. It is important to me that this is not the case. In fact, the final design of the course is borne wholly out of pedagogical, rather than research, concerns. It would be far easier for my research to teach this course as a series of analytical essays that build a schema through a more iterative and scaffolding process. Instead, I chose this unwieldy, difficult-to-predict-and-plan-for version that emphasizes rhetorical production over analysis.

I think I answered the question well enough, though it did feel like a defensive formulation: “This course is almost exactly the same as the course I taught last summer.” Is this true? I think, for one thing, that the class is more rooted in specific research in RGS. Both courses emphasized production, though this iteration more explicitly … Future class observations should pay attention to the tension I mentioned above, implicit in Finn’s question: to what extent do the students resist the approach on the basis that it is different? Or to what extent do they express misgivings or hesitations about the approach (knowing, as they do, that I’ve not done this before and that it is different than other AWD courses). (Teaching journal entry, 7/5/2016)

This moment of tension highlights how I sought to address the ethical critique of teacher research, which refers to both conflicts of interest that “jeopardize the best interests of… students” as well as perceptions of coercion that render informed consent procedures suspect
In my study, I drove the focus of the class toward markup, “redirecting the curriculum for my own research purposes” (Snyder 202), though I did align both courses with the Writing Program’s eleven learning goals and included these goals on my syllabi (see Appendices B and C). As I note in the entry above, transparency became an important source of ethos in the classrooms; to a much greater extent than in my previous teaching experiences, I chose to consistently and explicitly explain my rationale for decisions, cede decision making to the students, and engage in pedagogical discussions with students. In this way, these moments of tension were productive, as Lee Odell explains of teacher research, “the process of exploration and discovery arises from a sense of dissonance or conflict or uncertainty” (128).

The excerpt from my teaching journal also highlights how I sought to position myself as a teacher researcher. As I indicate in the entry, it was important to me that the “whims of my research” would not supersede my goals as a pedagogue. Helen Dale, writing of her own dissertation research, points out that the competing interests of the teacher and researcher may lead to the tacit approval of negative classroom behaviors in the service of answering our research questions or maintaining distance as a researcher. She refers to the “competing loyalties” of classroom-based qualitative research as “dilemmas of fidelity,” decisions a researcher must make in the course of a study in which “one individual’s or groups’ needs take precedence over those of another individual or group” (77-78). As we see in the example above, the complexity of the classroom makes dilemmas of fidelity impossible to fully account for in advance (Dale 92), however, we can anticipate that they will occur. In my study, I adopted a “teacherly” role (Dale 92), meaning that, if there were moments where my interests as a teacher and my interests as a researcher conflicted, my choices would serve my interests as a teacher; my primary allegiance was to the students and to student learning. While I would not go so far as to
say that this positioning ever compromised the research, there were moments when I made conscious decisions to support my pedagogical goals where other approaches may have better served my goals as a researcher.

As an example of what this looked like, one of the student groups in AWD chose to study, model, and produce cover letters. Then, in the FYW class the following semester, one group was struggling to choose a genre and tentatively decided on resumes. As a researcher, I understood that it would be beneficial for my study to have two different groups of students model the same genre. It would not have been difficult to encourage this group to move from resumes to cover letters, given the similar rhetorical situations of the two genres. Ultimately, I did not push the group to study cover letters because that would have undercut my pedagogical goal of having a student-centered approach to genre research, for students to decide upon the genres they wanted to model and produce. The FYW group took up resumes.

As well, I want to recognize that undertaking this study in these two classrooms also required certain technical coding and design skills. Coming into the first iteration of this course, I had a working knowledge of markup languages: XML, TEI, HTML; some background in coding: PHP, XSLT, Ruby; and other technical skills that were required to undertake this project: use of the command line, version control systems, etc. In short, while I learned and developed these skills a great deal in the course of the study, this research would not have been possible without previous experience in my MA program (a theory/practice program in New Media Studies) and working on and around DH projects in Northeastern’s Digital Scholarship Group and NULab for Texts, Maps, and Networks. These same experiences first exposed me to the use of XML in the Humanities in the form of the Text Encoding Initiative (TEI). Overhearing meetings involving researchers using TEI first alerted me to the potential of XML as a tool for
the production of writing. This exposure drove my research questions; it conditioned me towards what I might be able to see in the classrooms. Recognizing this enables me to account, in part, for the “why of the research” as Sullivan and Porter describe (4, emphasis in original). The questions that underlie the design of my research methods are far from neutral—they represent the coalescing of these experiences, political and ethical considerations, institutional ties, my identity as a researcher, and so on (Sullivan and Porter 4). This, too, calls to mind positionality with respect to how this dissertation is constructed and how students’ experiences and represented. I have tried, in what follows, to avoid advocating for a particular pedagogical approach. While I do closely analyze the successes and failures of my own pedagogy in this dissertation, my aim is not to have XML widely adopted by teachers, but to extract lessons from the experiences of students that might be useful to other teachers, in other contexts.

As I move to a closer discussion of the contexts and participants of this study—our classes, the students—I want to note that positionality is not something to be addressed, discussed, and forgotten about. As a teacher researcher, one constantly negotiates the terms of one’s position in a classroom and in a research study. I have tried here to outline the values and assumptions I embodied as I moved through this study, but these were not static qualities; nor are all values and assumptions explicitly espoused. The reflective teaching journal entries help provide a time-sensitive view into my thinking in situ and I weave this data source throughout the dissertation to make my thinking plain, and thus more open to critique and, hopefully, more useful to readers.

**Contexts of the Study**

**Research Questions**
This study takes as its object of inquiry the collaborative development and use of a system of markup using XML in two of my writing courses at Northeastern University (NU). At the outset of the project, the following research questions drove the selection of data sources and methods of collection and analysis:

1) How does writing in XML affect students’ writing processes?
2) How do students use and understand schema design as a collaborative writing activity?
3) Does this form of writing influence how students think about or approach writing in other (digital) contexts?
4) Do students report XML as helping or hindering their learning and how?

Developing these questions, I was influenced by Fecho et al., who suggest that as we undertake sustained inquiry into our classrooms, we systematically ask and answer “what happens when?” (133). The questions, then, were deliberately designed to be capacious enough to allow students’ experiences to (re)frame the directions of the study.

Research Site

These classes were taught face-to-face at Northeastern University in consecutive academic terms, Advanced Writing for the Technical Professions in the 7-week Summer II 2016 session and First-Year Writing the Fall 2016 semester. These courses share a set of eleven learning goals as defined by the Northeastern University Writing Program and included on both syllabi. For these goals and for additional detail, course materials for both courses are included in appendices to this dissertation (Appendix B and C), including syllabi, assignment prompts, and other documentation. Both courses are capped at 19 students and are taught by tenure-stream faculty, full-time (non-tenure) Teaching Professors, part-time faculty, and PhD students in the English Department.
I taught the first, an advanced writing in the disciplines (AWD) course for students majoring in technical professions, in an 8-week summer session in 2016. AWD is a required writing course at Northeastern for all students that, according to the NU Writing Program, “focuses on writing in the disciplines… students learn how writing and research function in their specific disciplines” (Advanced Writing n.p.). Students must have at least junior standing to enroll in AWD, and students in this section spanned from second- to fifth-year students. All of the students in this course had completed at least one 6-month professional internship through Northeastern’s co-op program. A central feature of Northeastern’s focus on experiential learning, the co-op program sees students “alternate semesters of academic study with semesters of full-time employment in positions related to [their] academic and/or career interests” (“Overview” n.p.). This particular section of AWD was focused on technical professions, designed for students with majors in the College of Engineering and College of Computer and Information Science. The course description is as follows:

Provides writing instruction for students in the College of Engineering and the College of Computer and Information Science. Students practice and reflect on writing in professional, public, and academic genres, such as technical reports, progress reports, proposals, instructions, presentations, and technical reviews, relevant to technical professions and individual student goals. In a workshop setting, students evaluate a wide variety of sources and develop expertise in audience analysis, critical research, peer review, and revision.

In the 2016 summer II session, the NU Writing Program ran 34 sections of AWD (14 of which were online and 30 face-to-face), six of which were for the technical professions.
First-Year Writing (FYW)

I taught the second iteration of this course, first-year writing (FYW), in the Fall semester of 2016 with enrollment of fourteen students. FYW (ENGW1111) is a required course for all NU students (NU does accept AP and IB scores in lieu of FYW); the course description reads:

Offers students the opportunity to study and practice writing in a workshop setting. Students read a range of texts in order to describe and evaluate the choices writers make and apply that knowledge to their own writing; learn to conduct research using primary and secondary sources; explore how writing functions in a range of academic, professional, and public contexts; and write for various purposes and audiences in multiple genres and media. Throughout the course, students give and receive feedback, revise their work, and reflect on their growth as writers.

This course is one of three potential first-year writing courses for first-year students at NU (1111, First-Year Writing; 1102, First-Year Writing for Multilingual Writers; and 1110, Introductory First-Year Writing). In the Fall of 2016, the NU Writing Program ran 76 sections of FYW (62 sections of 1111; 8 sections of 1102; 6 sections of 1110).

Study Participants

The eighteen AWD students enrolled in my section were majoring in a range of Engineering fields (14), Computer Science (1), Information Science (1), or a combined program in Computer Engineering and Computer Science (2). Five of the eighteen students identified as female (28%) and thirteen as male (72%). All students had at least third-year standing and all had completed at least one professional co-op.

The fourteen FYW students came from a range of colleges and majors across the university: Computer Science (3), Business (2), a range of Engineering fields (4),
Communications (1), Biochemistry (1), Psychology (1), and Undeclared (2). No FYW students had been on co-op. Four FYW students identified as female (29%), one as gender non-conforming (7%), and nine as male (64%).

Neither class was representative of NU’s population as a whole in terms of gender, as the university reports a 49:51 male-to-female ratio ("Diversity").\textsuperscript{13} The ethnic makeup of students at NU is reported as: 18% international, 5% African American, 7% Hispanic, <1% Native American, and 13% Asian American ("Diversity"). Presumably the remaining 56-57% of students are White students born in the United States or unknown. AWD had 61% of students identify as White, 28% as Asian, 5.5% as Hispanic/Latino/a, and 5.5% unreported. FYW had 50% of students identify as White, 29% as Asian, 14% as Hispanic/Latino/a, and 7% as Arab. Thus, the ethnic makeup of the classes was similar to that of NU as a whole but had fewer (no) students identify as African American and more students as Asian. The surveys did not collect information about country of origin.

Nearly all students in AWD (94%) and half the students in FYW reported some experience with coding or markup languages. This percentage is not surprising for advanced undergraduates in the technical professions. While 50% of students in FYW was more than I expected, I attribute this partly to the relatively high percentage of students majoring in Engineering and Computer Science in that course as well.

\textsuperscript{13} I suspect that the high male-to-female ratio in these classes was consistent with those found in the College of Engineering and College of Computer and Information Science, where many students were enrolled (100% of students in AWD; 50% of students in FYW). Although college- and major-level data was not available from NU, the College of Computer and Information Science is actively recruiting female students with the “big goal” of a 50:50 male-to-female ratio by 2021 ("Diversity Initiatives").
All 32 students in these classes agreed to have their work collected and used in this study (see Appendix A for informal consent document); five students from AWD and four students from FYW volunteered to participate in three semi-structured and discourse-based interviews with me outside of class (see Appendix A for IRB and formal consent document for the interview study).

Case Study Participants

Five students volunteered in AWD: Tim, John, Maddie, Finn, and Jack; four students volunteered in FYW: Tara, Zoe, Daniel, and Mark. The gender breakdown of the interview volunteers (one female, four male participants from AWD, two female, two male participants in FYW) roughly correlates with the demographics of the classes as a whole. It is important to note that these nine students volunteered for interviews. In other words, they were self-selected. As such, they were, for the most part, remarkably confident and successful students. As a group, they were also likely more opinionated than their classmates who did not volunteer. In those respects, they may not accurately represent the students as a whole, though they did bring with them a diversity of technical and writing backgrounds, perspectives, and levels of interest in the unusual approach to this course. Finn, for example, reported that he heard about the XML approach to the course from a friend and decided to transfer into my section of AWD (Survey). On the other end of the spectrum, Finn’s classmate Tim initially reported that he would “rather

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14 The names of students have been changed throughout this dissertation in accordance with IRB procedures.

15 Readers will also note that, in my final chapter, I overrepresent the voices of women by offering case studies of Maddie and Zoe—one drawn from AWD and one from FYW—writing with XML. This was not a deliberate choice—earlier versions of that chapter had four case studies, two of which were excised for spatial and structural reasons.
spend time evaluating work, debating, improving my writing technique” than spend time using markup in a writing class (Survey). While I do think that this project can be useful to readers in other contexts, with other students, I report findings with this limited scope in mind.

**Data Collection**

My research sources included semi-structured and discourse-based interviews, surveys, collected student writing, the class schemas and genre models, and a reflective teaching journal. The recruitment of interview participants, and the collection and analysis of all material was approved by Northeastern’s Institutional Review Board (IRB# 16-02-19); interview students were presented with and signed official informed consent documents while all students completed informal consent forms for the collection and analysis of all course materials collected in the normal course of classroom activity (student writing, observational data, survey).

*Interviews*

I conducted interviews, each lasting between thirty and sixty minutes, with nine “case study students,” five in AWD and four in FYW. Each case study student completed three interviews with me outside of class, roughly at the beginning, middle, and end of the term in which they were enrolled. This resulted in twenty-seven interviews. Interviews were conducted by me and were semi-structured. The second and third interviews were discourse-based, drawing on students’ in process and completed XML writing and their reflective prose writing (Google Community posts in FYW and Design entries in AWD). While interviews were semi-structured, designed to facilitate open-ended and organic conversation between the me and the students, they were based around four categories of questions, linked to my initial research questions and described below. The interview guides for all three interviews are included in Appendix B.
• Questions about students’ perceptions of digital writing and writing environments
• Questions about students’ writing processes in the context of the course and elsewhere
• Questions about students’ experiences of collaborative writing and design teams
• Questions about working with markup, their conceptions of using markup in a writing class

While the broad categories of questions remained the same for all three interviews and across both classes (perceptions of digital writing/environments; writing processes; collaborative writing; and markup and formalization), the questions for each of the three interviews were different: interview 1 focused on initial impressions and expectations for the course; interview 2 was discourse-based (meaning it sought to use specific pieces of writing to examine specific choices the interviewee had made during the writing process) and focused on in-process perceptions of specific assignments; and interview 3 focused on retrospective accounts of the course while maintaining a discourse-based approach centering around specific documents and decisions made by the student. As I describe in the final section of this chapter, my approach to interviews began to shift to more explicitly take the writing environment of the course as an object of inquiry. This resulted in modifying my approach to the first category of questions from a wide focus on students’ conceptions of digital environments to questions more situated in students’ precise experiences, the informal genres they called upon to supplement the environment, and why. As well, the final category of questions—about their conceptions of markup’s suitability for a writing course—increasingly became tied to specific potential changes to the writing environment that would improve their experiences and/or augment the pedagogical benefits of the writing environment.
I transcribed roughly 60% of the interviews before receiving a small grant from Northeastern’s NULab for Texts, Maps, and Networks to complete the remaining 40% of transcriptions, which were transcribed by a transcription service.

Survey

An optional, 12-question survey was distributed to students during the first week of classes (Appendix A). The questions on the survey were designed to gather demographic information about the students as well as to assess their previous experiences with computer markup languages, digital technology, their initial impressions of the course, and their conceptions of their own writing. This information was designed to be used 1) to help me decide between interview volunteers based on my goal of having students from a range of demographic backgrounds, and 2) to help me to organize students into groups based on their relative facility with markup and computer-mediated technologies. All 32 students completed the survey. The former goal, to identify potential case study students, was not possible because a limited number of student volunteered for interviews (5 in AWD and 4 in FYW); all students were made aware of the study in accordance with IRB protocol and asked to volunteer if they were interested. In the end, all nine students who volunteered participated in interviews.

Student writing

All 32 students also granted me permission to collect, analyze, and excerpt from their de-identified writing produced in the two classes. Permission was granted through an informal consent form (Appendix A). Two types of writing were gathered:

1. Student XML files: for each class, three major writing projects were completed using XML. Students “handed in” their writing projects by committing their XML file to the course GitHub repository, which saved each iteration of the assignment as a version each
time the students would “commit” their changes to the shared class repository, hosted on
GitHub. Each assignment required at least three commits: an initial draft, one commit
from a peer reviewer, and a final draft.

2. Student reflective writing: throughout the course, students were asked to write low-stakes
reflective posts which were publicly posted on the course blog (called “design entries” in
AWD) or Google Community page (called “GC posts” in FYW). In addition, the final
project in FYW was a reflective essay, which was not written in XML. This was added to
FYW and replaced a more informal final design entry in AWD because FYW had the
benefit of a full 14-week term, rather than the compressed 7-week summer term for
AWD.

Version Control Histories

As I mention above, the course used GitHub as a shared repository where all XML files
were available to students—the class schema, the XML template files developed as part of the
genre models, and the individual XML files written by students. Writing in XML made drafting
and revision continuous. All work, including peer review, took place in the same individual file.
Through version control histories, the records of those files are available. Each student had a
local folder on their own computer that they would update before and after each writing session.
This meant that students had access to their own and their classmates’ finished and in-process
writing locally on their computer. GitHub Desktop, the graphical user interface (GUI) used by
both courses to facilitate version control, requires a “commit message” anytime a change is
saved and synced to the shared repository. Ideally, each time a student finished a writing session,
they would “commit” that writing to the shared repository with a “commit message,” a short
description of the change made to the document. In practice, commit messages were not as
descriptive as one would hope (this is a common problem in professional programming projects as well, see Figure 3. Rather, students often fell into the familiar habit of using commit messages to mark draft numbers and other superficial features, rather than describing changes made in that commit. Although the commit messages themselves are a bit spotty among the two courses, the version histories are there and differences between versions of a document are parsed and visualized by GitHub.

This data source is an affordance of the workflow enabled by writing in XML and represents, to my knowledge, the first such use of version control histories as writing process data in writing studies.

Class schemas and genre models

Students developed “genre models” in this class (see “Overview of the Pedagogy” in the Introduction to this dissertation), which consisted of a prose documentation file sometimes called a “pseudo schema” (containing written definitions and usage rules for all schema elements, attributes, attribute definitions for a given genre) and an XML template file (containing an XML skeleton of the schema for students to use as starting points for their individual compositions). Together, these documents were used by me to create a single schema file for each class, written in a schema language called RelaxNG (an instance of XML).

Like the individual XML documents, the version control histories enabled the development of the class schemas and genre models to be traced over time. The resulting schema files are extensive (2215 lines for AWD; 1684 lines for FYW). The full schema files are available through the Digital Appendix site: http://markup.kevingeraldsmith.com and I refer to these lines when excerpting directly from a course schema.

Reflective teaching journal
After each class and interview—and at other times during the study—I wrote a reflective teaching journal entry, in which I described the class meeting or interview, noted my impressions and observations, identified emerging patterns and questions, and generally reflected on the course and my pedagogical practice. These entries were modeled on field notes common in ethnographic research. Most followed a format of a description of the class session or interview, followed by a reflection, including questions and notes on emergent patterns in the classes; the 62 entries I wrote range in length and level of detail, but were generally around 300-500 words.

Data Analysis

In this section, I recount the recursive and inductive process of data analysis I undertook, noting as well how students designing schemas and encoding their own writing functioned as a form of preliminary qualitative content analysis. This method of analysis aligns with my teacher research framework as it strives to honor the inside perspective of teacher and learners in classrooms.

As is clear from the data sources described above, the data for this study was extensive. Consonant with a Grounded Theory approach, the analysis that I undertook was concurrent with data gathering (Farkas and Hass). I began open coding the interviews for emerging themes based around my research questions, writing thick descriptive profiles of the case study students, reflecting on my teaching journal, and memo writing to codify emerging theories that addressed my research questions. As the data began to pile up, I began to notice themes across the interviews, including a focus on reading practices, discussions of transfer across the class and into other contexts, and critiques of the writing environment itself. As new interview data was gathered and transcribed, I would code those data according to my emerging scheme, noting
developments, and writing reflective memos. I would then revisit earlier interviews with modified questions.

Throughout the course, students were engaged with the task of creating and using markup schemas that described genres and their own writing. For the study, the schema files and encoded texts functioned both as sources of data (as described above), but also a form of inductive, qualitative content analysis. A closer examination of the procedures of the study will help to explain what I mean. As students developed schemas, they developed elements, attributes, and attribute values associated with the genres they were studying and producing (see Introduction section “Overview of the Pedagogy”). These components developed out of a bidirectional relationship between their genre research and their needs as writers of the genre (see chapters 3 and 4 for extended discussions of this relationship). As they composed texts in XML, they marked their writing with the emergent components they developed in a process akin to what Wendall Piez calls “exploratory markup”—that is, markup which proceeds from data to a model rather than having a model imposed upon it (151). Where previous approaches to markup-based writing courses were top-down, proceeding from a schema or Document Type Definition created \textit{a priori} and then applied to student writing (Conatser; Desmet et al.), bottom-up schema development asks students to collaboratively study and analyze a given genre, design a set of components that constituted a model of that genre, and mark in their texts where the components they identified appear. Readers may notice the similarities between this model-building and marking and inductive methods of coding textual data. In fact, in theorizing this approach to markup, Piez recognizes its potential as a method of data analysis for the social sciences:
It could prove to be a useful methodology in psychology, sociology, economics—any study with a complex and manifold data set—and a source of hitherto-unthought-of ontologies and modeling techniques. (Piez 152)

Exploratory markup, according to Piez, can be applied to large, unwieldy, and unpredictable data sets—unstructured survey responses, interview transcriptions, and textual data about which there is little to no a priori knowledge. For the classes, a model of a particular genre “emerged” as the more exploratory codes cultivated by students were consolidated and codified in the collaborative schema files.

This activity served the pedagogical goals of the course, to be sure, but also saw students perform qualitative content analysis of their own texts, coded according to the emergent model. Encoding a text—marking a portion of a text with a particular tag—makes a claim about that text that also makes claims about every other instance of tag. Encoding is a highly interpretive and rhetorical act, as Jacqueline Wernimont and Julia Flanders have pointed out:

The role of markup is to instantiate, to bring into communicative reality, the encoder’s ideas and beliefs about a textual ecology that is oriented towards a particular artifact but is not limited to representing that artifact. Rather, the markup may represent a much broader context of interpretation, related information, and argumentation for which the text itself is only the catalyst or point of interpretation. (Wernimont and Flanders “Possible Worlds” 260)

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16 Qualitative content analysis is a method of analysis that seeks to classify textual data into categories of shared “manifest” or “latent” meanings (Schreier). For a useful overview of qualitative content analysis, see Schreier, *Qualitative Content Analysis in Practice*. 

In other words, the markup of an encoded text expresses beliefs and ideas, not only about the text itself, but also about the “textual ecology” within which the particular object resides. All of my analysis of student writing proceeded from this initial ‘coding.’ It was built into the analysis in two primary ways. First, I used students’ open coding of their writing to consolidate schematic components according to function to analyze the different genre models. I traced the development of the genre models through the version control histories, coding the revisions made to the model according to added components, eliminated components, revisions to documentation for components, revisions to rules of components. After identifying these patterns, I turned back to the interview and reflective writing data, analyzing the discourse of students as they developed this coding system to search for explanations. I triangulated data from students’ schematic components, their talk, and their reflective and collaborative writing to develop four case studies in an attempt to understand, describe, and explain these patterns in chapters 3 and 4. Second, as I coded, recoded, and analyzed interviews, I would also mark what I called “traceable moments,” which demonstrated use of the schema in practice. The XML codes applied by students were instrumental in exploring these process moments, as I could trace the development of students’ writing through the version control histories gathered through GitHub, enabling me to compare revisions to the genre model to revisions in their individual writing.

In addition, the design of the schemas meant that the distant reading techniques I undertook using BaseX—an XML database management system which allows users to make queries on XML data—were structured according to students’ analyses of their own writing. These queries were used to compare students’ deployment of schematic components and were integral in developing the case studies in chapter 5. That is, the development and deployment of
the schema mediated what I was able to see as a researcher as I sought to understand their writing.

Collaboration

As I note above, the courses out of which this research grew were designed to be student-centered. Throughout the study, I thought of students as collaborators in both the teaching and research aspects of this project and encouraged them to think of themselves in that way as well. However, it is important to keep in mind that these measures do not fully ameliorate the unequal authority of a classroom. Rather, “collaborative research creates a political context among participants” that must be continually accounted for in research (Connelly and Clandinin 86). And I do not want to make the claim that students were full co-researchers in this project: they did not develop the initial research questions or interview questions, nor did they take part in discourse analysis of interview data or reflective writing. Yet, I do want to point out that taking seriously students’ encoding decisions as a method of preliminary data analysis honors their perspectives as knowledge makers in the classroom. Proceeding from their analysis in further analytic activities sees students’ perceptions as the foundation upon which findings of this study are built. To my mind, their analysis is inseparable from mine.

In practice, data analysis was not as linear a process as is implied by this representation. Phases overlapped with one another, as I returned to the component definitions described by students, the interviews, and the reflective and collaborative writing recursively to develop and test working theories of the phenomena identified.

Design as Research
What is difficult to express in the outlining of methods is the dynamic nature of the process as it actually occurred. Because teacher research is simultaneously aimed at producing research objects and improving practice, methods and goals may shift, as they are “continually [r]eformulated by those who are working in the classroom” (Berthoff 30). While this does not make teacher research a free-for-all—ultimately, systematic data collection means that we must proceed in orderly ways—a teacher research stance does enable a fluidity that I was alert to in the course of my study, and that I think provides a model and a provocation for how we carry out classroom-based studies in composition, especially those that involve new modes or methods of composing.

In this final section of the chapter, I want to suggest that there is some value to understanding our classrooms as part of, but not wholly encompassing, genre ecologies because it can help us to notice where and how we might intervene in those ecologies—to find what Spinuzzi and Zachry call “ecological niches” where we can influence the genre ecology to promote particular pedagogical goals (177). In their study of computer documentation systems, Spinuzzi and Zachry describe genre ecologies as contingent, distributed, and—important for my purposes—"relatively stable" (175, original emphasis). That is, while a genre ecology framework recognizes the role of ad hoc and unofficial genres that users—students, in my case—recruit to supplement (and sometimes circumvent) the official genres of the ecology, these ecologies stabilize over time. They write, “Just as genres themselves are relatively stable while still being dynamic enough to respond to contingency (Schryer, 1993), genre ecologies achieve relative stability—a dynamic equilibrium—over time” (176). Their conclusion, the “we are at best co-designers [of documentation systems] with our users” (180) is relevant for my purposes. As students engaged with the official genres of the class (Oxygen, the course site, GitHub, etc.; see
Figure 1), patterns began to emerge, especially in interviews, of the unofficial genres students recruited to help them coordinate their work.

As I interviewed AWD students about their experiences in the first iteration of the markup course, I began to recognize patterns in how students were taking up XML in their writing, reading, and thinking processes, and what other genres they were bringing to their writing tasks to mediate their work. As well, students began to reflect upon and critique the official genres of the classroom ecology (Figure 1), and, at times, suggested ways to revise the workflow, the course site, and the Oxygen interface to improve difficulties and bolster what they found to be productive. For example, many students were bringing another word processing application (like MS Word or Google Docs) to bear in their writing, using them to compose their writing before bringing that writing into Oxygen. I had not anticipated this in planning the
course, and I felt that it mitigated some of the potential benefits of composing in the Oxygen interface (e.g., prompting invention, metacognitive awareness, and reflection on the collaborative model of the genre through things like tag prompts and validation error messages).

In interviews and reflective writing, students pointed to spell check of all things as a primary driver of the recruitment of other word processing software. Oxygen does not have automatic spell or grammar checks that many students had grown used to. As well, students were not composing in Oxygen because they could not see formatted versions of their writing until I updated the course site, which happened on a schedule, but not necessarily on demand. In a teaching journal entry, I wrote, “concerns of processing, formatting, and display were never out of their minds. This makes me question how much XML really defamiliarizes writing so much as it just interrupts normal writing processes (like spell and grammar check).”

Finally, students reported in interviews and reflective writing that peer review was more effective than their previous experiences, because the specificity of the tags enabled readers to recognize shared rhetorical resources and make connections between their own and their peers’ writing. Yet, many students also complained that peer review was logistically difficult, because it required shuttling between different versions of the texts: the actual XML file and the two versions available as visualizations on the course site.

The framework of teacher research enabled me to reflect on these concerns, and search for ways to move forward. I noticed that my students were describing their experiences of the writing environment from the perspective of users. Because of this, I first looked to rhetorical theories of usability. In Rhetorically Rethinking Usability, contributors take up usability for a range of rhetorical purposes. Most useful for my purposes is Douglas Eyman’s contribution, which seeks to articulate usability as a qualitative research methodology. The affinities between
usability and teacher research are clear in his chapter: “When we ask students to tell us their stories and we invite them to participate in course design decisions, we should provide heuristic guides that will help us gather information about our students as users – information that will specifically inform our pedagogical practices” (“Usability” 224). Here, we see the relationship between theory and practice, engagement with students as collaborators, and a call for systematic data analysis of students as users. He goes on to draw on participatory design to figure students not just as users, but as collaborators and co-designers: “[Usability] presents the opportunity for an ideal collaboration of researcher and research participant in studies of rhetoric and writing—but it can only do so via a synthesis of methods that foreground context, narrative inquiry, and participatory design” (“Usability” 214). This call to participatory design changed the way I thought about my study.

Clay Spinuzzi describes the methodology of participatory design as a “way to understand knowledge by doing: the traditional, tacit, and often invisible [...] ways that people perform their everyday activities and how those activities might be shaped productively” (163). Growing out of Marxist theories of worker empowerment from Scandinavia in the 1970s and 80s, participatory design has close ties to the tradition of participatory action research in rhetoric and composition, part of the umbrella of practitioner inquiry (Spinuzzi 163-64; Cochran-Smith and Lytle Inquiry 39). Participatory design studies the tacit knowledge that workers bring to bear as they engage with technological and technologically-mediated systems. The discovery and interrogation of this tacit knowledge is not meant to describe practice, but to reveal ways that systems, workflows, and practices can be improved and actually improve those systems, practices and/or workflows. Thus, participatory design emphasizes co-research and co-design,
and researcher-designers “see themselves as facilitators who attempt to empower users in making their own decisions” (Spinuzzi 167).

By making the object of study the tacit knowledge of users of a technology or system, participatory design research refigures ethnographic methods like observation and interviewing as methods to continually bring the data back to participants “who co-interpret it, co-analyze it, and do-design responses to it” (Spinuzzi 168). As Spinuzzi outlines, in true participatory design research, “the traditional methods are … re-networked or reconfigured to meet the design orientation” (168).17 For me, participatory design research provided a model, especially as I moved from AWD to FYW, for engaging students more explicitly as co-designers of the writing environment. 18 As I planned to implement the course in FYW, I made targeted changes, responding to the “ecological niches” highlighted by my AWD students. These tactical interventions in the genre ecology added new nodes to the official genres of the course ecology, and sought to address workflow issues that prevented some students from successfully engaging with the official genres of the ecology: 1) added a new visualization to the course site, which was designed to combine the two versions and make the markup visible on a formatted text; 2) I updated documentation with some directives on how to make Oxygen more amenable as a composing interface (like enabling spell check and line wrapping); and 3) developed a “test

18 Again, a genre ecologies framework would likely call all users of writing systems “co-designers” to a certain extent, regardless of whether or not it is acknowledged by the designer (Spinuzzi and Zachry). Here, though, I mean to signal explicit engagement of students as co-designers as a matter of methodological practice.
XSLT stylesheet” that would enable students to see a preliminarily formatted version of their XML document on demand.

These may seem to have been small changes to the genre ecology, but they had real pedagogical benefits. For example, Zoe suggested that the annotated version of her peers’ texts was particularly helpful in her peer review process, and that this visualization also helped her move more easily to writing new genres (Interview 2). As well, more students (though certainly not all) reported using Oxygen as their primary interface for composing.

By bringing participatory design into my methodological purview, I approached FYW with a fuller sense of the genre ecology as an open, rather than closed system (Spinuzzi and Zachry). I was able to anticipate more readily that students would explicitly and implicitly identify “ecological niches,” and engage them more fully in thinking through the constraints of writing in XML. As a class, in reflective writing, and in interviews, I encouraged students to
more actively note the affordances and limitations of the technologies they used to compose. Noticing the environment—paying attention to the system’s effects on their writing, reading, and thinking processes—was beneficial in and of itself, an argument I make more fully in chapter 2. Methodologically, the iterative and tactical (re)design of the genre ecology became a primary goal of the research.

As well, the longer 14-week FYW session enabled me to actually prototype and test some features that grew out of students’ suggestions and accounts of their composing processes. For instance, based on a suggestion from Daniel to see more of how his classmates used schematic components for project 1, I brought BaseX into class to let students explore their textual data and helped them to make queries on it according to their interests. BaseX can visualize XML data in ways that allowed students to explore their own and their peers writing through the tags they had used. This added a new official genre to the ecology of the course (Figure 3).

Figure 3: A bounded view of the revised official genres of FYW
This activity was well received and I am now working to integrate this possibility more fully into future iterations of the pedagogy. Other suggested redesigns were more complex. Zoe, for example, offered other ways of leveraging markup to visualize student writing: “multiple colors” indicating nested tags, “boxes” to represent the abstracted structure of each document, and a combined view that is “both zoomed out and zoomed in at the same time” (Interview 3). She said that she thought these visualizations would improve the writing environment by offering students alternative ways of understanding and thinking about their texts. These suggestions will help me to (re)design the writing environment for future classes, future co-designers. In other words, the expansion of my methods to include aspects of participatory design have helped me to make the approach more effective by honoring and tactically responding to students’ felt experience of writing in XML. This expansion, to my mind, aligns with the goals of teacher research—to honor the inside perspective of teacher and learners in classrooms—and provides a model for other researchers. My experience suggests that we might look to participatory design as a way to systematically track students distributed and contingent uptakes of the technologies and tools we introduce into classrooms. Doing so, we might recognize patterns in those uptakes, and discover ecological niches into which we might intervene to re-design the ecology. I do not claim for my methodological approach what Spinuzzi would call “true participatory design research,” because it may not fully meet the three criteria he outlines there. This outline of my methodological shift is meant not as a model, but as a speculative provocation.

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19 Participatory design must 1) improve the quality of life for workers, 2) be collaborative, and 3) be iterative. This is not to say that one could not meet these criteria in a classroom-based study, just that these criteria were not my explicit focus.
Bringing participatory design into teacher research provides a model for expanding the focus of teacher research to explicitly include the technological ecology of a given classroom site. Of course, as Spinuzzi is quick to point out, “participatory design research takes an enormous amount of time, resources, and institutional commitment to pull off” (169). Yet, I still think that adapting aspects of participatory design research can be part of a methodological stance towards classroom-based research. This is not limited to, but especially useful for those classrooms into which we integrate and employ novel technologies and approaches. Bringing together teacher research and participatory design has the potential to shift us from research questions to “purpose statements” and orient our methodologies “toward development” (Spinuzzi 169). This has implications for our design of studies as well as the objects of our research activity. What might our research objects look like when we design studies to develop technologies and technological systems? Can we invite more students voices into the design of classroom ecologies, and thus empower students as designers of their own pedagogical experiences? What role do writing instructors have in the design of the technologies and systems we introduce into classrooms?

I do not mean to suggest that all writing teachers need to learn to code, but rather that we recognize that we and our students bring technologies into the classroom (from pencils to iPads) whether acknowledged or not, and that these are recruited and coordinated in the completion of complex tasks. Once we have recognized this, one way to move forward is to develop inquiries into how those technologies shape the possibilities for writing, and imagine ways we might intervene in them, directly or indirectly. In this way, we might leverage inquiry into our classrooms to bolster the goals of teacher research.
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Chapter 2  
Procedural Design, Genre, and the Spaces of Writing Classrooms

Consider Microsoft Word. Really, MS-Word. The default layout orientation for all academic writing, if not all writing, is portrait. How many of us have asked our students to change the orientation from portrait to landscape? What can a text do from a different orientation? (Boyle 91)

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As Casey Boyle rightly points out in the epigraph to this chapter, we do not often ask students to interrogate (or change) their orientations to a text in a material way. MS-Word orients us—by default—to a particular view of a text: a virtual 8.5 by 11-inch piece of paper in portrait. And Boyle’s point is that is requires effort to disrupt, or even notice, this default orientation. The habitual presentation and uptake of the default layout conditions users to orient themselves to texts in this way, delimiting the possibility space for writing. To delimit in this way is not to determine—users can easily change the layout to landscape, add columns, change the size of the virtual page, or use a different word processor—but rather to mark a boundary: to suggest or to persuade.

I am not, in this chapter, arguing against the use of MS-Word (although I do think there are other word processors that are better designed to facilitate academic and other genres of writing), but rather to suggest that these design features, like default orientation, are properly understood as rhetorical in that they work to shape and persuade users towards certain behaviors and habits of mind. That is, the design of a writing environment has rhetorical effects on a user “through the mediation of thought and action” (Bitzer 4). By interacting repeatedly with MS-Word, by being continually prompted to orient ourselves to a certain view of a text, we are conditioned to accept a particular view of what a text can be. This recalls Kenneth Burke’s articulation of identification, his expansion of Aristotelian rhetoric as persuasion, in *A Rhetoric*
of Motives. There, he describes identification occurring, at times, semi-consciously and through mundane repetition: “[O]ften we must think of rhetoric not in terms of some one particular address but as a general body of identifications that owe their convincingness much more to trivial repetition and dull daily reinforcement than to exceptional rhetorical skill” (26). And, further, that these rhetorical effects aren’t limited to word processors or digital technologies, but apply to all sorts of things. When we, as instructors, fail to interrogate the rhetoric of the composing environments we invite, allow, or create in our classrooms, we unselconsciousness impose this rhetoric upon our students. This is how MS-Word works, as Boyle suggests above, to delimit the possibility space for writing. What might be possible, Boyle asks, if we interrupt this default orientation? Or, we might add, choose a different environment for composing altogether?

In this chapter, I approach these questions through the framework of procedural rhetoric, a concept from game studies introduced by Ian Bogost. Procedural rhetoric asserts that rule-based processes—procedures—both computational and analog, can be rhetorically expressive. That is, rule-based processes anticipate, model, and constrain human behavior to express arguments that are “effective and persuasive” (Bogost Persuasive Games 3). Or, to expand on Bogost’s view of rhetoric beyond expression (outcome), rule-based processes can serve to “form attitudes or induce actions in other human agents” (Burke 41). What this framework offers is an

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20 We may think again of Burke, and the typographical experimentation in Collected Poems, 1915-1967. Richard Lanham writes that, in his “Flowerishes,” Burke, “uses the conventions of typography to pun on orientation” (35). He continues, “To ‘orient’ ourselves to this self-conscious form of proverbial wisdom, we must, like an illiterate pretending to read, turn the book round and round in an effort to make sense of it. We are made aware of the book as a physical presence in our hands. The printed surface is rendered opaque rather than transparent by changes in typeface, font size, and sequentiality” (35).
extension of rhetorical theory that accounts for procedures, a fundamental property of computation, as a form of rhetorical discourse (Bogost; see also Murray). So, MS-Word has a rule-based process designed into it which, by default, presents an 8.5 by 11-inch portrait-oriented virtual page when you open a new document. This process expresses an argument, whether intended or not, which forms attitudes (orientations) in users towards text.

I apply this concept to the writing classroom, arguing that the procedures enacted there by and through genres, software, and human interaction shape the real and imagined writing environments of students in rhetorically meaningful ways. Given recent and ongoing shifts in the environments and tools for communication—computation is increasingly ubiquitous, interfaces increasingly invisible, technologies increasingly embedded and embodied (see, for example, Boyle; Brown Jr.; Brock and Shephard; Emerson; Bratton; Easterling)—it is critical that writing teachers work to make visible the designed spaces of writing environments, to make them available for critique, and—where possible—transformation. I advocate for a procedural design approach to pedagogy, which requires a heightened sensitivity to the role of procedures in writing classrooms with the goal of inviting students to notice, build, manipulate, and critique the designed environments of the writing classroom.

It bears mentioning that the term ‘space,’ in the sense that I use it in this chapter, is an active construction, a “social space” (Lefebvre) made up of metaphor and material (Reynolds). This is important because my concern is with how the writing environments of students are designed and socially shaped. These environments may be material—e-portfolios are a good example: we select an environment within which students compose e-portfolios or we ask students to choose an environment for that task, the design of the environment mediates students’ thinking (Silva et al). These environments are also metaphorical, mental models of the perceived
space of composing, shaped by assignment prompts, class discussions, the examples of writing we provide, and so on.

This approach is an important supplement to Rhetorical Genre Studies theories of pedagogy, which seek “to make genres analytically visible to students so that students can participate within and negotiate them more meaningfully and critically” (Bawarshi 141). RGS theorists have drawn attention to the way that classroom genres, like the writing prompt, mediate classroom activity (Bazerman) and shape the “places of invention” in which students locate themselves and articulate their desires (Bawarshi). What is missing in this account is the rhetorical role that procedures—rule-based processes that impose constraints—play in the shaping of the material and metaphorical spaces of composing. Syllabi, assignment prompts, and assessment schemes are a few of the many classroom genres which create, enforce, and attest to the procedures enacted in the classroom. These procedures shape and constrain the environments, tools, and behaviors by and through which students compose. I argue that, following the ethos of RGS pedagogues in the teaching of genre, we should seek to make these procedures “analytically visible,” and, further, that we should invite students to design and critique them to encourage students to take an active role in shaping writing tools and environments. In doing so, we might begin to ask who is invited to author these procedures? Who shapes the tools and environments of composition? And, how, why, and where might we invite students into the shaping of those tools, environments, and behaviors?

I demonstrate the potential of procedural design by examining the two courses of my study, which invited students to work as procedural designers. That is, students in these classes did not just work within and through constraints, but were invited to interrogate critique, and create them. This is a form of rhetorical production not normally open to students, as procedures
are generally authored by instructors, writing program administrators, software designers, and others. I examine two related lines of inquiry: 1) how writing in XML and writing schemas in these classes opened up opportunities for students to craft, respond to, and revise procedural constraints, which in turn, shaped their material and metaphorical writing environments in ways which reflect their rhetorical goals being negotiated with the procedural rhetoric of the class; and 2) how this rhetorical practice made visible to students the material and metaphorical designs of writing environments and, in some cases, facilitated reflection upon and critique of those designs.

**Procedural Rhetoric in and of the Writing Classroom**

*Procedural Rhetoric*

The concept of procedural rhetoric was first articulated by Ian Bogost, who defines it as “the practice of persuading through processes in general and computational processes in particular… [It] is a technique for making arguments with computational systems and for unpacking computational arguments others have created” (Bogost *Persuasive Games* 3). In this formulation, Bogost brings together the concept of procedurality as articulated by Janet Murray—the computer’s “defining ability to execute a series of rules” (Murray 88)—with the concept of rhetoric drawn primarily from Aristotelian notions of rhetoric as persuasion. According to Bogost, the persuasive and expressive arguments of procedures “are made not through the construction of words or images, but through the authorship of rules of behavior, the construction of dynamic models” (“The Rhetoric” 125). He uses the term “procedural constraints” to describe the rules which govern how someone can interact with that system. As Murray puts it, procedural constraints are “the rules for the interactor’s involvement, the
conditions under which things will happen in response to the participant’s actions” (Murray 187). Constraint is an important term in this chapter, as I use it to describe how students use XML to shape their digital writing environments. That is, by designing schemas, students use XML to constrain their writing environment, test those constraints, and revise them. To use Murray’s terminology, students are both authors and participants/interactors. In this usage, constraints are not merely limitations, but are expressive and productive.

Constraint has resonances in both writing studies and digital humanities literature. In writing studies, one immediately thinks of Lloyd Bitzer’s articulation of constraints as a constituent of rhetorical situations: “Besides exigence and audience, every rhetorical situation contains a set of constraints made up of persons, events, objects, and relations which are parts of the situation because they have the power to constrain decision and action needed to modify the exigence” (8, emphasis in original). As a rhetor enters a situation, Bitzer writes, “his discourse not only harnesses constraints given by situation but provides additional important constraints” (8). In this sense, and as I will use it in this chapter, constraints do shape discourse, but that does not mean they are inherently restrictive or limiting. Discourse “harnesses” and “provides” constraints from/to a given rhetorical situation. There is a productive and mutually informing relationship at work. Rather than merely limiting, constraints can be productive, or help to “create expression” as Bogost puts it (Persuasive Games 7).

In digital humanities work, working within and through constraints is likewise characterized as a potentially productive. As outlined in the introduction, Julia Flanders refers to the “productive unease” of working through the constraints of digital representation (n.p.). For Flanders, working through constraints creates productive moments of tension, provoking “that same oscillating, dialectical pulsation that is the scholarly mind at work” (n.p.). Drawing on
Bitzer and Flanders, my use of constraint in this chapter rests on the notion that constraints can be productive of certain kinds of thinking and certain kinds of discourse production, which, in my view, makes them an important site of inquiry for teachers and researchers and a potential site of participation for students. Procedural rhetoric, which likewise recognizes the productive nature of constraint, widens the scope of what to consider when we consider the constraints of a writing classroom.

To better understand what procedural rhetoric might reveal about writing classrooms, we must unpack and expand on this concept. First, to recognize the role of procedures outside of computational systems; second, to understand procedural rhetoric as both an analytic and productive rhetorical method; and third, to expand upon Bogost’s definition of rhetoric beyond Aristotelian persuasion.

The value of procedural rhetoric as a framework is that it brings procedures into rhetoric as a unit of discourse. Bogost “identifies an intrinsic quality of digital texts that is not easily or sufficiently addressed by classical rhetorical theory or method (and that is also not directly taken up in accounts of contemporary rhetorical theory or practice)” (Eyman 41). To apply this concept here, though, procedurality must be broad enough to account for the material role of technologies in the writing classroom (digital and otherwise) but not limited to digital technology as such. Bogost provides a good starting point:

*Procedurality* refers to a way of creating, explaining, or understanding processes. And processes define the way things work: the methods, techniques, and logics that drive the operation of systems, from mechanical systems like engines to organizational systems like high schools to conceptual systems like religious faith. (*Persuasive Games* 2–3)
In practice, however, Bogost’s work is primarily concerned with video games, and so he does not explore this wider definition of procedurality. Some scholars have begun to apply procedural rhetoric to non-computational realms. The best example is James Brown Jr.’s 2016 book, *Ethical Programs*. In it, Brown explores a wide-ranging set of case studies that examine ethical predicaments presented by networked life and the procedures, or ethical programs, people and systems create and enact to navigate those predicaments. In a relevant chapter, Brown uses procedural rhetoric to unpack the processes by which the 2008 Obama campaign both maintained hierarchical control over campaigners while simultaneously facilitating peer-to-peer interaction, and suggests ways that users of procedural systems might discover, interrogate, and write back to procedures, remaking them according to their own rhetorical goals (70). Brown’s framework spans the digital and analog—from websites to phone banking scripts—reflecting the distributed nature of procedurality in social spaces. This application of procedural rhetoric is central to my reading of procedures in the writing classroom, as classrooms are similarly mediated by digital and analog procedures.

Brown’s work demonstrates the value of procedural rhetoric outside of computational systems: that the underlying structures and ideologies of a wide range of texts (and systems of texts) can be revealed by applying procedural rhetoric as an analytic method. Eyman recognizes this value, “One of the key values in this approach is the possibility of revealing the underlying structures and ideologies of certain digital texts—a move that is a central practice of contemporary rhetorical criticism” (41). This is evident in Kevin Brock and Dawn Shepard’s work, which outlines how algorithmic systems like search engines and dating sites use “procedural enthymemes” as rhetorical devices to shape how users interact with and understand their outputs (21). This work highlights how procedural systems can work to conceal or elide
their own rhetorical goals—to persuade users toward particular ways of interacting with and interpreting information while giving the appearance of transparently performing a user’s desired action (Brock and Shephard). We, at times, may not be aware that we are interacting with a procedural system, nor the rules of that system, nor how those rules constrain our possible behaviors. This makes procedures an especially important focus as they become more and more ubiquitous through the increasing integration of computational systems into our daily lives.

In addition to analysis, Bogost claims that procedural rhetoric is a method of production: Just as verbal rhetoric is useful for both the orator and the audience, and just as written rhetoric is useful for both the writer and the reader, so procedural rhetoric is useful for both the programmer and the user, the game designer and the player. Procedural rhetoric is a technique for making arguments with computational systems and for unpacking computational arguments others have created. (Persuasive Games 3)

Bogost’s oeuvre of video games attests to the applicability of procedural rhetoric as a “technique for making arguments.” Within an expanded notion of the applicability of procedural rhetoric within human interaction, this is an important point for asserting the value of procedural design: that procedural design, as a pedagogical framework is not merely a method for analyzing the procedures of the writing classroom, but also a technique for designing the writing classroom—including the material and metaphorical environments in which our students compose—in ways that align with our rhetorical goals and those of our students.

However, as Doug Eyman points out, Bogost’s conception of “rhetoric is somewhat simplified… he simply states that ‘Rhetoric refers to effective and persuasive expression’” (Eyman 41). Bogost does claim that procedural rhetoric also adheres to a more contemporary model of rhetoric, drawn from Burke, which Bogost describes as expression—to convey ideas
effectively. Yet, his concern is mainly how “serious video games” persuade users to change their opinions towards cultural topics like fast food, capitalism, and the like (*Persuasive Games*; “The Rhetoric”). In the larger view of procedural rhetoric, Eyman’s critique is well justified, as Bogost does seem to be focused primarily on “outcomes (reception, via style, as Ramus had suggested) rather than the process (as entailed in invention and arrangement)” (Eyman 35). For the work of this chapter, we need to expand this definition of rhetoric beyond persuasion to more fully account *how* procedures function rhetorically.

To this end, Matt King builds upon Bogost’s connections between procedural rhetoric and Burkean rhetorical theory, arguing that in Burke’s discussion of attitudes and identification, we can begin to glimpse the procedural qualities of rhetoric itself. King’s view is that we can see procedural rhetoric in Burke’s “terministic screens,” the frames or “logics through which we process and give meaning to our experience” (King n.p.). These King likens to the rule-based processes invoked by the term procedure. These logics are not fully determinative, but are inherently interactional and contingent upon situation. “In this sense, rhetoric’s procedures undo, undercut, implode upon, reposition, and call into question themselves, recognizing the extent to which they are shaped by contexts that shift in time and by language that never fully grasps the other it gestures toward” (King n.p.). In other words, rhetoric’s procedures are not static, deterministic rules, stubbornly governing experience and interpretation, but are responsive and thoroughly contextual. In this view, procedures become something like contingent models of behavior and thought; they structure and constrain, but are also flexible.

What I find compelling about King’s exploration of rhetoric’s procedures is that it forwards a *contextual* view of procedurality, which is important to understanding procedures as rhetorical. It is through *interaction* in a specific situation that procedures become meaningful,
that they become rhetorical: “[R]hetoric is synonymous with meaning, for meaning is in use and context, not words themselves. Knowledge and belief are products of persuasion, which seeks to make the arguable seem natural, to turn positions into premises—and it is rhetoric’s responsibility to reveal these ideological operations” (Bizzell and Herzberg 14). In other words, to understand the rhetoric of a given procedure, we must interact with it (or trace others’ interaction). Think of the poet, working within and through (or pushing against) the structure of the sonnet or the precise rules of the haiku. Procedures are rhetorical insofar as they adapt to shifting situations and contexts, shaping and facilitating the actions, behaviors, and attitudes of audiences, writers, and speakers without fully determining them.

In my discussion of the rhetorical opportunities offered to students as procedural designers in the writing classroom, I follow King’s notion of procedures as (sometimes invisible or tacit) structuring models that, through interaction, condition, but do not fully determine, how students make sense of—and compose in—the genres of the classroom. I contend that, when they are invited, students use procedures as rhetorical strategies for processing and expressing genres and that these procedures are rhetorical because they are responsive to dynamic situations and are meant to “form attitudes or induce actions in other human agents” (Burke 41).

Procedural design is not a term that points to a specific set of “best practices,” nor does it designate a specific curricular moment. Rather, procedural design is an orientation towards pedagogy that seeks to invite students into the process of building, manipulating, and critiquing writing environments in the recognition that the design of such spaces does not exist prior to or outside rhetoric, but is itself rhetorical, does itself express arguments. This is true in the writing classroom—where we may have some control over the writing environments and tools our
students use—but it is also true of the environments and tools for communication which are used outside of classrooms.

Procedural Rhetoric in the Writing Classroom

As we turn now to the procedural rhetoric of writing classrooms, consider, as an example, the common requirement that students revise their writing. When we require this, we enact a set of procedures—rule-based processes—that may include peer review, drafting, instructor feedback, and so on. These processes constrain student behavior in ways that invoke particular values about writing, condition student behaviors and responses, and seek to persuade students towards habits of body and mind.\(^2\) But the fact that instructors constrain student behavior does not mean that we totally determine how students behave. Rather, procedures are contextual and negotiated through interaction. This is especially true in the realm of human interaction, as Brown’s work evinces. He closely examines a phone-banking script alongside volunteers’ different interactions on actual phone calls, noting where the procedural argument enacted by the script was open to rhetorical exchange, resisting the notion of procedures as static and totalizing (71).

In the writing classroom, this form of rhetorical exchange can be seen, for example, in the process of peer review. The process of peer review makes an argument that feedback, revision, and collaboration are valuable activities for the production of writing. To carry out peer review in

\(^2\) This focus on procedures, which condition and shape behavior through interaction, places an increased emphasis on what Chris Gallagher has called the “scribal behaviors” of students, and how the environments we design shape these behaviors (258). In his view, writing instructors ought to think about how the environments of writing classes work to “expand [students’] behavioral repertoires as writers,” and the research and pedagogical agenda of writing studies “ought to be capacious enough to encompass the textual and the scribal” (257). My contention in this chapter is that procedural design offers a framework through which we may interrogate, change, and invite students into the process of designing those environments.
a classroom, we enact a procedure or set of procedures, which impose a rule-based process or processes that constrain students to act in certain ways towards one another and towards writing. These processes as well move students through material space—bringing them together in real or virtual spaces to exchange papers (again, physical or electronic copies). Often, as in Brown’s example of phone-banking scripts, these procedures are outlined in and enacted by genres. As instructors, we might design the peer review in any number of ways that emphasize certain values or promote certain writerly behaviors—we may distribute guidelines, requirements, worksheets, or provide models of “successful” peer review to enact these designs. We may even invite students into the design of the peer review to invoke shared values in this process. None of this meticulous design, however, finally determines how students will interact with one another during peer review. Regardless of how strictly delimited the process is, there is always some amount of play, to invoke a term from game studies, within the process. Students act within the free space of the constraints placed upon them, the “free space of movement within a rigid structure” (Salen and Zimmerman as qtd. in Bogost *Persuasive Games* 42). Articulating how a procedural system works, Bogost draws on this notion of play, which, he argues, exposes the “possibility space,” of a procedural system, the “myriad configurations the player might construct to see the ways the processes inscribed in the system work” (*Persuasive Games* 42). In a classroom, we might also describe this possibility space as a space of invention—the real and imagined spaces where students produce writing out of and along with the constraints placed upon them in writing classes.

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22 Play, in the sense that Bogost uses it, is distinct from, though not altogether unrelated to how the concept is used in poststructuralist theory—to denote “shifting centers of meaning” (42).
This concept of a possibility space of invention has strong affinities to Anis Bawarshi’s articulation of genres as “places of invention” (9) and recalls Bawarshi’s work tracing agency and motive within these spaces through the work of Anthony Giddens and Pierre Bourdieu. In Bawarshi’s view, there is a dialogic interplay between the *structure* of the inventional space (genre) and the individual motives and actions of a writer inventing within that space, which feed back into the structure, perpetuating it but also shaping it. Genres are places where desires are structured, but also that structure possible or available desires. (Bawarshi 87-88). Mobilizing this concept for the writing classroom, Bawarshi outlines how the genres of the first-year writing classroom—assignment prompts, syllabi, and student essays—act rhetorically to articulate the subject positions of students (134). He writes, “students first have to situate and ‘invent’ themselves in our prompts before they can assume the position of student writer. In fact, … it is the prompt that tacitly invokes the position that student writers are asked to assume when they write, so that students read their way into the position of writer via our prompts” (129-130). These genres constrain, but do not fully determine, what “successful” writing looks like. They shape the possibility space in which students compose.

I am persuaded by this account of how genres structure possibilities for student writing, but I worry that Bawarshi’s focus on relatively stable classroom genres—like the syllabus and the writing prompt—may miss the role of procedures in the writing classroom, because procedures are often embedded within or enacted by genres tacitly. For example, a requirement that an essay be formatted as a .pdf or .docx file may tacitly assume students are working in MS-Word or a similar word processor. As we have seen, MS-Word has a default “orientation” to the page that may work procedurally to shape how students write and understand what writing is or does. This “orientation,” may align with our goals or it may not. The point is that the genre of the
prompt enacts procedures, sometimes implicitly, which help to shape the possibility space
composing, working rhetorically on our students to “form attitudes or induce actions” (Burke
41),\(^\text{23}\) sometimes in ways we do not anticipate. One way to bring RGS and procedural rhetoric
together is to study procedures as part of the formal qualities, or “material embodiments,” of
genres (Devitt 33).\(^\text{24}\)

Of course, I do not want to suggest a return to formalism in the study of genre. Rather, I
follow Amy Devitt in her call for a “re-fusing” of a thoroughly contextual consideration of
form—that is, “all material embodiments of a genre” (33)—to that of social action in the study of
genre. As she writes, “I reject formalism but accept materialism… The material reality of texts is
formal, but our approach to it need not be formalistic” (31). This notion of contextual/material
form pushes rhetorical genre theory towards a consideration of procedural rhetorics, especially in
the study of writing that takes place online or is mediated by computational systems in some way
(as are nearly all forms of communication, from word processing to Twitter). Devitt anticipates

\(^\text{23}\) Again, this example is extrapolated from Casey Boyle’s landscape-oriented “Response” to
Matthew Overstreet’s thoughtful “Comment” on Boyle’s College English essay, “Writing and
Rhetoric and/as Posthuman Practice.” I do not fully subscribe to the posthumanist reformulation
of reflection Boyle outlines, but his ideas about the rhetorical capacities of non-human actors is
certainly influential to my thinking in this chapter. In some ways, my articulation of the self-
assessment and reflection of students writing with and through the schema is akin to the “tuning”
he advocates for in his essay.

\(^\text{24}\) Another way of getting at the procedures of genres may be through the concept of uptake, the
“bi-directional relation that holds” between genres as they interact” (Freadman 40). I am
especially drawn to Dylan Dryer’s term “uptake affordances,” which describes lines of inquiry
concerned with how a text “facilitat[es] particular uses or deter[s] particular activities,” and thus
focus on “opportunities and constraints in the conventions that precede the encounter” (64). In
this view, how an uptake is enacted is shaped by the uptake affordances, which could include the
procedural constraints of a particular composing environment, even tacitly imposed.
this possibility in her discussion of HTML and blogging infrastructure as enabling and delimiting the possible formal decisions, and, thus, rhetorical possibilities, of bloggers.

In my view, procedural rhetoric can provide a potent vocabulary and methodology to bolster this contextual consideration of the material embodiments of a genre, one which examines how procedural constraints are enacted by and enact genres, how they facilitate and delimit the rhetorical possibilities of writers working within them (the possibility spaces they shape), and the possibilities for users to respond to and reshape them.

Procedural design, as a pedagogical orientation, asks us to recognize and interrogate the constraints we place upon students, and whether or to what extent the arguments made by those constraints align with our goals for the teaching of writing. Far from a turn away from RGS pedagogies and theories of genre, procedural design can be used to bolster those pedagogies through a focused and contextualized interrogation of the constraints of writing courses. Following Brown, this approach builds on the rhetorical exchange available once a procedural user discovers the possibility space of a procedural system by inviting students into these forms of rhetorical production, refiguring them as procedural designers. Rather than merely interacting within the constraints of a procedural system, students have a hand in designing them. There are ways we already do this in writing classes and programs. For example, Asao Inoue’s community-based assessment pedagogy involves students in the generation of grading criteria and the assessment of writing, 25 Jody Shipka’s multimodal assignment design eschews some typical procedural constraints enacted by assignment prompts by opening the modal possibilities for

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25 Though there is not room here for an extended discussion of this relationship, the intellectual work I asked of my students as they designed, used, reflected upon, and revised schemas is remarkably similar to the work of creating and applying “the rubric” in the classes described in Inoue’s “Community-based Assessment.”
students’ writing, and Mary Lourdes Silva et al. recently invited student voices into e-portfolio design and policy, allowing students to help shape their material composing environments. From a perspective of procedure, these efforts are very much connected to one another. Procedural design suggests that our approach to classrooms and pedagogical designs ought to be sensitive to the rhetoric of procedures as a way of examining the explicit and implicit constraints that shape the spaces available to students in our writing classes and as a way of identifying opportunities for students to participate in these rhetorical practices where it may facilitate their goals as writers and our goals for the teaching of writing.

In the rest of the chapter, I describe the procedural rhetoric of my markup writing classrooms and how students were invited into the construction of the constraints which shaped their writing environments through the design, testing, and use of schemas. I read across examples of student writing and interviews to show how procedural design was perceived and experienced by those students. My aim is not a systematic examination of the content of students’ procedural designs, nor of the writing they composed out of the inventional spaces they helped shape, though, at times, we will look at both schemas and individual writing. Nor is the aim here to reconstruct all 35 students’ experiences in this course. These more systematic approaches to the data will carried out in chapters 3 through 5. Rather, the examples employed here are meant to provide snapshots of a few of the many rich moments that illustrate my larger theoretical argument—that attention to procedural rhetoric in writing classrooms can work to bolster and facilitate the goals of those classrooms, and that inviting students into the rhetorical work of procedures has the potential to provoke remarkable moments of learning for students. The procedural system of the courses, I argue, bolstered the goals of rhetorical genre studies pedagogies by dramatizing the tension between conceptual and material representations of
genres. But it did not do this by imposing procedures from the top-down. Rather, this approach invited students into the rhetorical work of procedural design, which enabled them to help shape their writing environment—their possibility space for invention—in ways that reflected their rhetorical goals. Finally, I argue that this work helped to make visible the designed writing environments of our classes, offering opportunities for students to reflect upon and critique the procedural rhetoric of the systems they interacted with in these classes.

**Procedural Design and the Possibility Spaces of Writing in Markup**

I want to highlight here, as a matter of methodological transparency, both the nature of the students who volunteered to be interviewed for this study and the nature of my relationship with them as instructor and researcher. It is important to note that the nine students who volunteered for interviews were self-selected. While I imagined that I would select students based on demographic information gathered in the preliminary survey, in the end, no students who volunteered to be interviewed were turned away. As such, they are self-selected and, for the most part, remarkably confident, well-prepared, opinionated, and successful students. In those respects, they may not accurately represent the students as a whole, though they did bring with them a diversity of initial opinions, experiences, and levels of interest in the unusual approach to this course. Second, it is important to keep in mind that, as a teacher researcher, interviews were conducted during and shortly after the course in which I was the instructor. I tried to explicitly position myself as a researcher for these interviews and encouraged students to communicate their views freely. In many cases, I believe a rapport developed over the course of the study that

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26 For a more sustained examination of my methodological choices and commitments, see Chapter 1: Designing Teacher Research.
allowed students to freely express even very negative opinions. However, it is naïve to think that responses were not at least somewhat guarded, given the teacher-student power dynamic, especially in early interviews. With these considerations in mind, the insights and experiences expressed by students are illuminative of the potential of procedural design as an approach to pedagogy, if not representative or predictive of the experiences of every student.

The Material and Metaphorical Spaces of Invention

In this section, I argue that sensitivity to procedural constraint in designing this approach to writing helped to leverage procedures to facilitate moments of learning that aligned with my goals (and those of the writing program) for the class, but also that inviting students into these procedures enables students to shape their writing environments according to their own goals. To make this argument, I refer, at times, to the Student Learning Goals for the Northeastern University Writing Program, which I include below.

1. Students write both to learn and to communicate what they learn.
2. Students negotiate their own writing goals and audience expectations regarding conventions of genre, medium, and situation.
3. Students formulate and articulate a stance through and in their writing.
4. Students revise their writing using responses from others, including peers, consultants, and teachers.
5. Students generate and pursue lines of inquiry and search, collect, and select sources appropriate to their writing projects.
6. Students effectively use and appropriately cite sources in their writing.
7. Students explore and represent their experiences, perspectives, and ideas in conversation with others.
8. Students use multiple forms of evidence to support their claims, ideas, and arguments.
10. Students provide revision-based response to their peers.
11. Students reflect on their writing processes and self-assess as writers. (Student Learning n.p.)
Though I do not address the enactment of all the learning goals, I do offer examples where, specifically, the tensions of procedural design—crafting, using, and revising constraints—are leveraged in the service of the goals of the classroom. These goals, while specific to Northeastern, I hope will look familiar enough to writing instructors at a range of institutions to suggest that careful consideration of the procedures of writing courses is a worthwhile undertaking. Of course, I do not want to suggest that I simply designed procedures to impose these goals, but that procedural design enabled students to negotiate their own goals as writers within the constraints of the course.

In these courses, students used XML, a metalanguage used to create and define markup languages. Like any writing medium, XML has affordances and limitations. It encourages certain tendencies in writers and discourages others. Designing schemas and authoring XML documents constrained how texts were produced and a provided set of rules that had to be followed: elements had to be named and defined, along with the rules for their use. Using a formal system like XML suggested that structural, linguistic, and rhetorical features of genres could be identified, named, and represented in a schema. It also suggested that these representations of genres could adhere to a paradigm of textual representation called the ordered hierarchy of content objects (OHCO). These constraints sometimes begat conflict, such as disagreements over the function of an element in the schema, where it could or should appear, its definition, or even its name. Students had to hash these conversations out or find creative solutions for

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27 For more about how scholars have understood and contended with the OHCO in the Digital Humanities, see Susan Schreibman, “Digital Scholarly Editing” (2013), James Cummings, “The Text Encoding Initiative and the Study of Literature” (2008), and Allen H. Renear, “Text Encoding” (2004); for a directed overview of the mechanics of XML and schemas, see the Introduction to this dissertation.
mediating group conflict within the rules of schema design. The sum of their decisions was represented in the schema as a genre model, a material representation of the genre. In turn, the schema constrained (and was shaped by) the individually authored XML documents that responded to specific rhetorical situations.

In the markup projects, students moved back and forth between schema design (group phases) and individual production of XML files. A brief example of how this worked in practice will help clarify the procedural role that the schema played in shaping the writing environment of students and how inviting students into schema design facilitated an alternative form of rhetorical production through the crafting of constraint. Included below is an example of a tag definition, `<context>`, written by a group of three First-Year Writing (FYW) students who chose to research and produce movie reviews.

```xml
<context>
Can be separate element if not placed in the same paragraph as synopsis, contains the information required to understand the movie such as who the actors are and their roles, the director and his role, and the optional attribute of the history of the franchise (if franchise). This tag can be used anywhere, within any other tag.

@actor
(Who is acting) an attribute of context; contains the roles of the actors. Usually only mentions the leads, villains, heroes, co-leads and other important actors and roles to the movie.

@director
An attribute of context; contains the information about the director of the movie such as how many movies directed, notable movies directed, etc.

@franchise_history
contains the history of the franchise (optional and conditional if it is a franchise), and usually acts as a point to further the movie review by giving the necessary details of previous installments to make sense of the current installment. ("ENGW 1111 Element List")
```

This documentation was collaboratively written by the three students in the group as they followed the guided research process (see Group Report Guidelines, Appendix A), including
example gathering, rhetorical document analysis, surveys and/or interviews with readers and writers of the genre. The group then proposed, discussed, and refined the components of their schema, including the `<context>` tag. In this documentation, the group addresses many concerns. There are rules for its use (where it may appear), possible attribute values, which further guide and clarify the specific uses for the tag, and open-ended definitions for how the tag should be used, including the ideal content of the tag (e.g. “Contains the information required to understand the movie”) as well as the rhetorical effects the component should have in a movie review (e.g., “usually acts as a point to further the movie review by giving…” [emphasis added]). When the group submitted their initial genre model, I would add their documentation directly to the class schema file (Figure 3).

```
<define name="review.context">
  <element name="context">
    <documentation>Can be separate paragraph if not placed with synopsis, contains the information required to understand the movie such as who the actors are and their roles, the director and his role, and the optional attribute of the history of the franchise (if franchise) [requires @type attribute]</documentation>
    <attribute name="type">
      <choice>
        <value>actor</value>
        <documentation>(Who is acting) contains the roles of the actors. Usually only mentions the leads, villains, heroes, co-leads and other important actors and roles to the movie. </documentation>
      </choice>
      <value>director</value>
      <documentation>contains the information about the director of the movie such as how many movies directed, notable movies directed, etc </documentation>
      <value>franchise_history</value>
      <documentation>contains the history of the franchise (optional and conditional if it is a franchise), and usually acts as a point to further the movie review by giving the necessary details of previous installments to make sense of the current installment </documentation>
    </attribute>
  </element>
</define>
```

**Figure 3: The `<context>` element schema definition**

Once added to the schema, the tag would be available to be used in the group members’ initial drafts of movie reviews. It is important to note that these tags and documentation are not static, but remain open to revision throughout the project. Revisions were accepted at any time, but the project required students to interrogate their schema after writing their first individual draft,
looking for tags that did not fit in their writing, were unnecessarily constraining, or that did not make sense to them as they composed.

Below are included three examples from group member, Zoe. After she and her two group members designed the schema, she drafted a review of *Hocus Pocus*, a 1993 Disney movie. The group then revised the schema together before she revised her individual writing. In her final draft, Zoe used two of the three available attribute values in her review, “actor” and “director” (Figure 5).

```
29 <context type="actor">Bette Midler obtained critical acclaim as an actress in the Janis Joplin-based The Rose (1979).
30
31</context>
32 <context type="director">Being only the second film directed by former dance choreographer Kenny Ortega, it is understandable that he would have wanted to go all out, so to speak, with the special effects in this movie in order to give it a "wow" factor.</context>
33
34</context>
35
36 <context type="director">It seems as though Kenny Ortega did not enjoy directing a "scary" Disney film, because since then he has stuck to directing wholesome shows such as the High School Musical franchise.</context>
37
38
39
40
```

*Figure 5: Examples of* `<context>` *element*

Zoe decided that these segments of text aligned with the definitions of the tag and attribute values as defined in the schema. However, to think of this as simply an annotative process, adding information to an existing piece of writing, would not fully account for the dialectical relationship between the schema and the individual writing. Here, Zoe’s examples of `<context>` make claims about her writing, about the genre of movie reviews, about genre more generally, and about movies even more generally.

Procedural design—crafting, writing with, and revising constraints—prompted students to continually negotiate their writing goals and their understanding of a given genre. I want to draw attention to the schema as a place of invention (Bawarshi) that is both material and metaphorical. From a material perspective, this approach asked students to use Oxygen XML Editor, a text editing application optimized for creating and editing XML (and other markup)
files. Oxygen calls attention to itself as a composing environment. It does not look like Google Drive or Microsoft Word. For most students, this was a significant shift in their material composing environment and one which had real effects on their writing process. As the chosen composing environment for the classes, the principle advantage that Oxygen held over typical word processors is that it linked the schema file—the collaboratively-authored set of genre models—to the individual documents. This link between schema and document shapes the writing environment of students. As students composes individual XML documents, Oxygen used the information in the schema file to prompt students with the tags available in each section in real time. For example, if I were writing within a body paragraph in a movie review and began to enter a new tag by typing “<”, I would be prompted with a list of available tags and their definitions (Figure 6).

![Figure 6: Example of Composing in Oxygen](image)

Oxygen materially embodies the constraints written in the schema through these tag prompts and through validation, but these constraints were left continuously open to revision. While there

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Validation is a technical term in XML, which simply means that a given XML documents is checked against the rules of a schema. A document is said to be ‘valid’ so long as it adheres to
was certainly a learning curve for students to adapt themselves to this software—many students even reported that they drafted in another word processor before moving to Oxygen—it had procedural affordances, as aspects of the composing environment were literally shaped by the schema designs and revisions of the students: offering particular tags as students compose, intervening on their writing process by highlighting errors, allowing them to see their writing in multiple visual formats, and so on. This procedural relation dramatized, for students, genre knowledge being put into action, and created moments of tension where students reflected on their writing in relation to their understanding of the genre.

FYW student Tara provided a typical description of the procedural relationship at work, saying,

[I]f you weren't using Oxygen, you're writing a regular essay, you still make decisions about what to include to back up your thesis or some sort of argument, but when you're using XML and Oxygen, I think the idea of rhetorical elements come to the forefront, because you are creating them, then you are inserting them … It gives you more focus. It makes you think more about your writing because you are forced to, because you need to have the elements in there. (Tara, Interview 3)

For teachers, as encouraging as it is to hear that students think more about their writing, the phrase “because you are forced to” may be a bit alarming. Consider, however, the origin of this feeling of constraint. Oxygen enforced the constraints that students themselves decided upon. The design of the schema constrained the possible actions for students as they wrote that genre,

these rules. One might think of how a form on a website prompts you with an error message if you type an invalid email address or phone number. This is a form of simple validation, though many of the rules designed in the genre models were more complex.
but did so according to the students’ design decisions. Regardless of the genre of writing, the schema made an argument—that certain elements should or could appear in a successful performance of that genre—through rule-based constraints, and enforced that argument on the writing environment of students. The constraints written into the schema file, the rule-based representations of writing genres, were never closed to revision. If Oxygen highlighted an error, this was a moment where students might “think more” about their writing, as Tara claims, to revise their writing to align with the schema, or it could be a moment where students proposed a change to the schema, a revision to the constraints themselves. As students wrote within these constraints, they had to continually negotiate their own writing goals, the goals of their classmates, and imagined future writers with the procedural rhetoric expressed in the schema.

Moments when students contended with the procedural rhetoric of the schema had real effects on students’ writing processes. The schema’s intervention in the composing environment made the procedures of genres, as hypothesized and represented by students, analytically and materially visible. As Bawarshi notes, making genres visible to students can help them to “participate within and negotiate [genres] more meaningfully and critically” (141). Here, students invented a set of procedures that they believed would facilitate their rhetorical goals for a successful performance of that genre. Examining and representing a genre in this way was an attempt to take the genre apart and model it works—what constraints the genre enforces, the relative flexibility of those constraints, and how well our perception and representation of those constraints facilitate our attempts at rhetorical production. Or, in the words of a student, “We're actually remaking our chosen genre” (Daniel, Interview 2, emphasis added). I want to return to the Northeastern University Writing Program’s Student Learning Goals to highlight how
(re)making a genre in this way saw students working to design procedures in ways that negotiate their own goals within those of the class.

Consider, as an example, Daniel, a student in FYW. Across multiple interviews, Daniel linked writing in markup to revision and self-assessment. In his first interview, he claimed writing in markup “did make me think about what I need to include in the paper, which was nice, because it had the specific tags. ‘Well, I’m talking about genre analysis, but I didn’t really have a lot of things about the scene [or] situation’” (Daniel, Interview 1). In his second interview, he expanded on this, claiming,

The tags really helped me out with that, where I was, “OK, I'm missing these opinion tags that I probably should be putting in. Let me throw something in there.” Or, “I’m missing an <aesthetic>. I'm missing <context> for a director. I should probably throw that in.” It really helped me out there, figuring out what I needed. (Daniel, Interview 2)

I want to focus on these moments because they raise the specter of formalistic understandings of genre. Despite Daniel’s language of “throwing” tags into his writing, I think these moments were more complex than recipe-following precisely because schema design and writing in markup engaged students in procedural design. In fact, this moment reflects (at least) two of the eleven Student Learning Goals for the writing program: “Students negotiate their own writing goals and audience expectations regarding conventions of genre, medium, and situation” (Goal 2), and “Students reflect on their writing processes and self-assess as writers” (Goal 11).

First, note that Daniel had a hand in inventing and defining the schema components he mentions here. So, when he reviewed his writing, he negotiated between a collaborative understanding of the genres’ procedures and his own goals as a writer. Second, the components he mentions here: <scene>, <situation>, <aesthetic>, and <context>, are not
formal textual features so much as they are rhetorical strategies for accomplishing the social action of the genre. One of these was `<context>`, a component detailed above that contained information about where it could appear, its content, and its rhetorical effect.

When read through the lens of the schema components he mentions, Daniel’s ostensibly flippant language of throwing in a tag becomes more complicated. When he read his review, and decided that he was “missing a `<context>` for the director,” he made the decision that he was missing “information required to understand the movie,” specifically “information about the director of the movie.” He assessed his writing according to his conception of the audience: will the audience understand the movie given the information they have? What kind of information does the audience need to understand the movie? Moreover, this tag could “be used anywhere, within any other tag.” So, while they did constrain his writing—he noticed he was missing components as he reviewed his writing—the components he mentioned did not function as strict, binary constraints (as in, you have them or you do not). Rather, these constraints, authored collaboratively with his classmates, were resources designed facilitate productive rhetorical strategies for accomplishing the goals of a movie review.

The writing Daniel produced after this moment of self-assessment and negotiation is also illuminative, given that he used the `<context>` element, to advance his overall argument in his review: that *Guardians of the Galaxy* successfully enacts and parodies the genre of the superhero movie.

`<context type="director">`What makes this film even more interesting is its director James Gunn. Gunn's background includes a large list of mediocre comedies, like `<style type="italics">`Scooby-Doo</style>` and another superhero film, `<style type="italics">`Super</style>`. All in all, it was a not very promising track record now that he was at
the head of a huge summer blockbuster. Which made it all the more surprising just how good <style type="italics">Guardians of the Galaxy</style> turned out to be. It turns out all his time working on self-referential and cheesy films worked greatly in <style type="italics">Guardians of the Galaxy</style>'s favor, as the movie is partly a parody of the superhero-genre while also mimicking it.

When triangulated, the schema definitions, interview data, and Daniel’s writing paint a much more complex picture of rhetorical engagement than is evident at first blush.

Other students reported similar ways that writing in markup enabled self-assessment and complex negotiation of “their own writing goals and audience expectations regarding conventions of genre, medium, and situation” (Student Learning n.p.). For example, Finn, an Advanced Writing in the Disciplines (AWD) student, described his process for writing a particular kind of scientific blog post, a genre his group called “edutainment” blogs,

It's like, oh I have this analogy, so I should use another analogy. It was a nice present reminder of not letting things kind of lull, I suppose. Where you finish a paragraph and it’s like, “well, how many of those words were needed? Or how much of that actually feels like it's moving something forward?” Whereas if you have <important_idea> and <analogy> just present, and just keep on working off of those it naturally builds, I think. (Finn, Interview 2)

Like Daniel, Finn referred to his writing in terms of the tags, the ways his writing was productively constrained by the components of the schema he designed.

But the writing processes of students were not always so neat as they may appear in the examples above. In fact, this approach to genre learning relied upon moments of tension—moments where the schema did not account for the needs of the composer, where constraints
were unproductive, inhibiting, or misleading. These were the moments where the schema, the material representation of the group’s understanding of a given genre, called for revision. These were moments of “productive unease” (Flanders n.p.), where students reflected on their rhetorical goals as writers and the schema, the material representations of their understanding of a genre.

There were certainly many examples where the procedural constraints of the schema were deemed unnecessarily restrictive, rather than productive. These were moments where inviting students to design and revise the schema was valuable, because it allowed students to propose and make procedural changes, rather than merely work within the constraints placed upon them. Daniel described one such moment of restriction while composing a movie review and how this was handled,

Daniel: Yeah. A big one for me was the intro of our thing. We originally only had an intro paragraph, but then I looked back at all the examples, and I was trying to write the intro paragraph. I realized they don't really use a singular intro paragraph. Their first paragraph is usually a little introduction, and then it has a synopsis, which is what we required in our intro paragraph. I pushed to get multiple paragraphs in the intro, and call it an intro instead of an intro paragraph. It didn't make sense just starting off with the synopsis at the start. It was kind of constricting, having this giant intro paragraph.

Kevin: You tried to write it and experienced some kind of dissonance with trying to shove all this stuff into one paragraph. Then you went back to examples. Then you went to your group, and said, "We need to change the schema." Is that the process?

Daniel: Yeah. I found that it was too big. Well, I checked back the example to see how exactly I should be writing this. There was a paragraph break between the little
introductory blurb they have about their opinions on movie, and then the synopsis of the movie. Then I knew that something was wrong, and we needed to fix that. (Daniel, Interview 2)

In this example, we see how design and use were mutually informing. As students pushed against the inventional space they helped to shape, they had the opportunity to reshape that space according to their developing understanding. These moments of procedural design allowed students to expose and address shortcomings in their representations. In the case of Daniel’s change to the intro paragraph, the dissonance enacted several processes—returning to research materials, taking the issue to his group, and designing a revision to the schema.

Daniel was not alone in proposing changes within his group. He continued, “After we wrote our first drafts, we all had little complaints we had about our schema. The next night we looked at our schema, and hashed out what exactly our problems were, and figured out what we needed to be changed about it” (Interview 2). Schema revision allowed students to negotiate their own rhetorical goals within the procedural framework of the class. Daniel’s description of his group revision strategies aligned with the Student Learning Goals: self-assessment; negotiating goals with conventions of genre, medium, and situation; “critical reading strategies” (Goal 9); and the exploration of “experiences, perspectives, and ideas in conversation with others” (Goal 7). But the description also shows that these revisions happened due to the perceptions of Daniel and his group members, based on misalignment between the schema and their goals as writers. We can see this in how students talked about their schema designs as enabling/limiting to their goals and expressive capabilities, and how they respond to those constraints: “We opened that [schema] up” (Mark, interview 2); “[W]e left it pretty free to do what we want” (Tara, interview 2); “As a general rule of thumb, I like being able to do whatever I want. That's a recurring theme
with the schemas. I knew the changes I wanted to make to the schema when I wrote my first
draft” (Zoe, interview 3).

As I will argue in the next section, this trend towards opening up schemas to wider ranges
of possible rhetorical action reflects a series of design decisions which respond to the tensions of
genres as both structuring frames and flexible strategies for social action.

*Designing Procedures for Rhetorical Genres*

In this section, I will examine how these constraints—those imposed by me (the use of
XML, the design of the assignments, etc.) and those open to students (crafting the rules of the
schema) worked to support the goals of RGS theories of pedagogy by dramatizing and
materializing the complex negotiation of genre knowledge and performance.

RGS approaches to genre pedagogy ask students to notice and attend to the formal
features of genres without relying on formalist definitions of genre. Synthesizing implicit (see
Freedman) and explicit (see Swales) traditions of teaching genres, RGS pedagogues aim to help
students develop “rhetorical, metacognitive literacy” through the study and production of genres
(Bawarshi 154). RGS pedagogy asks students and teachers to work together in an
“apprenticeship-based approach” (Bawarshi and Reiff 189) to make tacit genre knowledge
explicit through mapping, modeling, production, and feedback. These efforts are designed to
promote transfer, critique of the ideological underpinnings of genres, and facilitate genre change
and the production of alternative genres (Bawarshi and Reiff 189-92; 197; 200). While explicit
collaborative modeling through schema design did ask students to formalize a genre in the sense
that they had to make explicit their understanding of a genre in XML, it did not ask students to
understand genres themselves as simply sets of formal features. Like RGS approaches, explicit
collaborative modeling sought to open up the inner workings of genres, familiar and unfamiliar,
In the service of production, critique, and change. We strove for formalization without formalism.

The schemas themselves represent models of how students “stabilized” a genre as they research and produce it. Drawing on Catherine Schryer’s description of genres as “stabilized-for-now or stabilized enough sites of social and ideological action” (108), this approach asked students to stabilize their understanding of a genre, make it explicit, and then test its efficacy in actual use cases. This is a thoroughly rhetorical activity: students designed a model and that model enforced dynamic and contextual constraints by and through which they write. Importantly, though, the models in these classes were never “complete,” but always open to revision and change. This openness reflects the dialectic form of modeling I aimed for in designing these classes, and which aligns with theories of computational modeling described by digital humanities scholars. For example, Willard McCarty writes,

> [M]odeling of something readily turns into modeling for better or more detailed knowledge of it; similarly, the knowledge gained from realizing a model for something feeds or can feed into an improved version. This characteristic blurring of design into use and use into (re)design is what denies modeling of any sense of closure. (McCarty n.p.)

He continues, “In other words, computational models, however finely perfected, are better understood as temporary states in a process of coming to know rather than fixed structures of knowledge” (McCarty n.p.). This recalls Julia Flanders’ concept of “productive unease” as well as Catherine Schryer’s description of genres: “Genres are, in fact, local and in a constant state of construction; they are structured structures that structure; they are strategy-produced and driven and produce strategy” (95). This is the understanding of genres I sought materialize in the design of the course. My goal was for students to feel the tension of genres as “structured structures that
structure," to dramatize the mediation between conceptions of genres and genres in use as they designed, tested, and redesigned schemas.

By modeling genres and recursively manipulating and revising these models, students made explicit their understanding of genres as temporary states, stabilized for now, but open to change. From this view, schema designs were situated, flexible rhetorical structures, offering strategies for accomplishing particular social actions. They were dynamic, fluid, and both expressed and created (always incomplete) knowledge about the world. As King notes in his discussion of the procedures of rhetoric, “Rhetoric… demands the ability to balance the necessity of constraints against the recognition of these constraints as situated and contextual. In this balancing act, we must be able to recognize the limitations of our own perspectives and to make room for others” (King n.p.). In this markup-based writing course, an approach sensitive to constraint allowed us to dramatize this balancing act and materialize it in an attempt to open up genres and try to explain how they work.

In interviews, many students note the productive qualities of constraint—how the particular procedural system of this course prompted deep thinking about genre. The insights of students arose through the dialectic process of procedural design, iteratively crafting constraints, working within them, and revising them. Jack offered an example in a discussion of the rigidity of genre conventions in feasibility reports, a genre his group researched and produced in AWD,

Kevin: Can you talk about that tension a little bit between the perceived rigidity of the genre and the flexibility you[r group] wanted?

Jack: I actually thought about this after class. But you know our group yesterday had Wikipedia documents as a genre. So, was it “fuzzy” [using Peter Medway’s term to describe a spectrum of entrenchment of generic constraints]? Looking at that, a
Wikipedia article can cover any range of topics. You can have history and science, the atom, and Archduke Franz Ferdinand. You could have them in the same genre. But we were comparing Wikipedia documents and I was thinking, what happens if you have a financial feasibility document, a financially-focused feasibility document side-by-side with a technical feasibility study about a dam and one about a banking investment? And there, if you took them side-by-side, unless you have sort of the managerial experience with it, you might not think that they're the same genre. When we were discussing Wikipedia, I know we as a group thought it might be fuzzy, but looking back on it now, I'd almost say that they're not fuzzy, they're just flexible. I'm not sure how to articulate this. I guess I'm hesitant to call it a fuzzy document because I think, like you said, it is very rigid. But the flexibility is less focused on what you can do and more focused on the material, you know? It's more focused on what you're putting…would that be the exigence? I guess the real-world experience that's influencing it? The flexibility is more focused on the exigence rather than the user. There's nothing really flexible about reading a carefully-bulleted document.

Kevin: Right. The format is rigidly constrained.

Jack: Yeah, that's a good way to put it. The format's very rigid, but I guess at the same time you need some fuzziness to allow for such a broad range of topics.

Instead of beginning with a discussion of the features feasibility reports, Jack used an in-class activity to compare the genre to Wikipedia articles in an attempt to transfer genre knowledge to another domain. He sketched a developing rhetorical understanding of genre. He claimed that the flexibility of a genre is less focused on what you can do with that genre (social action) and more focused on the material (content). That is, Jack recognized the genres as “typified rhetorical
actions based in recurrent situations” (Miller 159), but also recognized those situations as materially distinct. Recurrent situations only appear recurrent, and exigence is a form of social knowledge, an “objectified social need” (Miller 157). For Jack, without the social knowledge gained from managerial experience, one might not see the recurrence in different material manifestations of the feasibility report. He used this knowledge to explain how working on the schema prompted him, through social interaction, to expand his own notion of the recurrent situation of the feasibility report:

Kevin: Do you feel like that idea is an idea you tried to build into the schema or one that you developed as you were developing the schema? That idea of kind of flexibility within constraint?

Jack: I think we thought of that when we were first developing the document, the text document [documentation], and I kept writing “app,”—application— in there. And then some people were like, “Well, we're not going to do apps.” And I was thinking to myself, “I’m being close-minded.” Because a lot of the examples we found were not web, or design, or code related at all. A lot of them were physical structures, or long-term managerial plans, or stuff like that. I think that sort of came from having the group rather than me doing it, because if it was up to me, my [documentation] might have talked strictly in terms of an application. (Interview 2)

It is clear that modeling feasibility reports expanded Jack’s understanding of the genre. This expanded notion of possible rhetorical situations to which a feasibility report can respond arose because students were invited into the design of the procedures enacted by a markup approach to genre research. That is, the group not only had to research genres together, they had to compose documentation with shared definitions of rhetorical features of their chosen genres that would be
useful for the entire group, and which would shape their possibilities for composing. For Jack, writing documentation revealed a wider range of rhetorical purposes amongst his group than he previously associated with the genre. Since the schema design, as a constraining force, had to be flexible enough to accommodate these purposes, composing documentation prompted him to reexamine his understanding of the genre they were researching and producing.

Jack’s reflection also underscores the value of this approach to writing in a disciplinary-focused required writing course. While this section of AWD was for students in the technical professions (students majoring in Engineering, Computer Science, and Information Science), there was a great deal of diversity amongst students in terms of major, professional co-op experience, and future career plans. Collaboratively working to create constraints that remained adaptable to multiple students’ needs pushed groups to account for a range of rhetorical situations in a single genre model. The procedural relationship between schema design and genre performance—that constraints were explicitly defined and applied to all students in the group—pushed students beyond abstract understandings of genres as adaptable strategies and towards modeling and testing that adaptability. For Jack, it challenged his tacit, unrecognized disciplinary bias towards computer science by forcing him to account for a range of other technical professions for which feasibility reports are a useful genre.29

In FYW, we had an even wider range of majors from across the University. Students in FYW tended towards more public and academic genres, as discussed in the introduction. Despite these differences from AWD, students similarly articulated complex understandings of genres

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29 This moment brings to mind the role of collaboration and teamwork in the development of genre knowledge, and in the design of writing classrooms. Collaboration and social knowledge are important aspects of this study, and will be taken up in detail in chapter 3 and chapter 4.
provoked by the process of designing and using schemas, of procedural design. For example, Mark suggested that moving between schemas prompted him to think about the social construction of genres and how they can change over time or in different contexts:

The shift from our own schema to another group’s helped me realize that people can view genres very differently and identify different aspects of the genre as the most important or key components of the genre. I found this to be interesting and helped me gain insight on the evolution of genres. (Reflection Essay)

Mark echoed Jack’s focus on the contextual flexibility of genres, perhaps a surprising connection for students designing formal genre models. This will be covered in more detail in chapter 3, but, in general, the genre models moved from stricter constraints towards more flexible designs during the course of revisions. For example, a tag might begin with a rule that it was required to appear in a certain section of a piece, but, in response to interaction, the group would decide to make the tag optional or to allow it anywhere in the piece of writing. This move towards flexibility suggests that students’ tacit understandings of genres were challenged by turning those understandings into explicit, rule-based procedures that constrained their possibilities for writing.

In these courses, the schema functioned as a built space that laid bare students’ contextual theories of genres and how they work. The schemas made arguments—this is how a genre works, these are strategies for performing this genre successfully—and enforced those arguments procedurally. The schema expressed, for the particular course and for the particular students engaged in designing it, a material mapping of genre knowledge and understanding. Of course, these models were never complete, nor should they have been. Like genres themselves, the models were fluid and contingent, they remained open to revision as understanding developed. In these courses, procedural design, then, facilitated the goals of RGS pedagogy, to make the inner-
workings of genres “analytically visible” to students to enable them to facilitate “rhetorical, metacognitive literacy” (Bawarshi 141, 154).

Indeed, as they interacted with the system, students began to leverage this metacognitive literacy by demonstrating a developing understanding the rhetorical effects of the schema designs and their limitations. Students had multiple audiences in mind while designing schemas: themselves, the instructor, their classmates, and imagined future users. In the next section I examine how awareness of these multiple audiences offered students opportunities to not merely work through constraints of the course, but also to look at them, to reflect upon and critique how those constraints shaped their possibilities for writing.

Rhetorical Awareness in Schema Design and the Critique of Procedural Systems

An advantage of engaging students in procedural design is that not only can they view writing through procedural interaction—that is, to examine genres, model them, produce writing, and reflect on these writing processes—but they can also look at the procedural system itself—to begin to critique it as a representational and rhetorical system. This oscillation between at and through recalls Richard Lanham’s formulation of digital rhetoric. He argues that the unique capacity of the computer to model reality is central to its role as a rhetorical device. Modeling, he writes, in the form of the declamatio, was “the single dominant exercise” of classical rhetoric, “and hence all of classical education” (47). According to Lanham, the centrality of modeling has been reinstated by the “world of electronic text” (47). For Lanham, models, and digital texts more broadly, enable what he calls bi-stable AT/THROUGH oscillations, recursive cognitive movements between looking self-consciously at the text (attention to medium and material) and looking through it (transparent text, unselfconscious). He writes,
Such an oscillation between looking AT the expressive surface and THROUGH it seems to me the most powerful aesthetic attribute of electronic text. Print wants the gaze to remain THROUGH and unselfconscious all the time. Lichtenstein’s Magnifying Glass, like the electronic screen, insists on the continual oscillation between unselfconscious expression and self-conscious design that formed the marrow of the classical rhetorician’s art and pedagogy. (43)

This is the kind of mental oscillation that procedural rhetoric offers writing courses. To engage students in procedural design is to ask them to continually oscillate between looking at and looking through the procedural system. It interrupts the unselfconscious, habitual adoption of writing tools and defamiliarizes the typically transparent composing environments of students.

This course used XML as a system for representing and producing genres. In the previous sections, I outline the affordances of this system as I saw them play out in the two courses. These affordances, I argue above, anticipate and respond to a potential critique of this approach from the perspective of genre studies: the extent to which the formal nature of XML markup explicitly or implicitly asserts genres as static collections of formal elements, rather than as rhetorical social actions (Miller). But I also want to highlight that this tension in XML, and indeed, in any system for representing genres—templates, descriptions in textbooks, visual maps and models—always exists. Materializing this tension, asking students to theorize, model, and test the procedures of a given genre, moved students to reflect upon and critique our method of representation, to think about the limits of those representations. Below, I discuss how I saw this develop during the two courses. Students moved from awareness of the rhetorical effects of their procedural representations to reflections on the limits of them, and, in some cases, to critiques and proposals for change.
Students conveyed awareness in the classes that schema design addressed multiple audiences and purposes. They had to distill and codify the research they conducted as a group into salient elements for the schema. Because I graded their genre model, this task asked them to use markup to communicate to me the extent of their research and findings. But, they were also aware that they were to use this model to produce an example of their genre. Thus, the schema addressed their own rhetorical goals and those of their group members. For example, students writing public initiative proposals in AWD had a range of goals for these proposals—proposals were written to the chief of the Scranton, PA police proposing officers wear body cameras, to the Massachusetts Department of Transportation proposing the installation of a protected bike lane on a busy thoroughfare, and to the Board of Trustees for Kirkland, WA responding to a call for renovating a major park, to name a few. The design of the schema had to be capacious enough to accommodate this diversity of social and rhetorical situations, as is clear from the discussion above. Finally, students were aware that future users, their peers, would also use and revise their model to produce examples of the genre which would respond to unknown situations. Schema design was thus a complex rhetorical task as students had to design constraints that communicated what one needs to know to produce the genre, that demonstrated their knowledge and labor, that worked to inform and persuade future users towards effective writing behaviors, and that could accommodate a diverse range of writers and rhetorical situations.

In interviews, students were keenly aware of the rhetorical effects the schema had on their individual compositions. Often this awareness was not immediately apparent in initial designs, but arose through procedural interaction, through the felt resistance of writing within and through the constraints of the schema. By interacting within their own procedural representations, students explored the possibility space of the system for the expression of their
individual genres. In the words of Daniel, “We had the tree [schema] laid out for us, but we didn't really realize how rigid it was going to be. We did, but we didn't foresee our own writing styles, and how I was going to be impacted by the hierarchy of the tree” (Interview 2). As a result of this interaction, students envisioned how their designs might facilitate and invite certain responses. Maddie, for example, pointed to the importance of documentation, examples, and the difficulty of modeling particularly unstructured genres, like “edutainment” blogs,

I guess hopefully the schema is documented well enough that they can [use it successfully]. I think the main problem would be—since I noticed the three other groups were very structured, the cover letter was like each line was almost a tag—so if they're coming from that sort of schema to this very broad, kind of open one, they may be like, “Well how do I even start to construct this?” […] People who start writing with our schema could learn a lot from our examples, which is why we, during our presentation… we chose [examples] so the tag kind of felt right, like who did what pretty well. (Maddie, Interview 2)

Maddie perceived a shortcoming in how well the design of their model communicates its use to future users. Her group tried to mitigate this shortcoming while presenting their model to the class. During the classes, we framed the activity of peers using already-existing genre models as a form of uptake—the “bidirectional relation that holds between” multiple genres (Freadman 40)—that schema designers could and should anticipate and try to condition in their designs. This vocabulary popped up in some students’ reflections. This is important because it reflects students’ awareness of future users of their models and invokes their peers as an audience for them. For example, Finn reflected on revising the schema with future users in mind—a concern
that was less central to the group’s original genre model, but the importance of which became clear after interacting with the model.

[W]hat we tried to do, especially with the revision, was to make it more obvious how that person who is—the uptake—the person who is writing that article based on our schema. We tried to make it so the tags themselves would kind of have more of a trigger so the person realizes what they're doing. And that'll be the catalyst for their article. (Finn, Interview 2)

In this excerpt, Finn drew on his own experience of the procedural effect the schema had on his own writing experience to imagine and facilitate the interaction of future users, to “trigger” particular uptake behaviors.

Although students were aware of the rhetorical capacities of the schema, they did not seek to fully determine future users’ interactions. Rather, they recognized the impossibility of designing a perfect genre model, one which could account for all possible rhetorical situations. In this interview, Daniel alluded to the impossibility of anticipating all future users’ needs,

Kevin: Knowing now that other students are going to use your schema to compose their own versions of movie reviews, are there any things that you would change?

Daniel: I'd have to see what they're complaining about, because I think it's fine, but I know, definitely, that there's going to be some issues of someone trying to write a movie review down the line, and then they can't do something that they really want to do. Then I'll see what they're trying to work through, and then I can say, “Oh, yeah, we should have changed that,” but I'd have to see it. (Interview 2)
Daniel was aware of the ultimate impossibility of accounting for all possible rhetorical situations in the design of a genre model. From experience, he anticipated that the model will present some difficulties for future users that ultimately will prompt revision. He continues,

They might have a little trouble with the <opinion> and <context> tags. Originally it was just <opinions>, but we decided to split it up into two types, “reaction” and “critique.” We did it so that we could specify what exactly we were talking about in our <opinion>, but we really didn't know what were good words, because “critique” is a pretty good word for critiquing the movie, and telling what we didn't like about it, and what we thought could be better. “Reaction” was like...We want to call it something, but we didn't know what to call it, a catchall term for all. (Daniel, Interview 2)

He pointed not only to potential problems, but his awareness of the inability of language to fully account for the procedures of genres. The group tried to represent what they felt was an important distinction between the types of opinions expressed in movie reviews, but ultimately Daniel was unsatisfied with their ability to represent it accurately as a formal constraint. It is this awareness—of the ultimately contingent nature of the genre models, of the inability to completely or accurately model a genre—that I think led students to reflect upon and critique XML as a representational system.

In this example of reflection on the capacities of XML, Mark explained how he anticipated a future FYW group interacting with his schema might miss important rhetorical aspects of the genre.

Mark: I guess if you're just looking at the schema with no knowledge of what a satirical article is, even though you don't know satire, they need to know, which isn't clear in the schema, that it is sarcastic and not just pointless. There is a point to be made with
the articles, which isn't present in the schema. I don't exactly know how. It will be something I'd tell them to look at in the research.

Kevin: The is part of the reason why we had the presentation, too.

Mark: I felt we covered the aspects. (Interview 2)

Here Mark articulated the difficulty that the group had representing the tone of satirical articles in their genre model, reflecting on the usefulness of XML as a tool for modeling how this particular genre works. While they did feel that they communicated this important aspect of the genre through an in-class presentation and group writing, I would consider this particular instance a failure of design. The text documentation for the model, in my view, could accommodate “the point to be made in the articles.” However, at times, some groups simply did not explore the possibilities of XML as an expressive writing technology. This may reveal a constraint of XML: that the easiest or most immediately apparent way to use it is to model just the structural elements of a genre, rather than more abstract rhetorical aspects. This was especially apparent as students modeled more strictly controlled or stabilized genres like resumes (FYW), cover letters (AWD), and feasibility reports (AWD). When I asked students about this, initial reactions tended to be that more stable genres lent themselves better to the representation in XML. For example,

Kevin: Do you think one or the other of the two genres you spent a lot of time with in the second half of the class lends itself better to an XML-based approach?

Finn: Yeah, I think almost unarguably, I think it has to be the feasibility report… Even though I brought up the fact that I found it harder to, when I was proofreading, to do it with feasibility report. I think it was just investment in the project, whereas I was more interested in a blog post as a topic, I think. I don't think it takes away from the feasibility
report as being viable for the [use of XML] at all. So, I think just as far as how structured
a feasibility report is, XML pertains to it in a more natural way. (Finn, Interview 3)

However, while students tended to think that more ossified, structured genres lent themselves
more readily to modeling with XML, often it was the less structured, fuzzier genres that students
reported as being more productive to model. Here is Finn again:

I think something that we then revised pretty well is that a lot of the tags felt like they
could kind of be, I don't think we had a concrete enough definition and word choice for
what each thing should be doing. So, it's not like we were going completely off-script
with it. But it was mobile enough that you could like use something and not use
something else. And I found it, I just think the XML for the second project just more
helpful, as far as a creative writing process goes. (Interview 2, emphasis added)

Finn’s evocation of the mobility of the blog schema is an apt representation of the potential
dynamism and fluidity with which XML can be used as a modeling tool. It demonstrates the
possibility for the schema to be adaptable and flexible to different writers, purposes, and
situations. Far from mere mechanized, fill-in-the-blank automation that ‘procedure’ might evoke,
Finn indicated that procedural design facilitated a “creative writing process.” Thus, what appears
obvious—that XML is better equipped to model more structured genres—is troubled by
students’ actual experiences using XML.

As students explored the possibility spaces of composing within and through these
constraints—as they limned the affordances of the procedural system for representing a given
genre—they demonstrated a wider understanding of the procedural system that went beyond
their individual writing tasks. They were able to articulate the rhetorical possibilities and fit of
this system for the tasks at hand, and imagine future implementations and applications of this
knowledge. One common way that students expressed this understanding was by suggesting changes to aspects of the course which were beyond their control, such as how their XML documents were transformed and displayed.

Daniel: I think that the color-coded thing is a good start. Maybe after everyone's passed in their papers, maybe a program that could say, “This is the distribution of what other people did,” and “This is how you did it.”

Kevin: That's fascinating.

Daniel: How many quote tags did you have compared to other kids in the class?

(Daniel, Interview 3)

Here, Daniel referenced one of the outputs of their XML writing, the annotated display (Figure 7).

*Figure 7: The annotated display of a sample of Daniel’s movie review*
He recognized that using XML had the affordance of processing and transforming marked up writing in multiple ways and imagines other ways to leverage that affordance in future versions of the class. Students did not control the mechanisms of display—these were constraints designed by me—but they did gain some understanding of them through interaction and, at times, recognized their potential for furthering their writing goals and the goals of the course.

Students also began to assess and critique XML itself as a medium for expressing and representing genres. In this example, Tim described what he saw as the limits of using XML to model genres,

I feel like it's almost like XML is a good way to...it's hard to describe, but if you read enough of the same document, you're going to start to think about it in terms of a schema. Just naturally, you're going to think, oh this is where they always go into this, this is where they always go into this idea. So, it's almost a really quick way to get on a very familiar basis with the genre… *I just think that's useful if you want to go against the norm, to sort of find places to break out of the same structure that everyone else uses.*

(Tim, Interview 3, emphasis added).

For Tim, XML was not capable of representing genre transgression, but it is useful for developing a thorough enough understanding of the genre to feel comfortable violating the norms. For some students, the limitation that Tim points to was perceived as less useful and more inhibiting. This is evident in how John (AWD) reflects on his experience of writing within this system.

Kevin: Thinking broadly, how do you think writing in XML has affected your writing process for the assignments in this class?
John: I guess attention to detail, and a certain way you would look for in writing and not so much just the nuances and the art and the transition and flow. More just so on the, “Did I satisfy the required part of every single sentence of this thing?” So, it wasn't so much, “Did I create just the big, flowing thing?” it was, “Did I satisfy this sentence? Did I satisfy this one? This one? This one?” So, it's like attention to detail but not necessarily the details that constitute good writing, maybe.

Kevin: What do you see as the details that constitute good writing?

John: More just the overall flow, the tone, how things go between each other, and transitions.

Kevin: Do you think any of those things are able to be expressed in markup or they're things that cannot be formalized like that?

John: Depending, because in some instances, you're trying to fit it specifically into an attribute, so you might not be as loose or as open to writing as freely. Because you're always thinking, “Does this fit within this?” or “Is this legal within these parameters?” You're not so much just focusing on writing.

Kevin: So, imagining yourself as the designer of the schema rather than a user of the schema, do you imagine any things like transitions, flow, those kinds of aspects... As a designer of the schema, do you imagine those are able to be written as rules that are enforceable in XML?

John: I don't really think you can enforce that so much. Just can't really say, “Make this sentence about who, and then follow this up with how they're involved with this situation.” And then say like, “And don't forget, make these two sentences flow into each other.” There isn't really a way to really enforce that, I'd say.
Kevin: In other writing courses, how are those kinds of things enforced or taught or practiced?

John: You would be graded on the overall flow, and can you clearly connect your ideas as part of it. So, can you make it seem like that just effortlessly flowed from talking about this to then how it relates to this. Not so much listing the facts about this and then listing the facts about this.

Kevin: So that feedback would happen in assessment? Like, in your grades from...?

John: In a review or assessment, kind of. (Interview 3)

I include this lengthy excerpt because I think it demonstrates critical reflection on the part of John for how the procedural system promoted values that did not align with his understanding of “good writing.” In fact, he seems to suggest that good writing was actively inhibited because of the limitations of XML for representing “flow,” “tone,” and “transitions.” For John, approaching genres of writing through XML imposed a “scientific” view of writing on what should be properly thought of as an “artistic” endeavor.

You can only classify some things so much, you can't class or rationalize emotions or some things like that. It just becomes an art of how do you evoke that feeling, or how do you do that? You can take your best guess with a method and what words might help to that, but, in the end, it comes down to the area of how well you know your material or how you can finesse it. (Interview 2)

Much like Matt, John recognized the limits of categorization and abstraction for representing genres in XML. He did not, however, find exposure to these limits to be conducive to his writing or thinking processes. And though I might suggest to John that there are rhetorical methods for evoking emotions that might recur in a genre, be represented in a schema, or be drawn on in the
process of producing that genre—he seems to be aware of this in the evocation of “a method”—it is heartening that he does not uncritically accept the procedural system of the course. Rather, he makes a claim about the procedural rhetoric of the course and the extent to which the composing environment inhibited his thinking and writing process. For John, it is not only a conceptual tension in the study of genres through modeling in XML, but a material tension: composing in Oxygen actively intrudes upon his writing and thinking in material ways. With his attention to the effects of XML and Oxygen on his thinking and writing, John reflects on the procedural system itself, critiquing its affordances as a possibility space for composing.

These examples reflect the dialectical interaction between looking at and looking through that procedural design facilitated. The work of procedural design revealed to students where their procedural work fit within the wider system of constraints imposed in the course. For some students, this prompted them to abstract from their situated writing experiences to examine the procedural rhetoric of the system, its shortcomings, and its possibilities.

Awareness and critique of the procedural system itself is important because, as Kevin Brock and Dawn Shepherd note, procedure is increasingly employed as “a rhetorical approach and a general descriptive frame for persuasion” by “ubiquitous human-computer rhetor systems/ecologies” (18). In other words, we are all increasingly involved in procedural systems, often over which we have little control: the search engines we use, the sometimes dizzyingly kairotic targeted advertisements which seem to anticipate our exact desires, the frustratingly regimented automated customer support line. These examples all function through internal, procedural logics that model and seek to shape human interaction and possibilities within a given situation. Spurring awareness and critique of these systems is a crucial task for Writing Studies if we are to effectively prepare students to participate in ever-shifting communicative...
environments. And procedures aren’t only computational. As we have seen, procedural constraints function in the physical space of the writing classroom as well, enacted computationally—the software we ask our students to use, the software students choose to use when we don’t bother to ask—and non-computationally—the constraints enacted by common classroom genres like the assignments prompt, syllabus, and so on. Procedures, whether we examine them or not, can function rhetorically on us and our students. Approaching writing courses with this in mind—what I have referred to here as procedural design—offers an opportunity to examine, revise, and open those procedures that we can control to promote more democratic designs. To invite students to help us interrogate and shape the designs of possibility.
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[I]f you read enough of the same document, you're going to start to think about it in terms of a schema—just naturally you're going to think, “Oh this is where they always go into this; this is where they always go into this idea.” (Tim, Interview 3)

In chapter 2: Procedural Design, I make the argument that schemas, as designed models of genres, represent how students “stabilize” a genre as they research and seek to produce it. By reading across data, I offer examples that dramatize how schemas sit in dynamic and dialectical tension between students’ conceptions of genres and their operationalization of those genres in use. From this view, I posit that schemas themselves are situated, flexible rhetorical structures, which offer strategies for accomplishing particular social actions. They are dynamic, fluid, and both express and create (always incomplete) knowledge about the world. In the remainder of this dissertation, I mean to trace how students in two classroom contexts used schemas to collaboratively mediate their understandings and performances of genres, and what this process of mediation can teach us about how students develop and use genre knowledge.

The collaborative writing activity of schema design sits between and mediates two recursive activities of the course: 1) group research into the content, form, and social actions of genres, and 2) individual genre “performances” undertaken by students. The development of schemas therefore represents a bi-directional interaction between these activities: As students are charged with representing their “felt” sense of a genre collaboratively, that sense is recursively informed by their group and individual activities. As such, schemas are locations, tools, and artifacts of “building collaborative knowing” (Stahl 305). The schema is the location where
collaborative genre work happens, it is a tool for facilitating that collaboration, and it is also the outcome of that collaboration. That is, the schemas can be read as a representation of the genre knowledge developed by students, but they also played a role in facilitating that work. In this way, schemas make explicit the schematic work normally implicit in an individual’s genre acquisition and use, evident in the epigraph from Tim, while putting that work into productive dialogue with peers. Thus, a close reading of the schemas along with the genres surrounding their development can help to unpack the way students worked together to develop, represent, and deploy genre knowledge. The following questions animate the case studies developed in this chapter:

- What components are included in schema designs? How and why are these invented and selected?
- What patterns are identifiable in schema design and revision, and what do they say about genre learning processes?

The two cases presented in this chapter focus on a pattern of flexibility in schema design that emerged across the very different contexts of AWD and FYW. This pattern of flexibility, I will argue, is representative of the schema’s role in the negotiation of genre variation within a framework of rhetorical constraint; the schemas became venues within which students could negotiate the tension between distinctive, situated genre performances and recurrent genre conventions. Designing schemas required the active and explicit negotiation of generic variation within rhetorical constraint, a function I see as potentially useful pedagogically and methodologically to genre theorists.

The cases outlined in this chapter represent a particular dynamic in the way that this pedagogy could be taken up—the pattern of flexibility revealed how genre variation could be
understood and negotiated by students through schema design. This approach to modeling required that students understand, and model, genres as dynamic and flexible, as accommodating—indeed, requiring—variation while simultaneously representing typified responses to recurring situations. In chapter 4, I qualify these findings by exploring how modeling could also be taken up by students without this dynamic understanding. I attend to how and why students might approach their genres as ossified (see Medway), rather than dynamic, and the implications of that approach to their understanding of genre variation and convention.

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Schema design is a collaborative writing activity that—as discussed in the introduction and chapter 2 of this dissertation—asks collaborators to abstract and represent an object of inquiry in a way that is computationally “readable.” Students were tasked with developing viable systems of markup for their own writing and that of their group members. Because we approached the class with a rhetorical understanding of genre, one which foreclosed the possibility of “accurately” or “completely” modeling a genre, the design, testing, and revision of genre models engaged students in a balancing act between technical concerns—the design and enforcement of constraints—on the one hand and expressive concerns on the other. That is, the technical standardization that XML requires for interoperability, taken to its logical extreme, would foreclose all possibility for expressiveness within the model. And, just as a perfectly standardized genre model would essentially be a fill-in-the-blank recipe for a genre, a perfectly expressive model would be unintelligible to the computer—and probably to humans, too—and would foreclose the possibility for interoperability and interchange. Genres themselves navigate a similar tension between convention—prototypicality—and the particularities of situated genre use. Genres “must accommodate both stability and change” (Berkenkotter and Huckin 481; see
also Weisser et al.; Johns). I want to argue that schema design—as a process of arriving at community-driven standards—is uniquely well positioned to animate and represent this tension for students.

To understand how this tension can be negotiated in schema design, it is helpful to look to the field of digital humanities (DH). Standards for digital representation, specifically in the realm of scholarly markup projects, have been developed specifically to navigate this tension in DH projects. Writing in this realm, Julia Flanders offers a definition of collaboration:

Collaboration—literally a shared work—is always understood to carry with it some sort of sacrifice, a trade-off between autonomy and synergy. In our collaborative relationships, we intensify the concessions we make to the demands of the social contract, and we voluntarily submit to norms of behavior and constraints on our freedom of action in order to gain the benefits of a group undertaking: a barn-raising, a collection of essays, a successful conference. But even before we as collaborators can adopt these norms, we (in a larger sense) also have to develop them. The collaboration of conversation is predicated on the norms of language; collaboration on a scholarly edition is predicated on a set of private agreements about the editorial mission, set against the backdrop of larger disciplinary expectations concerning what editing means and how it proceeds. So we might start by observing that collaboration takes place within frames of expectation that may be private, local, professional, or broadly social. The vectors of agreement and conformance are thus not solely between the collaborators themselves, but also between the collaborators and some standards that operate beyond their own sphere of activity. (Flanders 67)

This is a useful framework for a discussion of schema design as collaborative work because in the case of schema design, important “vectors of agreement and conformance” exist: 1) between
the collaborators as they develop a shared schematic genre model; 2) between the collaborators and the standards and guidelines of XML; and 3) between the collaborators and the wider expectations and demands of the course. Thus, the outcome of the collaboration—the development of some consensus represented by the schema—is mediated by all of these “frames of expectation.”

For Flanders, the “norms” for text markup in the digital humanities exist in the form of technical standards and guidelines, most notably the Text Encoding Initiative (TEI). She argues that these norms navigate a fundamental tension in digital humanities, the tension between the technical requirements of digital expression and the disciplinary goals of humanities research. In other words, these norms must “carry a double weight: they must achieve some kind of technically actionable uniformity, but they must also express useful scholarly concepts and differentiations” (68). In her article, “Collaboration and Dissent: Challenges of Collaborative Standards for Digital Humanities,” she articulates how the TEI, which is the primary set of guidelines for scholarly markup projects in DH, has sustained debates over these “competing concerns” over a period of more than 30 years (Flanders 69). She explains that, in debates around this issue, “[I]t is usually assumed… that a strongly enforced uniformity will facilitate collaboration, and conversely that heterogeneity will militate against it” (70). She suggests otherwise, that because digital humanities projects are humanities projects, the sacrifice of expressive nuance and heterogeneity for interoperability and interchange is “impossible and also undesirable” (70). How, then, might we proceed in our understanding of the function of community-driven markup standards?

Flanders looks to John Trimbur’s article, “Consensus and Difference in Collaborative Learning,” to establish a working definition for collaboration that recognizes the role of dissent
in consensus making, and uses this definition to articulate the TEI as a “mechanism for negotiating dissent” (75). In Trimbur’s view, collaborative learning is “not merely a process of consensus-making but more important[ly]… a process of identifying differences and locating those differences in relation to each other” (610). Collaboration, in this view, does not seek to efface or normalize difference, but is rather a recognition of the “inexhaustibility of difference” (615).

This is an important point for understanding the cases that follow in this chapter. For Flanders, standards like the TEI function as “a common mechanism for negotiating about data representation” (75). Flanders argues that “the TEI is rare (but perhaps characteristic) in taking seriously the legitimacy of dissenting views while also seeking a technically functional outcome. It needs such views to exist—indeed, it relies on their existence as the driving force behind its own onward progress—but it wants them to exist in relation to the community at large, as part of the discourse rather than apart from it” (71). Similarly, my students were tasked with developing emergent standards for the encoding of their own writing. Students had to negotiate the tension between technical uniformity and expressing the concept of rhetorical genre that was the framework for the class. And, importantly, they had to arrive at an actionable consensus (a genre model) that could still accommodate differences among their individual performances of the genre. Because of the procedural relation between the schema and the individual files, and between the schema and the shared understanding of the genre, schema design becomes a “mechanism for negotiating dissent” (Flanders 75), one which functions “both socially and technically” (Flanders 77). Dissent is not covered over by the schema. A schema is understood to be a site of ongoing negotiation, not the end-product of negotiations representing settled consensus and the end of the conversation.
In what follows, I develop two case studies to examine what “standards” students arrived at for representing genres and how they explain their collective decision-making processes in arriving at those standards. In the following chapters, I will continue this discussion (chapter 4) and demonstrate how they drew on these standards—these genre models—individually as writers (chapter 5). Critical though they are to the dynamics of the classroom and to collaboration, there is not space to adequately represent individual students’ identities in this or the subsequent chapter. This bracketing of identity, while not ideal, is necessary due to the level of analysis employed here. In short, I am exploring what is included and excluded in schematic representations of genres, what those components were designed to accomplish, and how they came to be. In chapter 5, I develop case studies of two individual students which more fully account for the role of identity in students’ individual reading, writing, and thinking processes.

(Re)Making Shared Genre Knowledge

With all the genre models in both AWD and FYW, there were three primary phases of development: the initial model designed by three group members (project 2), revisions to the model made after drafting and reviewing their individual compositions (project 2), and revisions to the model made by a new group of students as they came to the genre and attempted to use the model for the first time (project 3). Although revisions to the model in practice were more fluid, these three phases provide a useful structure for tracing patterns in schema development. Each of

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Interested readers can view all students’ (de-identified) writing from the course on the Digital Appendix, “Markup in the Writing Classroom” at http://markup.kevingeralsmith.com. The appendix is organized by genre, enabling users to read examples of the individual compositions produced with the schemas discussed here and those of the other genres studied and produced in these classes.
the two cases below will be discussed across these three phases of design, use, and revision.

The two groups I discuss produced genre models in different classes, modeling different genres, and for use by student writers at different moments in their academic careers. Despite important differences between the two models in terms of what was produced, I want to draw attention to an emergent process pattern across these two contexts: In response (primarily) to practice-based tensions arising in schema use, students in these two groups primarily made revisions to their models that increased the flexibility of their respective schemas. By drawing on interviews, group reports, and reflective writing, I argue that this pattern reflects the negotiation of genre variation within the constraints of rhetorical convention, prompted by the similar, but materially and dispositionally distinct rhetorical situations of the different group members.31

Case 1: Movie Reviews

Phase 1 – Initial Model: Developing a Working Theory of the Genre

The initial design of the movie review genre model saw the three group members, Zoe, Daniel, and Adam, engaged in boundary-setting and using the schema to represent the findings of the research process.32 The development of the initial model shows the importance of boundary drawing in the development of a theory and model of a given genre.33

Early research time was used to decide, broadly, on what the group meant by “movie review.” The group contemplated what was within the scope of analysis and what was not. When

31 Again, the processes of individuals will be elaborated upon in chapter 5.
32 This process was guided by a modified version of questions provided by Devitt, Reiff, and Bawarshi in chapter 2 of their textbook, Scenes of Writing.
they began to talk as a group, they initially thought of studying reviews of superhero movies, specifically. After talking it over with me, they decided to broaden their genre selection to reviews for any type of movie. With this decision made, they then turned to the different contexts and media in and through which movie reviews circulate. Citing the ultimate goal of the assignment—devising a schema and using it in individually written documents—the group decided to focus on written reviews, although they did claim that video and written reviews were not “fundamentally different” in terms of the scene and situation of the genre (Movie Review Group Report). They also decided “auditory reviews,” referring to audio reviews one would encounter on a podcast or radio show, would not be included in their model because that “subsection of [the] genre is not very prevalent.” Finally, they excluded “user reviews,” reviews submitted to websites like Rotten Tomatoes by anonymous users, “because… they lacked professionalism/authority so they would never interact with other genres such as newspapers” (Movie Review Group Report).

In this process, Zoe, Daniel, and Adam became arbiters of the genre, seeking to develop an initial working theory of the genre. That they exclude certain kinds of reviews as illegitimate public discourse is itself interesting, pointing to an emphasis on the uptake of the genre—interaction with other genres in a wider ecology—as central to its efficacy and even to its genreness. This conceptual activity was important for the group to make early decisions about the rhetorical constraints they understood themselves working within and through. Other groups similarly spent much of their early research efforts searching for, and sometimes arbitrarily drawing, boundaries for their chosen genres.34

34 See discussion of edutainment blogs in chapter 4 for a more on the importance of boundary-setting in schema design.
Once the initial boundaries of the genre were defined, the group set about gathering samples for document analysis. These examples were drawn from a range of online sources: *The Onion AV Club, The Washington Post, Reelviews, The Atlantic, SFGate,* and *Detroit News.* They analyzed their examples through cooperative close reading and by employing a word counting application to reveal implicit patterns in the examples. From that analysis, they found that the examples refer frequently to the director, main character, the title of the file, and the genre of the movie. These patterns are reflected in an initial element called `<background_info>`, which was eventually changed to `<context>`, which they defined in their initial model: “Can be separate paragraph if not placed with synopsis, contains the information required to understand the movie such as who the actors are and their roles, the director and his [sic] role, and the optional attribute of the history of the franchise (if franchise) [requires @type attribute].” The available values of the type attribute were actor, director, and franchise history. In this example, we can see a direct uptake from the research process into the genre model. `<context>` reflects structural, rhetorical, and semantic concerns that were discovered through the document analysis. However, not every pattern from the analysis phase of the project found its way into the initial schema. In their group report, they wrote: “There were many more optional tags we could have included for movie reviews.” When asked for a specific example of an element that did not make it into the schema, Daniel offered the following:

A big one was... jokes and quips... It was a big one that we had initially. It was jokes, because there would be certain reviews of “The Lego Movie,” or “Deadpool,” where the author would make a subtle, little joke about the movie. We were originally going to have that in there, too, then we looked at some more serious reviews about “Birth of a Nation” and “The Purge,” and they were completely stone-faced, serious the entire time. That was
one big example of a tag we definitely could throw in there if we want to have a more complete view of the movie review genre, but we decided to exclude it *because we weren't really planning on using it*. (Interview 2, emphasis added)

It is important to note that, according to Daniel, the group made the decision to excise jokes/quips from the schema because they did not anticipate using that component *as writers*. As a design group, Adam, Zoe, and Daniel invented (and rejected) schematic components with an eye towards their future genre performances: What would they use in practice? What resources would meet their needs as writers? They designed their initial model to facilitate those needs. This concern for how writers—here themselves—will use the schema connects this rhetorical activity with the rhetorical canon of delivery, and particularly with the concept of “rhetorical velocity” (Ridolfo and DeVoss), a connection I take up in the conclusion and below. As we will see in the second phase of project 2, it is precisely this process of using the schematic components—in a sense, recomposing the schema in practice—that animated revisions the group made to the schema.

It is equally important to note that the group originally planned to make a schema specifically for the genre of superhero movie reviews. It was in that specific sub-genre of movie reviews that the group initially identified a pattern of jokes and quips being used by movie review authors. However, as they broadened their analysis to other types of movie reviews, they realized that the pattern of jokes and quips was not as prevalent as they first thought. The broadening of the conceptual schema saw the potential jokes/quips component drop out, which highlights the importance of the scope of categorization—decided, in part, through boundary setting—for deciding upon relevant rhetorical conventions. The group’s definition for the genre shifted, the frame of analysis was widened. Thus, although a convention which did appear to be
relevant to a sub-set of movie reviews, jokes/quips was not a convention that the group decided should formally constrain their writing.

As they discussed the emergent patterns in class, I noted questions I heard them ask one another: “What if it depends on the author?” “What if it changes based on the genre of the movie, or the subject matter of the movie?” These questions were central to the construction of interview questions that the group sent to six professional movie critics, an aspect of the research process while, not mandatory, was strongly encouraged. Along with an explanation of their task, the group sent a list of what they termed “generative questions that would help us create our own movie reviews as authentically as possible” (Group Report).

The list, reproduced in Box 1, includes questions of audience, context, purpose, and process.

Although they only received one response to these inquiries, “the thoroughness of this reply was very helpful in our understanding of the movie review writing process” (Movie Review Group Report). In

**Box 1: List of questions sent to movie critics**

- How do you pick the movies you review?
- What criteria do you base your reviews off of?
- Who is your intended audience?
  - How did you decide on that audience?
- Do you change the style of your writing based on what movie you are reviewing/what your intended audience is?
- What is your main goal when writing these reviews?
  - Do you do it for profit or to inform people?
- How much, if at all, does your publisher affect your writing?
- What is your writing process?
  - Do you write right after watching the movie?
  - Do you take notes during the movie?
  - Any other authors involved?
    - Is it a collaborative effort?
  - Are peer reviews common in your type of writing?
- Do you hold back many opinions?
  - Why?
  - How often?
- Do you follow a certain outline/structure you follow when writing?
  - What kind of structure?
particular, they claimed, “Based on the response we got from a professional movie reviewer, we know that [authors] write reviews in order to ‘get the word out’ about a show or movie they appreciate. We also learn[ed] what information is most important to authors when trying to inform an audience about the movie: genre of the movie, who acts in it, who directs it, and what the major plot points are” (Movie Review Group Report). Some of these findings corroborated their document analysis—the emphasis on director, actor, and importance of the genre of the movie being reviewed.

They wrote of their initial model: “We incorporated most of the analysis into our XML/Documentation. There were many more optional tags that we could have included and would have made for a more robust review as we’ve seen from our example, but we did not want to have too broad a schema” (Movie Review Group Report). This is an interesting moment, as their report suggests a concern in the first phase of their work over the relative breadth of the genre model. In the second phase of the project—revisions to their initial genre model undertaken after drafting and peer review—the breadth of the model remained a concern for Adam, Zoe, and Daniel. However, rather than the model being “too broad,” the majority of revisions made to the initial model actually increased the flexibility of the schema, broadening its potential for use by the three student-writers.

*Phase 2 – Revisions to the Initial Model: Responding to Constraint*

After drafting their individual examples, Adam, Zoe, and Daniel made six significant revisions to their model. The bulk of these revisions increased the flexibility represented by the genre model (highlighted in the excerpt below). They write:

We made a few changes to the `<opinion>` tag. We felt as though the tag was too broad and so we added the following types: reaction and critiques. These are defined in
our documentation. In our current schema, \texttt{<opinions>} is placed under \texttt{<p>} and therefore takes the shape of a paragraph. Because an opinion can be as short as sentence, we decided it would be best to allow \texttt{<opinion>} to be a free element and be able to go anywhere.

We also decided to get rid of the \texttt{<book_progression>} tag and replace it with a \texttt{<comparison>} tag. This allows us to compare both other movies and books to the review we are writing. We think this makes everything a little neater.

We also decided to make \texttt{<synopsis>} more flexible because we didn't like forcing it into the intro paragraph. It can now go in any paragraph, including the intro paragraph.

We also changed \texttt{<into_para>} into \texttt{<intro>} and allowed \texttt{<p>} to go under both \texttt{<intro>} and \texttt{<conclusion>}. We did this because the first paragraph in a typical movie review isn't the synopsis, it usually a little blurb about the author's opinion on the movie.

We allowed \texttt{<conclusion>} to have multiple paragraphs within it, because some people write that way. Additionally, \texttt{<summary>} can only go in \texttt{<conclusion>} because that is how most of the movie reviews we read through were structured. We also decided to make the attribute of \texttt{@rating} optional within \texttt{<summary>}, so it would match the other attributes within \texttt{<summary>}.

We changed \texttt{<background_info>} into \texttt{<context>} because it was a more fitting word and this allows us to be more specific with the information we are describing. This element can be used anywhere. (Movie Review Group Report)

I reproduce this section of the report at length because it serves to demonstrate the primary
concerns of the group as they revised their model: They broadened definitions and expanded the availability of elements to make them more amenable to more diverse situations. Daniel and Zoe, two case study students involved in this group, described the revision process as a negotiation of their different, but still recognizably related, rhetorical situations. By making typically occluded differences (and similarities) between group members’ texts explicit, collaborative schema design required the thoughtful articulation and negotiation of genre variation within the conventions of the genre the group decided upon in their initial genre model. Zoe explained: “Adam started [proposing revisions]. He did it differently than I did. He wrote in Oxygen using the tags as he was writing, unlike I was doing. A lot of [the revision process] was based on his opinion like, ‘Oh, I felt limited in this way or that way’” (Interview 2). These feelings of constraint while using the genre model to produce their individual compositions were not necessarily felt initially by each member, but the mechanics of schema design required that if one group member requested a change, then the schema must reflect that change. These tensions arose for this group out of moments where the schema disrupted something that they wanted to do as writers—that is, when they felt constraints during schema use, in practice. As in Trimbur’s and Flanders’s conceptions of consensus, difference in this approach was foregrounded as productive, rather than elided in the pursuit of consensus.

In a typical classroom environment, differences amongst students—often made palpable during peer review activities—can elicit deep thinking on the part of student writers. As Elizabeth Wardle’s research has shown, “genre knowledge may at least partially be gained through participating in the work of creating a new genre with the help of a community of supportive peers” (101). Yet, they can also be easily disregarded or superficially chalked up to unique stylistic tendencies. In the markup classroom, however, differences must be negotiated
within the design of the schema. Because all individual documents are subject to validation by the same schema, students must identify and bring issues to the group. Daniel described this process:

Daniel: After we wrote our first drafts, we all had little complaints we had about our schema. The next night we looked at our schema, and hashed out what exactly our problems were, and figured out what we needed to change about it. The big one was making opinions go anywhere. A movie review is an entire opinion piece. We can't just keep it its own separate thing. We got to keep it flowing so we can put it anywhere we want. Everything's an opinion pretty much … We also did a bunch of minor changes where we made things more flexible, changed the names of some stuff, just because it made more sense.

Kevin: All of those changes seem to me to be adding flexibility. Right? Reducing the amount of the constraint you had originally placed?

Daniel: Mhmhm.

Kevin: Is that a function of the genre, or a function of writing in markup? Like, you don't realize how the rules are enforced until they're enforced on you? Or is it movie reviews should be flexible, and we just didn't realize how flexible they were?

Daniel: I think it's probably more of an XML thing… We had the tree laid out for us, but we didn't really realize how rigid it was going to be. We did, but we didn't foresee our own writing styles, and how I was going to be impacted by the hierarchy tree. (Interview 2)

Daniel had a palpable feeling of constraint as his writing was “impacted” by the schema. The rhetorical constraints that the students had devised for themselves, based on their research,
impinged upon their writing in various ways. Their writing, in turn, pushed against these self-imposed restrictions, revealing new knowledge of the genre: <opinion> tags should not be relegated to a particular section of the review; <book_progression> speaks too specifically to a particular rhetorical situation, and the model is better served with a more widely applicable <comparison> tag; and so on. The pattern of these changes reflects the increasing availability of genre variation within the constraints imposed by the schema.

I want to focus, as well, on Daniel’s claim that the “tree,” or hierarchical schema, “impacted” their writing. What was he describing here? If the tree represents a contingent theory of the movie review genre made material in the schema, then composing, for Daniel, in markup made explicit the application of that theory in such a way as to expose shortcomings of the theory. Since each group members’ genre performance necessarily differed—Daniel refers to this as the group’s different “writing styles”—schema design confronted students with a fundamental tension in genre use: the accommodation of genre variation within the rhetorical constraints of identifiable conventions. It is this tension that Daniel felt and described as being impacted by in his writing process.35

In reflections and interviews, Daniel’s fellow group members addressed this accommodation of generic variation. For example, when asked what she learned about movie review as a genre, Zoe responded that she had learned to “be very flexible. It all depends on the authors. I don’t think you can ever come across two that are exactly the same, like two different movie reviews for Hocus Pocus will never be the same” (Interview 2). Adam reflected similarly

35 Again, there is not room in this chapter to explore individual students’ writing processes and how the “impact” Daniel described played out. Chapter 5 includes an extended discussion of how one member of this group, Zoe, used the schema in her own writing process.
in a discussion post, claiming that, “The schema that my group generated on our genre was very comprehensive and tolerant of the different presentations of the genre. Because it was built with all three members in mind … the schema was adapted to the structure we all needed” (Google Community post, emphasis added). Both Zoe and Adam articulated a view of the review genre as dynamic—able to accommodate different approaches and styles. And while Daniel’s conception of variation was limited in scope to the different writing styles amongst his group members, both Zoe and Adam made larger claims about genre variation, where they abstracted from their situated experiences composing with and revising the schema and applied those experiences to future unknown writers of the genre.

It is important to note that the designers of the movie review genre model—and indeed, all students—did not view their model as authoritative or final. As we see above, their experience of designing and revising the model places an emphasis on flexibility and variation within a system of self-imposed rhetorical constraint. This model, as well as it was designed by the group, was never meant to be anything more than contingent—a model that enables them to complete the assignment and produce a successful movie review. Zoe articulated this ideal, “I didn’t have to change my writing to follow what the schema said, they worked in unison” (Google Community post). The model and their individual writing informed one another such that their writing was successful.

Yet, the group was not under the impression that the model included everything. Indeed, there were important aspects of the genre that were not represented in the model, though they were discussed amongst the group. Daniel, for example, mentioned the concern the group voiced over the “tone” of different movie reviews, citing the genre of the movie being reviewed as a major factor for the tone of the review. Despite identifying this convention of movie reviews,
Daniel claimed that he was hard pressed to envision a schematic component that could address this aspect of the movie genre. This is a potential drawback of XML, as it is very good at representing some things, and less adept at others. The danger was that Daniel’s knowledge of tone remained implicit, and thus was not leveraged by his collaborators in his group, or other classmates using his schema in project 3. Beyond concerns that the group felt were not representable in a schema, the group also recognized the model’s rootedness within the unique needs of their group. Daniel discussed this in an interview when asked about how he thought future users would take up the movie review genre model.

**Kevin:** Knowing now that other students are going to use your schema to compose their own versions of movie reviews, are there any things that you would change?

**Daniel:** I'd have to see what they're complaining about, because I think it's fine, but I know, definitely, that there's going to be some issues of someone trying to write a movie review down the line, and then they can't do something that they really want to do. Then I'll see what they're trying to work through, and then I can say, “Oh, yeah, we should have changed that,” but I'd have to see it. (Interview 2)

As a location of collaboration, the schema encouraged the negotiation of difference and variation amongst group members. The explicit grammar of schema design makes material this negotiation in such a way as to be productive of genre knowledge. Daniel recognized this as he asserts that he would need to “see what they are trying to work through” in order to renegotiate his theory of the genre. It is not that he was skeptical of this occurring. He was quite sure of that eventuality. However, in order to update his working theory of the genre, reflected in a revision to the schema, he would need the classmate to articulate their positioning with respect to the schema such that he could adopt that positioning.
Zoe, too, expressed a sense of how the schema acted as a location for and actor in negotiating difference. When asked about future users adopting the schema she claimed that she felt the schema worked: “I don't think we would change many things. We feel like all the flexibility within the genre is covered in our schema and in our documentation” (Interview 2). However, she also was aware of how the existence of elements in the schema prompted conversation amongst group members, claiming, “We could go back and add all those other tags that we didn't include for their sake if they want to talk about it” (Interview 2). This conception again recalls the concept of rhetorical velocity, as Zoe demonstrates a keen awareness that the contents of the schema (the contours) would require or enable certain conversations amongst future writes/users engaging the schema with the goal of producing successful examples of movie reviews. Looking forward to future writers, Zoe recognized that the schema, beyond a location for collaboration, was also an artifact of that collaboration, and a tool which would inform and persuade future writers towards a particular understanding of the genre.

As an artifact of collaboration and a tool for writing, the schema reflected the specific material and dispositional factors of these three group members—the language and design, especially those of the revision phase, were rooted squarely their concerns. Revisions were devised to enable the group members, as writers, to produce the genre in ways that they felt would be productive. Daniel and Zoe both recognized this fact as they looked forward to future users. Their responses in interviews demonstrate a developing understanding of genres as dynamic, constellations of strategies that must necessarily be stabilized (if only momentarily) in order to be deployed, and the role of the schema in making explicit and representing that moment of stabilization.

Phase 3 – Final Revisions: New Writers and New Concerns
The final revisions to the movie review genre model were undertaken by a group of five students, different from those who originally designed the movie review genre model. These students, each having worked on one of the three other genre models produced in project 2 (satirical articles, resumes, and op-eds) decided to work on movie reviews for project 3. The revisions to the model were minimal. The most substantive revision the group made was to add additional values of “first_impression” and “recommendation” for the @type attribute of the <opinion> tag. According to the group, the revisions were similarly rooted in a desire for the schema to be “less rigid” due to the “wide variance in styles” (Movie Review Group Report 2). Mark wrote, “The changes we made to the schema, we think made it a little easier to take the review in our own direction” (Google Community post). We see here how the schema, as an artifact of collaboration produced by Adam, Zoe, and Daniel, became an actor in the collaboration and genre performances of the project 3 group. Thus, changes to the schema based on the group’s “own directions” must be made “with respect to the community as a whole” (Flanders 71), an affordance that enables asynchronous collaboration amongst design groups.

Part of the perception of rigidity in the schema may have been due to the project 3 group expanding the initially imposed boundaries of the movie review genre. The group wrote, “Because of the nature of movie reviews having no singular platform (can be in the form of a video, can be professional or amateur), the content can vary greatly” (Movie Review Group Report 2). This assertion was an expansion of the boundary limits set by the initial design group, who specifically decided not to include video, audio, and amateur reviews in their design. Thus, the additional flexibility that the project 3 group felt they added may have been less about the design of the original model and more a reaction to a broadening of the potential rhetorical situations to which the model was designed to respond. In short, new writers meant new
concerns and conceptions of the genre. These shifts had to be accounted for in schema design.

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In what follows, I offer a discussion of a second case, drawn from the AWD course. Despite important differences between the groups discussed in these two cases, reading across them enables me to highlight similarities in process undertaken by collaborative groups in these two contexts—namely, that students modeling, using, and revising the schema for public initiative proposals also drew upon practice-based moments of tension as writers to negotiate genre variation dynamically with rhetorical convention. These moments were demonstrated by the increasing flexibility of the model across phases of revision.

**Case 2: Public Initiative Proposals**

As an advanced class, students in AWD were tasked with studying and producing genres broadly relevant to their disciplines (Engineering and Computer Science). All of these students had professional experience through at least one co-op, which many of them drew upon in discussion and in their writing projects. Although research processes described on the project prompts were very similar across FYW and AWD, the analyses of genres during the research process were generally more robust in AWD than were those undertaken in FYW. I attribute this difference to the students being at different curricular moments, the prior experience of AWD students with specific genres, and the experience of AWD students producing and using writing outside of academic contexts.

Yet, when analyzed in terms of process, there is still a pattern across these contexts. In AWD, though the students focused on disciplinary genres, the phases of development were similar to those outlined in the FYW movie review group: There were two initial phases of
schema development by a four-member group for project 2, followed by revisions made by a second group of three students for project 3. Like the movie review group, the initial phase of development began with boundary-setting, followed by document analysis, and an interview with a writer of the genre. Once the initial model was developed, revisions to the model increased the flexibility to accommodate more diverse approaches to writing the genre. Finally, the flexibility of the genre model was increased by the new group of students for project 3 as they made changes to the model based on their own needs as writers.

Phase 1 – Initial Model

As befitted the more advanced standing of these students, the depth of the genre analysis that this group\textsuperscript{36} undertook in the initial development phase was exemplary. As in the case of the movie review model, a significant portion of the early research time was spent by the initial four students delimiting the boundaries of the genre. The group writes, “We began our study by constructing a list of all the types of proposals we have been exposed to. In doing so, we were able to gain an understanding of where our experiences overlapped. By focusing on public initiative proposals for this project we were able to narrow down the scope of our genre to make finding examples and creating a sample schema slightly simpler” (Proposal Group Report). Tim, a member of this group and interview volunteer, shed further light on this process.

\[T\]hat was actually a really big part of our conversation—recognizing when we started talking about proposals that required requests versus public initiative proposals. That's why we had to narrow it down, because there is a big difference between a proposal and

\textsuperscript{36} Group members included Tim, a case study student, and others. Most of the data used in this section is drawn from their collectively authored Group Report, with occasional clarifying data from interviews with Tim.
public initiative proposal in the sense that anyone can see a problem and say, this is what I want to do, public initiative proposal first step. And what that's going to do is trigger the whole reaction of people talking about it, town meetings, response to those meetings. And then eventually, as it gets approved, then down the line you have an RFP and a response proposal. So, there's two points in the timeline where you have a proposal and we tried to really make sure we focused on the first point. (Interview 2)

By articulating this fundamental difference between public initiative proposals and later proposals that respond to an RFP (request for proposals), Tim demonstrated an understanding of the wider ecology of which the public initiative proposal is a part. Even more, he recognized the role this specific genre plays in that activity system, not simply that it is a part of it. This wider focus expanded the scope of their document analysis:

In an attempt to better understand the situation involving public initiative proposals, final projects were observed to gain an understanding of the general format. We also studied how RFPs are constructed, modeling after a successful proposal. To gain a better understanding of the process before a proposal is submitted, we contacted the Director of the Stoughton Public Library Board of Trustees. Her input helped us to see how the initial recognition of a problem interacts with the final proposed solution that we have already studied. In addition to studying the proposals and RFPs, we analyzed a marketing campaign the town of Franklin, MA produced that went alongside the proposal to change the traffic pattern of the downtown area. (Proposal Group Report)

This larger scope was informed by the group’s discussion of Clay Spinuzzi’s article, “Four Ways to Investigate Assemblages of Texts,” which was assigned to the class. According to their report, this reading pushed the group to “examine different assemblages of text,” including “both the
linear and progressive steps involved in the situation surrounding a public initiative project as well as the overlap in conversation and exchange of information throughout the proposal writing process.” They continued, “With public projects there are a number of different stakeholders involved at different levels at different points of the project. Because of this, it is very important to keep track of any decisions or steps made in a formal and publicly published format.” It is through this lens that the group understood the structural and lexical patterns found in examples of the genre:

The language or types of words found within these proposals are general and simple enough to be understood by the general public. The pattern and structure of these proposals are usually started off by a title element where anything associated with that material is found under the title. The sentences found in these sections are shorter and contain all necessary information to make its point in that section. In these proposals there aren’t many, if any, sections where you’ll find excess writing that sets up another section or for instances uses writing tools to develop tone or forms of imagery. Instead the sentences are purely informative and are design to make one point after another.

(Proposal Group Report)

They drew conclusions as to why these patterns exist, making claims about the situation where the public initiative proposal is an appropriate response:

The ability to communicate your ideas or goals to a large audience with varying levels of involvement and expertise is vital to achieve the changes that you hope to make. In addition, we were able to observe how the author(s) of a proposal sought to control the uptake of the genre by including various sections in the proposal. The author(s)’s goal is for their intended audience to agree with their proposed solution method, and will attempt
to construct their argument to lead the reader to conclusion that the author’s suggestion will be beneficial for the town and is worth pursuing. (Proposal Group Report)

In this explanation, we also see the group drawing on other Rhetorical Genre Studies readings for the class, most notably in their use of the term “uptake,” theorized in Anne Freadman’s chapter “Uptake” as well as Weisser et al., “30 Years of Genre as Social Action.”

The uptake of RGS vocabulary in the Group Report for this group helps us understand the underlying theory of genre adopted by the group, and how that theory was taken up in the design of the schema for public initiative proposals. Though the group’s schema was a “direct result of the examples that we examined and the people that we talked to,” and thus well aware of the conventions of the genre, they also tried to design a schema which was capacious enough to accommodate a wide range of variation within the genre.

Since there are so many different methods of persuasion and such different levels of professionalism, many sections needed to include overlapping optional sections… Each proposal we studie[d] had its own methods to attempt to persuade the audience. There were many sub-sections that could have been included to reflect all of these strategies, but we decided to keep our sections broad enough to be all-encompassing with the understanding that it could be altered or added upon when the situation called for it.

(Proposal Group Report)

Rather than prescribe particular rhetorical strategies—methods of persuasion they identified in example texts—the group instead aimed to accommodate wide use of the schema, recognizing that the design of the schema was open to additional revision and alteration based on the needs of each particular writer. Notice, too, that at this initial design phase, the group already discussed the accommodation of variation in terms which anticipate the future needs of writers using their
schema. This design decision reflects an understanding of genre variation and recognition of rhetorical conventions as common strategies for accomplishing rhetorical action. The group’s focus on the relevance of the situation—and the expansion of situation itself to attend to the wider genre ecology—in the potential deployment of those strategies can be read as a recognition of the material situatedness of genres—since no two rhetorical situations are materially identical, available strategies may or may not be relevant to a given situation. This also bears a striking resemblance to the FYW movie review group’s claim that “there were many more optional tags that we could have included” (Movie Review Group Report), the stabilized representation of a genre in schema form was never comprehensive, but a strategic decision motivated by the group’s felt experience of the schema in use.

The decision to keep these persuasive strategies largely absent resulted in a genre model that was concerned primarily with content—out of 27 total tags, the documentation for 23 tags were coded as addressing semantic concerns (i.e. Identifying and defining the content of an element), compared to just 5 tags (19%) coded as rhetorical. A potential shortcoming of this approach is the risk that the project 3 group may uncritically adopt the model inherited from the project 2 group without the wider understanding of the genre, the activity system, and so on. This risk is part of the material constraints of XML as a medium for representing a genre. Because everything from research cannot feasibly be included in a formal model, it is important that the project 3 group read the project 2 group report in order to understand how the boundary-setting and uptake processes played out for the initial design of the model.

Phase 2 – Revisions to the Initial Model: “We thought we could encompass just about everything”

Like the movie review group the public initiative proposal group’s revisions responded to
the experiences of the members composing within the constraints they devised. And, like the earlier example of the movie review, the revisions demonstrate an overall increase in the flexibility of the schema. These similarities are process-based. In terms of the models being produced, my sense is that AWD students were much more experienced writers. As such, AWD students had more robust understandings of how the genre they were producing functioned socially. So, while the practice-based tensions still prompted revision, these moments were increasingly less rooted in individual needs (or attributed to “style” as we saw earlier with Daniel) and more tied to an understanding of genres as social actions, in use.

They wrote, “After our first attempt at using our schema, a few shortcomings became evident” (Proposal Group Report). The principle revision was a structural change to add flexibility to the schema: “We decided it was necessary to incorporate multiple paragraphs into each of our sections.” This change shifted from a strictly-delimited, element-based structure to a more abstract structure that allowed elements to appear anywhere inside of arbitrary paragraph elements. This had the greatest effect on the feasibility section of the proposal, where the group added three new child elements for the <feasibility> element, defined as “Initial and long-term implications or obstacles in the implementation of the project.” The three child elements the group added were: <economic> (Initial and long-term financial implications of project compared to do-nothing alternative), <social> (Initial and long-term implications or obstacles as they relate to members of the community), and <environmental> (Initial and long-term implications or obstacles as they relate to the surrounding environment). Tim called these child elements the “three pillars of sustainability,” and with which, he claimed, “we thought we could encompass just about everything we figured would be included in sort of a shrunk-down version of a feasibility report” (Interview 2). He suggested that it was in this <feasibility> element
where the group “got the most structured, most concrete in our guidance to the writer” (Interview 2).

Phase 3 – Final Revisions: Expanding Feasibility

The <feasibility> element remained a concern as a new group of three students used, responded to, and revised the genre model in project 3. Two additional child elements were added so that the “user of the schema would not just be limited to the three feasibility sub elements already defined” (Proposal Group Report 2). These additional elements were: <legal> (Initial and long-term legal implications of project) and <other> (Other implications of the project that do not fit in other sub-elements of feasibility). John, a member of the project 3 group, addressed how this particular change came about.

John: I think we added a legal or other section to that, because there's a lot of projects where you don't know the legality of it, or if it's going to be on private land, or those sort[s] of issues.

Kevin: Do you think that adding those elements was a result of the specific projects that you all were doing? How did that conversation play itself out?

John: I think it was more kind of the feasibility thing. First of all, is there money, or is there funding for this? Then the other group had thought of environmental impacts. We were thinking with a lot of public work and stuff. There's a lot of difference in public land, private land and all that stuff, just general stuff like that. There can always be a legal element to stuff like that, or the construction, if it goes over certain decibels, breaking local ordinances. There's always going to be something legal probably.

Kevin: Right. Going back to the scope, you said that was a little unclear. How did that present itself?
John: It was the differences in how much people entered in each section. Some would have two sentences under one attribute, some would have two or three under all three. It was kind of unclear what the importance of that section was, I think… We had pretty much all done our main draft, and then come back and said, "When I was working on this, it seemed kind of unclear, kind of funny that this was working this way." I think that's what prompted that stuff. I guess it would have been after the peer review.  

(Interview 3)

The constraints of the schema “seemed unclear” or did not “work” as expected for the group, leading them to compare “differences” between each members’ usage of the <feasibility> element. Ultimately, this comparison, enabled—indeed, required—by the material existence of the schema, led the group to broaden the scope of the element in question. We see again the negotiation of generic variability within the framework of rhetorical constraint and convention. The revision was prompted by the project 3 group having a shared language, representing a set of strategies, and recognizing differences in how each of the group members carried out those strategies.

**Key Findings from Movie Review and Public Initiative Proposal Cases**

Here, I want to offer some key findings that we might draw out of the two cases outlined above. There are some clear limitations in offering these findings. For one, these two cases represent, in many ways, ideal examples from these two classes. While not anomalous, these genre models did happen to be worked on by some of the strongest students in the two classes. For FYW in particular, the initial designers of the movie review genre model—Daniel, Zoe, and Adam—were three of the strongest writers and most engaged students in the class. Despite these
limitations, looking at these two cases next to each other allows me to explain a process pattern which emerged across these two different courses, and which can be of use to teachers and researchers of genre.

I should also note that the findings presented here are qualified and extended by the findings of the next chapter, which examines another process pattern identified in schema design across the two courses: the recurrence of components across schema designs. With these caveats in mind, I discuss the three primary findings from these two cases: 1) The pattern of increasing flexibility seen in the development of both models is representative of the negotiation of the various writerly positions of students within the group; 2) students negotiate schematic components primarily prompted by practice-based concerns (i.e. to get things done); and 3) students recognize the impossibility of creating a “perfect” genre model.

The pattern of increasing flexibility seen in the development of both models is representative of the negotiation of the alternative writerly positions of students within the groups. That is, because genre performance is always situated in context with particular material and dispositional factors (Weisser et al.), schema design functions as a way for students to negotiate those differences in performance—what I have referred to as genre variation—within a collaboratively-defined framework of rhetorical conventions. Said another way, the material existence of the schema offers a location within which students can experience and experiment with genre variation explicitly. It asks students to interrogate the boundaries of genre convention. In many cases, as outlined above, this leads to an expansion of their shared understanding of a particular convention: the possibilities for the <feasibility> element, for example, were continually expanded and clarified throughout the three phases of development.

This finding builds on previous research into the role of collaboration in genre
acquisition. Aviva Freedman, for example, includes feedback from other writers or the individual
instructor as the final stage of her genre acquisition model (“Show and Tell?”). As well, Mary
Soliday notes the pedagogical benefits of individual students working to assimilate genres by
reworking shared (communal) understandings. She writes that students’ genre acquisition is
benefitted when they “rework the voice of the other, the communal form, into their own
individual words, intentions, and worldviews” (82; see also Devitt Writing Genres; Richard Coe
“Teaching Genre as Process”). Elizabeth Wardle argues, “[G]enre knowledge may at least
partially be gained through participating in the work of creating a new genre with the help of a
community of supportive peers” (101). By “new genre,” Wardle is referring to a genre that is
unfamiliar to students. Discussing the students in her class, she writes,

[The students] relied on one another and pooled what they knew to help them achieve
knowledge of appropriate conventions…again suggesting that students cannot simply be
given authority without actually earning it, in this case, by gaining some mastery of genre
conventions. Additionally, the workshop results suggest that Vygotsky’s ZPD can help
explain how students acquire genre knowledge and authority to write, by co-constructing
knowledge that would earn them the authority to critique and write the genre. (104-105)

Yet, this collaborative aspect of genre knowledge development is often occluded37 in classrooms
because, as Wardle suggests, it occurs primarily in discussion, rather than written critique, or
because it is relegated temporally and conceptually to a single (or a few) structured peer review
activities toward the end of the composing process. From the perspective of genre pedagogy,

37 My use of “occluded” here is indebted to (but not identical to) John Swales’ term occluded
genres, which he defines as a genre that is “out of sight” to “outsiders and apprentices”
(Research Genres 18). Here, what is occluded is not a particular genre, but a particular aspect of
genre work, and the “outsiders” are teachers (and also students) of writing.
schema design offered students a mechanism by which communal genre knowledge could be built—quite literally—into the foundations of their individual genre performances; from a research perspective, explicit, collaborative modeling through schema design also created artifacts of developing genre knowledge, traces of typically occluded, ephemeral processes.

This finding—that students negotiated their own goals as writers within a communal understanding of the rhetorical conventions and constraints of the genre—suggests that schema design, as a location, tool, and artifact of collaboration, “has the potential to widen the scope of available discourse for its participants” by making alternative writerly (dis)positions analytically visible to students (Duffy 425). In the cases in this chapter, the material existence of the schema aided the work of a “community of supportive peers” (Wardle 101) in understanding a genre by offering a location within which students could explicitly negotiate differences between their individual writing and resistance to the constraints enforced by the schema. William Duffy writes, “[T]here is value in paying attention to the resistances that affect the discourse you are able to produce together, because such metacognition will illuminate the kinds of interaction that work best for your unique collaboration” (427). Schema design enabled students to trace “their discourse, especially moments of resistance when their discourse [was] stymied;” this tracing allowed “co-writers to intervene in and enhance the efficacy of their interaction, to make their work ‘fit together’” (429). And, importantly, to teachers and researchers. Community-driven standards—like XML schemas in this case—can be particularly adept at serving these multiple social roles in genre classrooms because they enforce the consensus of students in such a way that difference must “exist in relation to the community at large” (Flanders 71). Thus, differences between individual students’ genre performances were necessarily and continually negotiated within a communal framework of rhetorical convention.
Yet, I do not want to suggest that schema design always resulted in the labor-intensive task of inhabiting another student’s position/understanding of a convention and negotiating that position with one’s own. Rather, at times, the dynamics of the group may have been less productive. Tim offered an example in an interview:

That's just how people interact in a group: Some people just have such a set idea of what one thing would be, and another person such a set idea of what another thing would be. We came up with roadblocks like that at some points in writing project 2. There were two elements that people kept on saying like, “This is what I think this should be accomplishing,” and someone else would just totally disagree. But they wouldn't really— they would keep restating their ideas—but wouldn't really be working towards the middle at any point. So that's when you almost have synonymous words mean completely different things just to serve that purpose in the group dynamic (Interview 3).

Here, perhaps, we see the other end of the spectrum—two group members explicitly refusing to adopt one another’s positioning, entrenching themselves in their own understanding of a particular genre convention such that, as Tim points out, the schema suffers. What is so fascinating about this moment is precisely that fact—that the schema, as a location of collaboration, serves particular purposes “in the group dynamic.” In this case, it allows the group to mediate conflict amongst its members. Even this moment of logjam is generative—for Tim, if not for the other members of the group—in that the schema can accommodate and represent multiple, dissenting views of genre conventions. As well, because the schema is also an artifact of that collaboration, it bears the trace of this collaboration. It is interesting to note, in this case, that the project 3 group, unencumbered by the interpersonal dynamics which resulted in the “synonymous words” referring to “two completely different things,” recognized the redundancy
in the schema. They write, “Under the approach section, we found that the definitions for ‘execution’ and ‘action’ were so similar that we thought it might streamline the markup to just eliminate these two attributes and leave the text under the ‘approach’ heading” (Proposal Group Report). This concept of using schemas to negotiate differences as individual writers of the genre raises the question of what prompts students to negotiate these differences and actually make changes to their genre models, which is the subject of the second finding.

*Students negotiate schematic components primarily prompted by practice-based concerns (i.e. to get things done).* What I believe is demonstrated by the two cases presented here is that students across these very different contexts negotiated genre variation in response to (or in anticipation of) practical concerns as writers of the genre, as when John described his group’s addition of the `@type='legal'` attribute value on the `<feasibility>` element: “[T]he other group had thought of environmental impacts. We were thinking with a lot of public work and stuff” (Interview 3). These moments also arose in schema design in anticipation of the schema’s use, as when Daniel claimed that the elimination of the potential jokes/quips component was because they “weren’t really planning on using it” (Interview 2). Daniel’s group member, Zoe, offered an apt description of this practice-based approach, likening it to the design process in her Engineering courses:

> It's like the engineering design process. Everything goes back to engineering. You start, you do your research. You try something. You get it reviewed. You try again. Then you have your final product… You come up with ideas, you brainstorm. You come up with a prototype. Build that prototype. Figure out what's wrong with it. Go back. Fix it. Then you have your product. (Interview 2)

Zoe, and other case study students recognized the heuristic value in this process. One telling
example was AWD student Finn, who was the only student in the class to choose to compose a feasibility report for project 3. Coming to that genre model as a user, he decided to overhaul the genre model. “I decided to do that because, I mean, obviously nobody else was going to be using this after me…but I think regardless, it seemed like a better way to increase my own understanding of the schema and the genre as I was doing my final round of edits” (Interview 3). But, although the class was concluding that week, his revision still accounted for future writers/users of the genre model. He related his revision of the template file component of the genre model to code documentation he had written “as a programmer.”

If there is a standard where everybody puts their genre on the template file this way, I think it would make it easier to understand, say if you have another class. I think it would be kind of an organized way to dive into it… I think because you have the template file, which feels more relatable and kind of understandable than the schema itself. I think by kind of keeping the template file as the body of work to understand what that genre entails, but embellishing it with things that are more technical and give you a better idea of everything that is in the schema and the rules with it. I think it's easier and faster to understand that given schema. So, I put the work into it for that reason. (Interview 3)

At first, students’ practice-based design decisions were aimed at themselves as writers of the genre. But, as they tested their prototypes, students increasingly began to think of future writers—their classmates and other, unknown writers—who might use their schemas as tools for composing. In other words, the future, practice-based use of the schema was held in mind as students invented components—rhetorical resources that would be useful to themselves and future writers.
I see this finding aligning with the concept of rhetorical velocity (Ridolfo and DeVoss). As it is described by Jim Ridolfo and Dànielle Nicole DeVoss, rhetorical velocity names a conceptual aspect of invention, particularly for digital texts, wherein rhetors make judgements and decisions based on “how a text might be recomposed (and why it might be recomposed) by third parties, and how this recomposing may be useful or not to the short- or long-term rhetorical objectives of the rhetorician” (Ridolfo and DeVoss n.p.). In other words, when writers strategically compose for “rhetorical delivery,” they compose with rhetorical velocity in mind. With rhetorical velocity, we can understand students’ tendency to broaden their thinking to include future, unknown writer in their schema designs as a strategic composing for rhetorical delivery. As students composed schemas, they increasingly became aware of how the genre knowledge represented by those schemas would be taken up by future writers and sought to attend to those future writers.

The schemas, then, respond to a particular—and particularly digital—rhetorical situation. This rhetorical situation is mediated by a host of factors—genre being modeled, the ecology of the course, the particular needs of the writers/designers, the social context of the class, and so on—and calls for the composition of a design that works for writers within these contexts, a design that is productive. This mode of composing for recomposition is slightly different than the type identified by Ridolfo and DeVoss. They distinguish the type of strategic composing they are theorizing from “boilerplate and templates,” which “abound in corporate contexts,” noting that these activities have a more known audience of future recomposers. Schema design, however, brings just those kinds of boilerplates and templates into focus, suggesting that they are also composed with strategic concern for how they will be worked with and recomposed. Given an expansion of the role of mediating texts—in Web 2.0, often templates (Arola)—in distributed
digital composing, it is important to also theorize how these texts work rhetorically and how rhetors can invent them and invent within and through them. John Gallagher writes:

[U]sing templates in innovative and subversive ways ought to be encouraged in the writing classroom, especially as the proliferation of online writing, inside and outside of the classroom, increases in professional and personal lives. Such innovation and subversion will help to give students access to a broader available means of persuasion when writing in Web 2.0 It will also assist students in seeing the intended and unintended possibilities of using a template. (8)

I would add that rhetorical template design is also a productive activity for student writers in the current digital milieu. The design of flexible, rhetorical templates—by methods like schema design, but also others, like mapping, or documentation writing—can help student better understand the constraints and opportunities of their composing lives, an argument I make in more detail in chapter 2.

The practice-based concerns, or moments of tension, that prompt revisions to the schema help move us toward the final finding. Because they began to anticipate the inexhaustibility of genre variation, students came to understand their genre models to be situated and contingent, and, importantly, open to future revision and variation.

*Students recognize the impossibility of creating a “perfect” genre model.* Because students recognized the situated nature of their schematic designs, they were under no illusion that the model they created would work for all writers of a genre. Consonant with the focus of the courses on a rhetorical conception of genres, the schemas in these two cases were understood to be dynamic, contingent, and tactical representations of genres. As Carolyn Schryer puts it, genres exist as “constellations of strategies” which are “stabilized for now” (84); they exist in
dynamic tension, as “structured structures that structure” (95). They are in a constant state of becoming while they simultaneously shape individual actions. Both cases above demonstrate, through increasing flexibility, a dynamic understanding of genres as momentarily stabilized constellations of strategies, rather than static sets of textual features. Daniel’s reflection on his second project provides a fitting encapsulation of this understanding. He said, “I know, definitely, that there's going to be some issues of someone trying to write a movie review down the line, and then they can't do something that they really want to do” (Interview 2). The constellation will necessarily shift in response to new contexts.

This brings us back to the epigraph that begins this chapter, where Tim described schematizing as a “natural” activity: “[I]f you read enough of the same document, you're going to start to think about it in terms of a schema” (Interview 3). Schema building, then, is simultaneously novel and always already happening. The novelty is in making visible this activity to be leveraged by students, instructors, and researchers.
Works Cited


Chapter 4
Intertextuality in Schema Design

In chapter 3, I outline a process pattern that emerged across the contexts of this study. Although the outcomes of schema design were not the same across AWD and FYW, the schemas provided venues within which students could negotiate genre variation within frameworks of rhetorical convention, thus animating the dialectic nature of genre use as simultaneously new and always recurring. I argue that these negotiations arose, primarily, from practice-based moments of productive tension where students’ goals as writers limned the boundaries of rhetorical constraint represented and enforced by the schema. Although by no means were they anomalies, the cases presented in chapter 3, in many ways, represent this process at its most productive.

Part of my goal in this chapter is to explore alternative dynamics that might arise as students take up genre modeling. As a result, the findings of this chapter are, in some ways, a qualification of the previous chapter. I explore other ways this pedagogy can go—namely, if students design a schema that does not constrain their practices in meaningful ways, then it is unlikely that they will find practice-based moments in which they negotiate the genre variation represented in their individual writing. That is, if they never run up against the boundaries of rhetorical constraint imposed by the schema—if their goals as writers are never in tension with what the schema allows—then they will not necessarily reckon with or examine those boundaries in productive ways. I was alerted to this dynamic through analysis of the schematic components (see Appendix D), which revealed a pattern of intertextuality amongst schematic designs. In the two cases developed here—the op-ed, developed and revised in FYW, and “edutainment” blogs, developed and revised in AWD—I outline this pattern of intertextuality in schema designs, which points to how students attempt to transfer resources between genre modeling experiences.
Intertextuality, as I use it here, is broadly defined as the conscious and unconscious repurposing of previous schematic components, approaches to modeling, and ways of thinking with schemas. These intertextual links are traceable through the content, reflective writing, and interviews with students engaged in schema design—that is, moments where previously successful rhetorical strategies of schema design were adapted, successfully and unsuccessfully, to the design of new genre models.

I suggest that this pattern of intertextuality in schema development represents students’ attempts to transfer rhetorical resources from one genre to another in the seemingly recurrent situations wherein students designed genre models. This understanding rests upon a recognition of the schemas, developed in chapter 3, as responses to complex rhetorical situations, mediated by—among other factors—the genres being modeled. Although I do see this chapter as a qualification of chapter 3, I do not want to suggest that intertextuality is indicative of a failure on the part of the students. Rather, I provide examples of both successful and unsuccessful attempts at repurposing prior rhetorical resources in schema design. The larger claim that unites the findings across these examinations of schema development is that the explicit modeling required by schema design reveals these dynamics of the writing classrooms by making them materially visible to students, teachers, and researchers. As such, the two cases developed here build upon the questions animating chapter 3:

- What components are included in schema designs? How are these selected? And why?
- What patterns are identifiable in schema design and revision, and what do they say about genre learning processes?

The pattern of intertextuality which emerged in the qualitative coding of the schemas raises an additional question, which I address in this chapter:
What components recur across different schema designs and why?

I begin by outlining the initial development of the op-ed genre model, where intertextual links to the essay genre model—designed by the whole class for project 1—are apparent in the design of the model for op-eds. In the initial design of the op-ed genre model for project 2, we see what I argue is the unsuccessful adaptation of strategies from the essay genre model, resulting from a lack of meaningful negotiation of genre conventions and boundaries. Second, I outline the initial development of the “edutainment” blog schema, where tracing intertextual links between that model and the annotated bibliography model that preceded it reveals how students attended to shifts in the rhetorical situation of schema design as they adapted and transformed strategies across genre experiences. Comparing these two cases makes apparent that there are different dynamics at play in how students take up genre modeling, how they approach the design of schemas for rhetorical genres. These dynamics—made materially visible for interrogation through explicit genre modeling—help to unpack the conditions under which this form of collaborative writing is successful, and suggest ways to facilitate students’ successful transfer of rhetorical resources across genre modeling and production activities.

Op-Eds in FYW

In order to trace connections between the essay genre model and the op-ed genre model, a brief explanation of the development of the essay model is necessary. Unlike the models

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38 In chapter 5, I describe in detail how one writer, Zoe, approached this schema in project 3, having not been a party to the initial development of the op-ed schema outlined here. While the changes she proposed to the model are an improvement, I argue that the openness of the model designed by the project 2 group posed no significant rhetorical constraints upon her as a writer, leading her to unilaterally revise the model to “fit” her writing, rather than negotiating the tension(s) between her goals, dispositions, and context as a writer within and against the constraints of the schema.
developed and revised in project 3, the model for project 1 was built by the class as a whole, through a series of structured group and class discussions. The genre being produced by students for this project was a genre analysis essay. The FYW syllabus introduced the project as follows:

In the first few weeks of class, we will engage a variety of genres—both as a group and as individuals—as we refine our critical reading practices. We will work together to develop a set of XML elements and attributes (a “schema”) that helps us analyze genres. We will accomplish this by analyzing genres together as a class, and by working in groups to propose additions/revisions to the schema. In this assignment, you will complete a brief analysis paper that builds on the work we do together in class. You will choose a genre, collect samples of that genre, identify patterns in that genre, and use our growing vocabulary to make interpretive claims about that genre in an analytical essay written using the XML schema we design and develop as a class.

There is not room here to outline the entire process of developing the schema. However, a few aspects of the essay schema are relevant to my argument here. First, outside of the broad structural divisions of <intro>, one or more <bodyPara>, and <concl>, none of the components students invented for this schema were required by the schema. Although at least one instance of <mainArgument> was required within the <intro> element in the first version of the schema, this requirement was jettisoned in a second design session. Instead, the <mainArgument> element was revised to a broader <argument> element with three available @type attribute values: ‘main’, ‘supporting’, and ‘opposing’. This revision also saw

39 Documentation for the essay genre model (and all other genre models) is available on the Digital Appendix site, “Markup in the Writing Classroom.” A direct link to the FYW documentation is available at [https://goo.gl/KYjP6m].
the <intro> element revised from being a single paragraph into an abstract structural division, allowing one or more <p> (paragraph) elements within it.

A result of the design sessions was a remarkably open model that, while including a range of components addressing content-based and rhetorical strategies for producing the genre, only required the inclusion of structural components (Box 1).

```xml
Box 1: Template file for genre analysis essay
<essay>
  <docHead>
    <title></title>
    <author xml:id=""></author>
    <date></date>
  </docHead>
  <body>
    <intro>
      <p></p>
    </intro>
    <bodyPara></bodyPara>
    <concl>
      <p></p>
    </concl>
  </body>
  <docFoot>
    <title>Works Cited</title>
    <listBibl>
      <bibl>citation here</bibl>
    </listBibl>
  </docFoot>
</essay>
```

This radically open design approach adopted by the class—borne out of a shared concern for the restrictive qualities of XML—recurs as we examine the initial development of the op-ed genre
model (initial template file included in Box 2 below).

<table>
<thead>
<tr>
<th>Box 2: Template file for initial op-ed model</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>&lt;op_ed&gt;</code></td>
</tr>
<tr>
<td><code>&lt;docHead&gt;</code></td>
</tr>
<tr>
<td><code>&lt;title/&gt;</code></td>
</tr>
<tr>
<td><code>&lt;author xml:id=&quot;id&quot;/&gt;</code></td>
</tr>
<tr>
<td><code>&lt;date/&gt;</code></td>
</tr>
<tr>
<td>&lt;/docHead&gt;</td>
</tr>
<tr>
<td><code>&lt;intro&gt;</code></td>
</tr>
<tr>
<td><code>&lt;opinion type=&quot;main&quot;&gt;&lt;/opinion&gt;</code></td>
</tr>
<tr>
<td>&lt;/intro&gt;</td>
</tr>
<tr>
<td><code>&lt;body_para&gt;</code></td>
</tr>
<tr>
<td><code>&lt;opinion type=&quot;opposing&quot;&gt;&lt;/opinion&gt;</code></td>
</tr>
<tr>
<td><code>&lt;picture url=&quot;#url_here&quot;/&gt;</code></td>
</tr>
<tr>
<td><code>&lt;evidence type=&quot;other&quot;&gt;</code></td>
</tr>
<tr>
<td><code>&lt;bg_info&gt;</code></td>
</tr>
<tr>
<td><code>&lt;quote&gt;</code></td>
</tr>
<tr>
<td><code>&lt;example&gt;</code></td>
</tr>
<tr>
<td><code>&lt;situation&gt;</code></td>
</tr>
<tr>
<td>&lt;/body_para&gt;</td>
</tr>
<tr>
<td><code>&lt;conclusion&gt;</code></td>
</tr>
<tr>
<td><code>&lt;source&gt;</code></td>
</tr>
<tr>
<td>&lt;/op_ed&gt;</td>
</tr>
</tbody>
</table>

Simply looking at the similarities between these two template files highlights the similarity in conceptual approaches to modeling adopted in producing the two models. The reliance on their previous experience is evident in similarities with the essay genre model in three domains: 1) the structure, 2) the content, and 3) the rules of the op-ed genre (Table 1).

<table>
<thead>
<tr>
<th>Essay schema</th>
<th>Op-ed schema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structure</strong></td>
<td></td>
</tr>
<tr>
<td><code>&lt;docHead&gt;</code></td>
<td><code>&lt;docHead&gt;</code></td>
</tr>
<tr>
<td><code>&lt;intro&gt;</code></td>
<td><code>&lt;intro&gt;</code></td>
</tr>
<tr>
<td><code>&lt;bodyPara&gt;</code></td>
<td>(one or more)</td>
</tr>
<tr>
<td></td>
<td><code>&lt;body_para&gt;</code>(one or more)</td>
</tr>
</tbody>
</table>
**Content**

- `<evidence>` (evidence) indicates evidence in support of a claim or argument.
- `<situation>` indicates the rhetorical interactions happening within a scene, involving participants, subjects, settings and purposes [can include participants and settings tags].
- `<q>` (quote) indicates quoted text; for quoted material, should be accompanied by a citation element.
- `<argument>` (interpretive claim/argument) indicates a claim/argument made based on evidence presented or to be presented in an essay [requires @type attribute, values of 'main,' 'supporting,' or 'opposing'].

**Rules**

- `<argument type='main'>`
- `<opinion type='main'>`

- `<evidence>` Evidence that supports the main opinion [requires @type attribute with suggested values: statistics, pers_exp].
- `<situation>` a current event that relates to the main opinion.
- `<quote>` A quote of what a notable person said.
Table 1: Comparison of essay and op-ed models

Structure: The structure of the essay model was <intro> followed by one or more <bodyPara> elements, and one <concl> element. The op-ed structure bears striking resemblance to this structure, with <intro>, <body_para>, and <conclusion>. The op-ed model also directly adopted the <docHead> element and its attending elements (<title>, <author>, <date>), which is significant only in comparison: All three other design groups in FYW made significant changes to the header of their models, changing the name, adding, and revising elements based on the different header styles of their genres. We might, for instance, imagine that essays and op-eds contain different information in their respective “headings.”

Content: Along with the four structural elements shared between the schemas, the two models shared three elements: <evidence>, <situation>, and <quote>. Although the definitions and rules for these elements in the op-ed model differed slightly from those in the essay model (see Table 1), the similarity in naming illustrates a significant reliance on the part of the op-ed group on their past experience developing the essay model. Even in cases where the exact names of the elements did not line up, there were strong links between the schemas. For example, the op-ed <opinion> element was essentially a stripped-down version of the

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40 Although the requirement for <mainArgument> to appear in <intro> was technically removed from the project 1 schema, <argument type='main'> appeared in nearly all students’ essays somewhere in their <intro>, including all four students who designed the initial schema for the op-ed genre. I consider this a de facto requirement of project 1, given its wide use and connection to the idea of stating your thesis in your introduction, which was stressed in schema design sessions for the essay genre model.
<argument> element from the essay model. In all, then, eight components of the op-ed schema were either directly adapted or very closely modeled on components from the essay model. This is significant in this context, because the initial op-ed schema contained only twelve total components outside of the root element, <op_ed>. Fully two-thirds of the components in the initial op-ed schema draw heavily on that of the essay genre.

The less specific definitions provided in the op-ed model documentation are also telling. I do not have interview data to confirm this, but it is likely that the minimalist approach to defining certain components in the op-ed model (e.g., <opinion>) was because students in this group relied so heavily upon their association of their schema with the essay schema that their components were perceived as self-evident. Of course, in the case of <opinion>, we might also point to the strong influence of high school essay writing, and the importance of thesis statements in paper introductions, that these first-year students drew on in their experiences in this class. Although the names and exact definitions of these elements differ, the similarity in available attributes points to intertextual links between the two genre models.

*Rules:* Like the essay model, the vast majority of elements were optional. Outside of the structural elements, the only required aspect of the op-ed genre model was that an <opinion> with the attribute type of “main” had to appear in the introduction. This requirement was similar to the “main” attribute value of the <argument> element in the essay genre, which, while not required, was included in the <intro> section of nearly every FYW student.

Unfortunately, no member of the original group of four students who designed the op-ed genre model volunteered for interviews, but I do have their group report and individual reflections on developing and using the schema. Based on my teaching journal entries, the op-ed group had “a bit of a hard time wrapping their heads around the two aspects of the project”
(Teaching journal entry), and landing on a genre that was capacious enough to cover all of their interests—standardized testing, Beyoncé’s *Lemonade* visual album, the effects of Brexit on the London fashion industry, and the effects of sleep on high school students. When they began, there was some confusion amongst the group as to the work of project 2. They initially attempted to carry over the work from the first project, analyzing a genre in an essay, and began to talk about standardized testing as a possible topic for their second project. When I visited with the group, I spent some time explaining to them that, in this project, they would be producing, rather than analyzing, the genre they were studying. I suggested that they might consider researching a genre that allowed them to discuss and analyze standardized testing. They landed on op-eds, which, compared to other genres selected by their classmates for project 2 (satirical articles, movie reviews, and resumes), bears a close resemblance to the genre of the essay.

The research process undertaken by this group, guided as it was by the assignment prompt, was somewhat similar to those previously outlined with one important exception: the group report and individual reflections on the genre model do not demonstrate an explicit process of boundary-setting, as we saw in the movie review and public initiative proposal models in chapter 3. Rather than examining and deciding upon boundaries for the genre, the group dove directly into document analysis, looking “most notably [at] the New York Times opinion pages” because, according to the group report, the op-eds they found there were the most “interesting,” and authored by the most “successful writers” because of the reputation of the *New York Times*. This is a significant difference between the op-ed modeling group and other groups because the boundary-setting process is where groups most explicitly applied and contended with the working theory of genre underpinning their schema design. The absence of this activity, I contend, reflects a failure to attend to important shifts in the rhetorical situation faced by the
group in designing a schema for the op-ed genre as they moved from the genre analysis essay. Differences in purpose, audience, and rhetorical conventions between the two genres were not fully accounted for, and the group instead relied heavily on the essay schema to inform their schema design.

The group’s reliance on prior knowledge is evident through an examination of how the research process was (and was not) taken up in their initial model. The group contacted several op-ed authors with questions about their writing processes and views of the genre. They received one response from an op-ed writer, as they explain in their group report:

As part of our research, we have emailed several successful op-ed writers, and have asked them questions concerning their views on the genre of op-ed’s and also individual questions about their feelings towards their subject matter and how they personally structure their pieces. We also asked some other questions such as why they decided to write op-ed’s in the first place, and how they think that op-ed’s will fare in the future due to the rise of technology. One writer, [name removed], who writes for the Guardian (U.S. Edition) came back to us, and he said that in terms of structure, he has not yet fallen into a concrete structure with his writing, and that he prefers to tailor each column to the subject material, and said that the only conscious structure he makes sure to include are the lede and the kicker. He also told us that he thoroughly enjoys reading other writer’s op-ed’s [sic], and that he learns a lot from how other structure their ideas, columns and phrases. Another interesting comment he made was that he thinks that the style of opinion writing has changed significantly over the last 20 years, as we are much more conversational now, due to our use of social media. He also said that he thinks that opinion columns will continue to be popular in the future, as a well-argued opinion is
more distinctive than a news article which often has a very short shelf life. (Op-Ed Group Research Report)

Curiously, though “lede” and “kicker” seem precisely the kind of rhetorical conventions of the op-ed that this research process is designed to identify and integrate into a genre model, neither of these appeared in the genre model designed by this group. As the “only conscious structure he [the op-ed writer] makes sure to include” (Op-Ed Group Report), the absence of “lede” and “kicker” (or some component derived from these conventions) represents a principal shortcoming of the model. Despite the valuable information this group gathered in their research process—including the open structure and casual language offered by the professional writer—reading the language and structure of the model suggests that the group reverted to the familiar and staid structure and conventions of the academic essay, a familiar genre both in the context of the class and in the students’ previous writing experiences.

Some transfer of components between the essay genre to the op-ed model were appropriate, given some similarities between the genres. For example, the adaptation of the <argument> element from the essay genre seen in the <opinion> element refashioned a rhetorical resource for a new genre and context, one which they describe in their group report being centrally about opinion: “We found Op-Ed’s [sic] a very interesting part of the newspaper because they are purely subjective and opinions of real people” (Op-Ed Group Report). Finally, the uptake of rules from the essay model to the op-ed model can also be grounded in the research undertaken by the group to understand op-eds. The op-ed columnist that responded to their interview questions indicated that “he has not fallen into a concrete structure” for his op-eds, and instead “prefers to tailor each column to the subject material” (Op-Ed Group Report). Thus, the rule-based similarities between the essay and op-ed genre models could be attributed to this bit
of research gathered by the group, but they seem to have misunderstood the columnist’s discussion of structure. In their group report, they wrote, “When writing our schema and documentation, we took into account the fact that writing an Op-Ed is generally a very unstructured piece of writing, so we did not set many obligatory elements, as the style of writing should be particular to your subject, and there is no formal structure” (Op-Ed Group Report).

Yet, the group did, ultimately, impose structural, content, and rule-based constraints on their initial model of the op-ed genre. And these constraints, as outlined above, showed a strong thread of intertextuality with the essay genre model. It appears that some aspects of the document analysis undertaken by the group was represented in the initial schema design (for example, the @type attribute values for <evidence>). But, the op-ed schema design process did not account fully for differences between the essay and op-ed genres, and so group members drew on the structure, content, and rules from the essay genre model. In some cases, these represented attempts at refashioning successful resources for a new situation. Of course, some of these were successful and some were not. In the initial design of the op-ed genre model, I think that the easy transfer of components from the essay schema resulted in a genre model that did not fully account for the shifts between essays and op-eds.

As I argue in chapter 3, a primary potential benefit of schema design as an intellectual activity is that it allows—at its best, requires—students to negotiate genre variation within a self-designed framework of rhetorical constraint. In the case of the initial op-ed design group, this benefit was not realized. There is no better evidence of this than the fact that the op-ed design group made no substantive changes to their initial model. The group reported that they “did not encounter many problems with our schema, and only made a few minor changes” (Op-Ed Group Report). In fact, not even these “minor changes” were a part of the official revision phase of
project 2. All the changes this group made to their model they made before they drafted their individual op-eds. In other words, no practice-based tensions arose in the writing processes of any of the four writers in this initial design group. Thus, students did not butt up against the constraints of their schematic design; they did not use moments of tension to negotiate the dynamic between convention and the situated contextual nature of individual genre performances because they experienced no moments of tension. Likewise, they did not interrogate the boundaries of rhetorical convention within the op-ed genre, because those boundaries never presented themselves as such.

So, what went on here? There are many possible explanations: Students, especially first-year students, are very comfortable producing essays and thus it is not easy to draw them out of this realm of comfort. Given their recent introduction to Rhetorical Genre Studies, students were unable to easily perceive important and meaningful differences between the genres. Because they did not explicitly engage in boundary-setting in their research process, deciding what was in and what was out, students had trouble recognizing the specific rhetorical conventions that made an op-ed recognizable as such. Students rightly perceived that designing and writing an unconstraining schema would ultimately be less work for them (as a group and as individual writers). Students sought to produce—or draw on—typified schematic design strategies, a response to the unfamiliar task of inventing components for schemas. The truth, as is often the case, is likely some combination of all of these factors.

This combination of factors illuminates how genre modeling might be taken up. While I recognize that students, especially FYW students, were engaged in difficult and unfamiliar work, I do want to explore the conditions under which meaningful intellectual work can occur. Ambrose et al. suggest that two primary reasons that students may fail to successfully transfer
relevant skills and knowledge across tasks are context dependence—they may “associate that knowledge too closely with the context in which they originally learned it and thus not think to apply it”—and failure to understand the “underlying principles and deep structure” of a concept, skill, or task (109). In the case of the op-ed schema, I think both of these were factors. Students held closely to their previous experience modeling an essay (and producing them in high school). When moving to a new genre, they failed to notice shifts in context when designing a schema for a new genre. In other words, their conception of schema design was strongly context dependent and tied to the genre of the essay, so their prior knowledge was inappropriate to the task (Ambrose et al. 14). As well, the group of initial designers did not approach op-eds as recognizably recurrent (having conventions) while simultaneously flexible and dynamic. This was most obvious in the absence of boundary setting, suggesting that students did not understand the underlying principles of schema design of this course, tied as they were to rhetorical conceptions of genres.

Taken up in this way, the activity of schema design can quickly become a routinized, stale activity. By my reading, what the development of the op-ed genre demonstrates is the rapid habituation of strategies in schema design. Peter Medway describes a similar aspect of genre use in terms of ossification: “So a certain amount of play and adaptability are normal features of genres. It often happens, however, that when a genre is well established and a situation remains stable, the need for variation is small. As well, some writers may get lazy, and simply run the generic routine as a substitute for instead of an aid to addressing the original purpose. The genre becomes an end in itself and ossification sets in, leaving the textual form rigid and even dysfunctional in terms of that purpose” (135). While schemas are not “well established” as a genre, the unfamiliarity of schema design as a rhetorical task may prompt students to look to
their previous experience to routinize the practice. The initial op-ed genre model displays characteristics of rigidity in the way that the initial design group applied rhetorical resources—structure, content, formal rules—from the essay genre.

As I argue in chapter 3, schema design can offer the opportunity for students to collaboratively negotiate the tensions between rhetorical convention and genre variation as they design and revise genre models, a process of invention that allows them to explicitly coordinate rhetorical resources toward a desired end: successful performance of the genre. However, as we see in the case of the op-ed group, this promise relies upon taking up schema design 1) with an underlying theory of genre that understands genres as “dynamic rhetorical structures,” and 2) recognizes schema design as a flexible rhetorical response to shifting situations (Berkenkotter and Huckin 479).

The op-ed group was not alone in struggling with these two, admittedly difficult, tasks. In FYW, the satirical article group also failed to make substantive revisions to the schemas after drafting. Ultimately, what we see when we compare the op-ed model to the edutainment blog model produced in AWD is that this tendency in FYW is partially attributable to the genre we began with—the academic essay—and our conceptual approach to modeling—making most components optional. By contrast, in AWD we began with annotated bibliographies, a much more constrained academic genre. And the approach taken to modeling it was much more systematic, unsurprising given that this AWD course was made up of Engineering and Computer Science students.

By looking at the development of the edutainment blog schema in AWD, we may be able to unpack how one might combat the negative effects of this quick ossification.

**Edutainment Blogs in AWD**
As with the discussion of the op-ed genre model, I will briefly explain the preceding project in AWD, which asked students to work as a class to develop a schema for a different academic genre, the annotated bibliography. The schema portion of the assignment was explained on the prompt as follows:

In groups and as a class, we will spend time reading and analyzing examples of annotated bibliographies and problem statements from a few disciplines. Out of this analysis, we will create a markup schema that defines elements, attributes, and attribute values (and rules for how and when they can be used) relevant to the genre of the annotated bibliography. Your final projects should be well-formed and valid against the schema (i.e. Oxygen does not list any errors). (Assignment 1 prompt)

Notice, in this description, the focus of the schema design rested more upon describing the content of the genre than the description of the schema design offered in FYW, where the focus was more on production: “We will work together to develop a set of XML elements and attributes (a “schema”) that helps us analyze genres” (Assignment 1 prompt). This emphasis, along with the tightly delimited nature of annotated bibliographies as a genre—with obvious and explicit conventions for format, content, and structure—resulted in a tightly constrained schema: A required `<problem_stmt>` followed by a series of paired `<citation>` (possible `@type` attribute values of ‘APA’ or ‘IEEE’) and `<annotation>` elements. Within each annotation, students allowed free text and required one or more of each of the `<background>`, `<summary>`, and `<relevance>` elements, each having several possible `@type` attribute
values. Box 3 shows the template file of the annotated bibliography genre model.

When compared to an annotated bibliography, an edutainment blog is not likely to be immediately familiar to readers. Indeed, insofar as it is a genre, it is decidedly “fuzzy,” to use Peter Medway’s term. As such, much of the work of the group was spent in delimiting the boundaries of the genre—deciding if the genre was indeed a genre and, if so, what was in and what was out. I will argue that this boundary setting prompted students working in this group to take fuller account of the rhetorical situation of schema design than we saw in the op-ed example. The rhetorical resources transferred (or attempted to transfer) between the annotated

Box 3: Template file for annotated bibliography model

<annotated_bib>
  <problem_stmt>
    <!--problem statement here-->
  </problem_stmt>
  <citation style=""></citation>
  <annotation>
    <background type="">
      <!-- can include <q> element(s) for quoted material -->
    </background>
    <summary type="">
      <!-- can include <q> element(s) for quoted material -->
    </summary>
    <relevance type="">
      <relevance>
      </relevance>
    </relevance>
  </annotation>
</annotated_bib>

Again, all documentation for AWD genre models is available for readers on the Digital Appendix, “Markup in the Writing Classroom.” A direct link to documentation for AWD models is available at [http://markup.kevingeraldsmith.com/php/crib_sheet.php].
bibliography schema and edutainment blog schema show evidence of being significantly refashioned for this new modeling situation. While there is still evidence of intertextuality between the annotated bibliography schema and the edutainment blog schema, there is less evidence of the unreflective or mismatched transfer of rhetorical strategies we saw in the op-ed genre model, suggesting that this group was able to “abstract knowledge that crosscuts contexts” as they moved between modeling experiences (Ambrose et al. 110).

<table>
<thead>
<tr>
<th></th>
<th>Structural</th>
<th>Presentational</th>
<th>Rhetorical</th>
<th>Semantic</th>
<th>Metatextual</th>
<th>Total tags</th>
</tr>
</thead>
<tbody>
<tr>
<td>annotated bibl.</td>
<td>2, 20%</td>
<td>1, 10%</td>
<td>5, 50%</td>
<td>9, 90%</td>
<td>0, 0%</td>
<td>10</td>
</tr>
<tr>
<td>edutain. blogs</td>
<td>3, 16%</td>
<td>1, 4%</td>
<td>10, 53%</td>
<td>11, 58%</td>
<td>0, 0%</td>
<td>19</td>
</tr>
<tr>
<td>feas. reports</td>
<td>14, 40%</td>
<td>5, 14%</td>
<td>9, 26%</td>
<td>35, 100%</td>
<td>0, 0%</td>
<td>35</td>
</tr>
<tr>
<td>proposals</td>
<td>3, 11%</td>
<td>0, 0%</td>
<td>5, 19%</td>
<td>23, 85%</td>
<td>1, 4%</td>
<td>27</td>
</tr>
<tr>
<td>cover letters</td>
<td>19, 76%</td>
<td>0, 0%</td>
<td>11, 44%</td>
<td>21, 84%</td>
<td>0, 0%</td>
<td>25</td>
</tr>
</tbody>
</table>

Table 2: Categorical distribution of AWD schema components

One significant difference between the edutainment blog schema and the rest of the schemas designed in AWD is in the lower ratio of semantic components to rhetorical components. Table 2 shows how each of the AWD genre models were coded. In the annotated
bibliography schema, the only schema that all students were involved in designing, a vast majority of components addressed semantic concerns (90%), while only half of the schema components addressed rhetorical concerns. This ratio of nearly 2:1 was similar to the cover letter schema (roughly 2:1) and was even greater in the feasibility report (roughly 4:1) and public initiative proposal (roughly 4:1) schemas.

The edutainment blog schema, by contrast, diverged from the focus on semantic components typical of other schemas (84-100%). Instead, components reflecting rhetorical and semantic concerns were nearly equal. This difference in the ratio of component types suggests that the edutainment blog design group adopted a different approach to modeling than the class adopted for the annotated bibliography schema and that the other groups in AWD used. While this may be expected—blogs are, after all, very different than annotated bibliographies—it is significant for examining what rhetorical resources, if any, students attempted to transfer between these two very different genres.

Box 4 shows an excerpt of the template file produced by the initial design group, Ben, Maddie, Finn, and Gurtaj. The complex structure of the template file alone—heavily commented, using examples, and conceptually separated into global elements and structural sections—demonstrates the radically different conceptual approach to modeling adopted by the design group in contrast to the design approach of the annotated bibliography schema.
Despite these differences between these genres, there were intertextual links between them. When closely read in comparison with the annotated bibliography genre model, the strategies employed in designing the edutainment blog genre model appear to share some similarities with those of its predecessor. However, a careful analysis of the commonalities of
structure, content, and rules reveals differences in the deployment of those components and approaches such that they are refashioned for a new situation. I want to suggest that this divergence was partially the result of the radical differences between the level of established convention found in each genre—the annotated bibliography being a relatively established and codified genre, while the edutainment blog represents a fuzzier, less determined genre. This difference between genres, I argue below, necessitated serious reflection on the part of the design group in regard to the shifts in situation between annotated bibliographies and edutainment blogs, which resisted the easy appropriation of resources and approaches from the annotated bibliography schema. In short, because of the differences between the genres being modeled, the group’s design of the schema was less reliant on previous strategies, and more rooted in the concerns of edutainment blogging.

<table>
<thead>
<tr>
<th><strong>Annotated bibliography schema</strong></th>
<th><strong>edutainment blog schema</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structure</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;problem_stmt&gt;</td>
<td>&lt;background&gt;</td>
</tr>
<tr>
<td>followed by one or more groups of:</td>
<td>&lt;answer&gt;</td>
</tr>
<tr>
<td>&lt;citation&gt;</td>
<td>&lt;sources&gt;</td>
</tr>
<tr>
<td>&lt;annotation&gt;</td>
<td></td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;problem_stmt&gt; (problem statement) contains the problem statement for which the citations and annotations are relevant</td>
<td>&lt;question&gt;: The question or topic that we are trying to answer or simplify to a general audience.</td>
</tr>
</tbody>
</table>
The section introduces the main topic. Body of text that moves towards the answer of the question, presenting topics, ideas, analogies, and explanations that lead towards the ultimate conclusion. Specific scientific principles that are directly relevant to the explanation of the question. Ex. A description of the chemistry behind acid-base reactions. (directly adapted but made optional) Hyperlink around a phrase that
Table 3: Comparison of annotated bibliography and edutainment blog models

Structure: While the two models shared a similar percentage of components addressing structure, the models differed significantly. The annotated bibliography model had a strictly delimited, recursive structure, with a required `<problem_stmt>`, followed by multiple pairs of `<citation>` and `<annotation>` (Box 3). Each annotation had to include at least one `<background>`, `<summary>`, and `<relevance>` tags of different type attributes. By contrast, the edutainment blog group explained, “In order to accommodate the flexible nature of the blogging structure, we have only three primary required structural tags” (Blog Group Report): `<background>`, `<answer>`, and `<sources>`. Within these required elements, there was a lot of freedom for writers, with nine “global” elements. That is, elements that were optional and, when used, were allowed anywhere within the genre model (Box 4). As well, within `<answer>`, there were additional available elements, which could appear anywhere within the `<answer>` section. This relatively flat structure, according to the group, was a result of their understanding of the genre as flexible.
*Content:* Although the two models share some elements, those elements serve fundamentally different purposes in the two models. For example, `<background>` for the annotated bibliography was defined as: “(background information) anything that could help provide context or information with regard to the source you are using; can contain text, and optional q elements [requires @type element],” while the edutainment blog documentation defined the element as: “The section introduces the main topic.” Although we might still point to the existence of `<background>` in the blog schema as an element drawn from the annotated bibliography schema, because the element served a different purpose, this was a different kind of transfer than we saw in the op-ed schema in that the very idea of providing background information shifts from a necessary aspect of context to a structural division wherein an author introduces their topic. Unlike the op-ed schema, where the influence of the previous schema prevented students from recognizing differences between the genres, here, by adapting `<background>` from the annotated bibliography schema, they recognized a similarity between the genres—that both provide background information about a topic—but they also recognized how that rhetorical move takes a different form (a section, rather than a sentence or two explicitly in reference to a source), is deployed differently (once, at the beginning of the genre), and for different purposes (framing and introducing the `<question>` element, the fundamental organizing concept of the genre). This same kind of refashioning of annotated bibliography components occurred in other cases of the edutainment blog schema as well: the influence of the `<problem_statement>` could be seen in the `<question>` tag, `<citation>` and `<ref>` were revised to meet the specific needs and conventions of online writing, and traces of the rhetorical `<relevance>` element could be found in both the `<answer>` and `<specific_topic>` elements.
Rules: This was where the model of the edutainment blog diverges most significantly from the annotated bibliography model. As outlined in the discussion of structure, the blog model made significant use of “global elements,” elements that were optional, could appear anywhere, and could appear as many times as the author chooses. While some of these addressed structural or semantic concerns (<pb>, <ref>, <section_header>), all were positioned as rhetorical resources at the author’s disposal; they addressed the meaning, purpose, or use of an element. The <analogy> element, for example, was described in the documentation: “Analogies should be used to better illustrate important and difficult to understand topics put forth by the other elements.” This element existed to prompt the writer, to encourage them to use this rhetorical move to improve their writing by providing ways for their readers to better understand difficult concepts. In Box, we can see how rules and definitions of these global elements positioned them as rhetorical resources for the authors use (see <analogy>, <technical_principle>, <misconception>, and <important_idea> elements). Yet, we might point to how students designed the <annotation> element for annotated bibliographies, which allowed for free text and its three child elements to appear anywhere within. The approach to this specific element was meant to accommodate diverse approaches to the writing of an annotation. In some ways, we see what is nearly the logical extreme of this approach in the edutainment blog schema, where the entire document allowed free text and most elements can appear anywhere and in any order within the defined structure.

Thus, while there were important intertextual links between the annotated bibliography and edutainment blog schemas, those links were not merely recycled, but were refashioned such that they were made appropriate to the new task. These examples accord with the framework of prior knowledge outlined by Ambrose et al, who write that, for prior knowledge to help learning
it must be activated, sufficient, appropriate, and accurate (13-14). The group did not simply run
the modeling routine of schema design, but rather continued to wrestle with the process of
inventing schema components—transforming existing and crafting new resources appropriate to
the new purposes presented to the group in the second project. Based on their reflections and
interviews, the process of boundary setting—which played a role in the discussion of the movie
review and public initiative proposal genre models in chapter 3—was instrumental in accounting
for the necessity of developing new and significantly altering previous rhetorical strategies for
schema design. The group described their process of boundary setting in their group report
document:

Our genre is educational blogging, a work that simplifies complex topics for a general
audience. To develop our model, we first looked at the works that inspired our genre
choice; these were the edutainment blogs xkcd: What If and Wait But Why. Due to the
consequence of the free writing style of blogs, not all blog entry topics are strictly
complex and technical. The majority of posts were, so selecting relevant examples was
not difficult. We reviewed roughly 10 posts from each source. In order to understand the
writing process, we also emailed the authors of these blogs using the contact information
available on their websites. We made the decision to include video media, like YouTube
channels, that took a similar approach to conveying information. We drew primarily from
the popular Vsauce, Veritasium, and MinutePhysics, watching two or three videos from
each. Inherent to the entertaining presentation style of both of these mediums, and from
viewing the community interaction by fans, it seems that the communities using these
two resources have significant amounts of overlap. We briefly attempted to visit online
forums like the Reddit subreddit pages r/askscience and r/explainlikeim5, but decided
that they were members of a related but different genre, as they follow different conventions. We also explored more typical “newspaper” science blogging as featured on sites like Wired.com or IFLScience.com. We felt that in these instances, however, announcement of technology takes a front seat to the entertainment and community building aspects to the genre we are focusing on. (Blog Group Report)

This fascinating bit of analysis reveals something of the working theory of genre that the group used to understand these blogs. While they decided to include YouTube channels in their analysis, they did not include Reddit pages because they felt that they followed “different conventions.” Yet, Wired and IFLScience were excised not because of conventions, but because their social action—the announcement of technology—did not align with that of edutainment blogs—community-building. This demonstrates a complex—and, frankly, idiosyncratic—working theory of the genre that wrestled with tensions between formal and rhetorical conventions and social actions. The group was far from formalistic in their understanding of convention, however, as we see YouTube channels were included in part because of “presentation style” (convention) despite significant differences in medium.

The group’s process of delimiting the boundaries of the genre results in an understanding of the genre that accommodates a surprising amount of variation in form, content, and textual convention. This analysis is reminiscent of Peter Medway’s analysis of the “fuzzy genre” of architectural student sketchbooks. He writes, “[P]erhaps the notion of genre needs to be fuzzy. Perhaps there are degrees of genreness, from tightly defined (or ossified—certainly not the case in this instance) to baggy and indeterminate” (141). Surely, from this view, the edutainment blog is a fuzzy genre. For the group, deciding that this is in fact a genre, and what is in and what is out of that genre enabled them to imagine and invent schematic resources applicable to the desired
end of edutainment blogging. As Medway describes of architecture students’ notebooks, the process of categorizing and naming edutainment blogs a genre, baggy and indeterminate as they are, was useful for this group of students as researchers of genres and inventors of schematic resources.

We might point to radical differences between annotated bibliographies and edutainment blogs as a factor in the successful adaptation of rhetorical resources between the two genre models, but we might also be surprised to see any resources transfer across these very different genres. These two genres were radically different from one another in terms of how established they were—with annotated bibliographies being very tightly constrained and edutainment blogs very fuzzy. The shift in “genreness,” as Medway terms it, may have prompted the group to spend a great deal of time researching and analyzing the situation and social action of the edutainment blog. Finn described how different it felt to design and use the edutainment blog schema compared to the annotated bibliography schema in an interview:

I just think I was more excited about the substance itself, and I think because of that… it just flowed more naturally. And maybe also because I was more aware of the genre I was writing within as well. I kind of knew what felt right as far as what is similar to *Wait, But Why?* as opposed to annotated bibliographies, where it [was] very much a matter of trying to figure out what it is. And maybe length plays into it as well. Because for the annotated bibliographies, they were so short—we had like seven examples back to back—so you can quickly go and match the lines. So, it's more obvious what you're trying to do with each of your own sentences. Whereas with something like an edutainment article I think it's, just because of like the size of things, obviously it's a little more, not direct sentence-to-sentence matches between different examples. And filtering
through examples takes more time. So, I think I think because of the length of it's kind of you know the tone and the attitude of, you know the form of [the edutainment blog]. I think we probably had the same number of tags in the annotated bibliography as we had with this example. Or roughly, which is just, I think goes to show—tags to word count, basically—how much more strict and confined the annotated bibliography was. (Finn, Interview 2)

Finn’s awareness of the edutainment blog article was drawn from his familiarity with the blog *Wait, But Why?* During schema design, he called on this knowledge from his personal reading practices rather than immediately drawing on his experience designing and using the annotated bibliography schema. This is significant because this prior knowledge may have overridden or interrupted a tendency to adapt schematic components directly from the annotated bibliography schema to this new genre. This was evident in other AWD groups as well, given their varied experiences writing disciplinary genres for other classes and in workplace context for their coop.

I also think that the excerpt above indicates a more important factor in a model’s success. More than what genre they are modeling, what is important is that students take up modeling as a dynamic rhetorical activity, one that responds—in part—to the genre being modeled. Finn, for example, understood that the two schemas he had helped design served different functions. For Finn, the annotated bibliography schema was useful for “figuring out” what the genre “is” by

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42 For example, the feasibility report group used the previous knowledge of one of their group members to drive the schema design, rather than relying on strategies drawn from the annotated bibliography schema. They wrote, “In order to study the situation that a feasibility report addresses, we mostly referred to [Jack], who had created a report before, along with the previously collected samples… It was possible for us to access the scene of actually writing one of these reports by interviewing our group member [Jack]” (Feasibility Group Report).
“matching the lines.” No wonder, then, that 90% of the components designed by the class concerned themselves with the content of the genre. By contrast, the edutainment blog schema was more an attempt to capture “the attitude and the flow” alongside the “form” of the genre. Finn did explain this difference by pointing to fundamental differences between the genres in terms of how established their conventions are, referring to annotated bibliographies as “strict and confined,” and contrasting the “matching” style of the annotated bibliography schema with the more open, less strict edutainment blog schema. Yet, the group’s success was less a function of the specific differences and more a result of understanding schema design as an activity that is capacious enough to serve different functions, depending on the genre being modeled. Therefore, though they still draw on previous experiences, they properly adapt them to this new, and different, context.

**Key Findings from Op-ed and edutainment Blog Cases**

_Students are strongly influenced by their previous genre modeling experiences when modeling new genres._ Even, as we saw in the case of the edutainment blog, when genres were very different from one another, groups still transferred or attempted to transfer rhetorical resources from their previous modeling experiences. This finding would not be a surprise to genre theorists who have traced the role of prior knowledge in students’ genre performances (Devitt; Rounsaville; Lindenman; Artemeva and Fox). In her article, “Inventing Metagenres: How Four College Seniors Connect Writing Across Domains,” Heather L. Lindenman uses the term “student-driven metagenre-invention process” as a way to describe the work her subjects did in focus groups. Drawing on Michael Carter’s definition, she defines metagenres as “groupings of genres based on similarities in purpose, impetus, or rhetorical moves” (n.p., emphasis in original). She advocates for metagenre talk, which can help students make
connections across their genre learning experiences, and points to three potential benefits of fostering this kind of process: 1) enabling students to access prior genre knowledge that they may not have otherwise considered relevant; 2) enabling students to re-envision their goals as writers; and 3) offering researchers and teachers insight into ways we might foster transfer by attending to students’ idiosyncratic metageneric conventions. She argues that “writing researchers and teachers would benefit from looking for the ways that students connect their writings based on their own organizational schemas.” My findings here align with Lindenman’s call, and extend her findings by suggesting that we might foster more productive connections between students’ genre experiences across classroom tasks through explicit modeling, which prompts students coming to terms with one another’s organizational schemas.

In order to leverage the productive aspects of schema design, students had to have designed constraints that would present practice-based moments of tension as they wrote the genre. Otherwise, there was no reason for students to negotiate differences between their individual genre performances, and thus no critical interrogation of the rhetorical conventions which comprised the genre. A primary method that set students up for success in this activity was explicit boundary setting. Unless students consciously shift the rhetorical goals of the schema (as we saw in the case of edutainment blogs) they won’t necessarily feel the need to account for important shifts in different modeling tasks. Students are less likely to undertake boundary-setting, a critical activity for explicitly defining the rhetorical situation to which schema design responds, when previous schema design experiences too strongly influence their approach to modeling. Or when modeling situations too closely resemble one another. However, if the new genre is radically different, especially, as we see, in terms of how stabilized the rhetorical
conventions of the genre are, then that shift is felt more strongly, and is thus more likely to be accounted for in the new designs.

The example of the edutainment blog suggests that students involved in the process of inventing schema designs might resist the rapid habituation of generic strategies between schemas by moving from more- to less-ossified or entrenched genres. In this case, the radical differences in the level of established rhetorical convention required the group to take a new and full account of the rhetorical situation to which the schema responded, resulting, in my view, in a more thoroughly reasoned schematic design. Maddie wrote, “Making the schema for academic blogging was pretty different from making the first one as a class, mainly because this genre approaches writing in a very casual but informative way. Since it’s casual, the layout of one blog post can vary greatly from another’s, which made it difficult to gather commonalities without taking away from the pieces” (Design entry). As well, it appears that prior knowledge of the target genre may delay or override the tendency to unreflectively draw on previous iterations of schema design. If students have other resources from which to draw, they are less likely to unreflectively or inappropriately adapt resources from previous schemas.

Instances of transfer between the schemas designed in the class were both successful and unsuccessful. This finding is closely related to the role of previous modeling experiences. According to Ambrose et al., prior knowledge can both help and hinder learning as it is brought to new tasks and contexts. If prior knowledge is inactive, insufficient, inappropriate, or inaccurate, it can hinder learning (14). In the context of these classes, previous schema designs had the potential to provide resources for new modeling tasks. Even within the op-ed schema we see (for example, in the <opinion> element) the conscious transformation of rhetorical strategies from the essay schema. Yet, there is also strong evidence that other instances of
transfer overrode the primary research conducted by the group in ways that weakened the
efficacy of their design. In the context of these classes, previous schema designs had the potential
to provide resources for new modeling tasks. These examples of successful and unsuccessful
“near transfer”—transfer across relatively similar contexts—are consistent with transfer research,
which can help to identify issues that can “affect transfer negatively and positively” (Ambrose et
al. 108). Boundary-setting, for the edutainment blog group, offered students an opportunity to
make “structured comparisons” between the genre modeling situations, a technique that has been
shown to facilitate transfer (Ambrose et al. 110). As well, the approach to modeling taken by the
group—and represented in the Group Report—demonstrates a deep understanding of the
dynamic nature of genres as stabilized but dynamic rhetorical forms (Schryer), indicating that the
group was able to apply abstract knowledge of rhetorical genres to the concrete task of modeling,
a combination that has also been shown to promote transfer (Ambrose et al. 110). This may be
the factor that is most influential in facilitating successful instances of transfer across class
contexts—that students take up their genres as dynamic and variegated. The students developing
the op-ed model did not take up the task of modeling with an understanding of the op-ed genre as
dynamic, they failed to interrogate the complex relationship between stability and variation
within the genre and, as a result, unreflectively adapted resources from the essay model.

The transfer research briefly outlined above suggests that, in taking up explicit genre
modeling, instructors might promote successful instances of transfer through specific strategies,

\[43\]

These include: discussing conditions of applicability, giving students opportunities to apply
skills or knowledge in diverse contexts, asking students to generalize larger principles, using
comparisons to help students identify deep features, specifying context and asking students to
identify relevant skills or knowledge, specifying skills or knowledge and asking students to
identify contexts in which they apply, and providing prompts to relevant knowledge (Ambrose et
al. 117-120).
all of which include offering students more opportunities (in more contexts) to apply and discuss the applicability of skills, principles, and knowledge across contexts. To me, these suggest that the prompts and the workflow of schema design projects might be usefully revised to promote those activities that I saw were productive for students, especially boundary-setting. The centrality of boundary-setting could be made more prominent on assignment prompts. As well, more explicit prompting (by me and by the course materials) for students to reflect on and draw on knowledge across tasks could prove useful.

As well, we see in the case of the edutainment blog how failed transfer could also be productive of genre learning for students. Moments where students looked to previous experiences for resources and found them wanting prompted them to critically assess shifts in the rhetorical situation of schema design mediated by changes in the target genre.

In chapter 5, I will explore this conversation around transfer in more granular detail, adding specific examples of transfer—both within the class and to and from other contexts—in the cases of two students: Maddie and Zoe. In particular, I examine how Zoe, a FYW student, dealt with coming to the op-ed schema in project 3 and what resources she called upon from her previous modeling experiences to revise the schema. As well, I describe how Maddie, and AWD students, drew on diverse genre experiences in her selection of genres for study and in her individual writing.

From the perspective of genre research, schema design offered a way to trace these moments to better understand how they operate, leading to the final finding.

*Explicit modeling can help us—as researchers and teachers—trace how genre knowledge is transferred and, in some cases, transformed across genres within classrooms.* Although this study was not specifically designed to trace transfer, instances of transfer emerged as important
through the pattern of intertextuality across schema components. Had I anticipated transfer being a primary focus, I might have designed the study—in particular the interview questions—to more fully trace students’ thinking as they made these connections. And yet, the pattern of intertextuality across schema designs still speaks to the efficacy of explicit modeling techniques as a way for researchers and teachers to capture this activity, especially—but not exclusively—in collaborative genre learning situations.

Clearly, however, as we saw in both cases, students also transfer knowledge from prior—and concurrent—genre knowledge from without as well, an aspect of students’ experiences which I will take up more fully in the next chapter.
Works Cited


Chapter 5
Writing with XML

Throughout this dissertation, the writing of individual students has taken a backseat to wider concerns of classroom design (chapter 2) and collaborative schema development (chapters 3 and 4). What motivates this chapter is a desire to understand how students engaging in this form of digital writing—designing schemas and deploying them in their individual writing—understood their writing experiences. The writing, reading, and thinking processes of students guide the case studies as I explore the following questions:

• How do students take up the schema in their individual writing? How do they draw on, revise, and translate the knowledge represented in schema designs in their individual writing processes?
• How do students conceive of and use the markup of encoded texts, their own and that of their peers?

This chapter attempts to address these questions from the perspectives of two different students: Maddie, an AWD student, and Zoe, a student in FYW. For each of the two cases, I draw attention to a few key features of their experiences which speak to the questions above. And while the two cases are not meant to be strictly comparative, the experiences of Maddie and Zoe do reveal some common insights that bridge across the two courses. In other words, highlighting similarities and differences in their experiences clarifies some aspects of the pedagogy, how it was (or might be) taken up, and offers some indications of how students’ writing is affected differently by similar digital writing practices.

Throughout this chapter, I draw on data from interviews, reflective writing, and—sometimes quite extensively—from the individual writing of students. Line numbers in excerpts
of students’ texts correspond with line numbers on their finished writing, available on the Digital Appendix site, “Markup in the Writing Classroom” [http://markup.kevingeraldsmith.com] by selecting the “XML View” on a given text. References to drafts of student texts do not include line numbers because the history of those files include identifying information and, as such, are not shareable as data. For each writing project, I provide a link to the particular writing project being discussed. Readers who explore the Digital Appendix and read the individual compositions I excerpt from will have a fuller understanding of how genre knowledge was drawn upon, revised, and deployed in context than will readers who rely solely upon the textual representations I develop here.

**Case 1: Maddie**

I begin with Maddie, a student in Advanced Writing in the Disciplines (AWD) for the Technical Professions. Maddie grew up in Arkansas. She identified as a female, as Vietnamese, and checked the lowest income bracket for her family income, $0-50,000 (Survey). According to her, “the main reason” she chose Northeastern was financial aid, with secondary reasons including the co-op program and that her older sister was a student at a nearby college (Interview 1). When she enrolled in my class, Maddie was a combined major in Computer Engineering and Computer Science (CE/CS), but indicated that she was “leaning towards CS [Computer Science]” (Survey). She ultimately reported in interviews that she decided to remain in the combined major because she was entering her final year of undergraduate work. Her interest in CS was specifically in game development, which she was interested in for a possible graduate degree. Game development came up a lot in our interviews—questions about graduate school, comparisons with writing for class (Interview 2), and examples of independent writing (Interview 1). She did not identify strongly with her major, especially the Engineering part of it,
indicating that she “stumbled into it” after her father “hinted, ‘It’d be so nice if we had an engineer in the family’” (Design entry 1). In terms of her writing, the aspect of her identity that was most influential for Maddie was her nascent identity as a game designer and developer. She showed a lot of enthusiasm for game development, describing it as what she “is most interested in” (Design entry 1). She was especially interested “useful” games—ones designed to “relieve stress,” to help shy people “bond with others,” to be used as “teaching tools,” and to intervene in mental and physical therapy and rehabilitation (Design entry 1). Yet, Maddie had not pursued game design fully while at Northeastern, citing the economic precarity of the industry: “I've always been interested in games but then I always, like, try to steer away from that … because you hear a lot about how it's not a stable profession. Once the game is over you have to find another one and it's always changing” (Interview 1).

As is likely clear from her major, Maddie considered her proficiency with computers and computer-based tasks “strong” (Survey). Her three co-ops all involved coding. Most of her tasks included fixing bugs and automating processes on internal applications. She had exposure to XML data, but had not worked with it extensively before this class. In academic writing tasks, Maddie considered herself a weak writer (Survey), going so far as to claim, “I guess I wouldn't really consider myself a writer in that I take really long to write things that should probably take thirty minutes” (Interview 1). She did not take first-year writing at Northeastern, and so AWD was her first official writing course in college.

While I am quite sure that I could fill several chapters narrating the intricacies of Maddie’s experience, it is necessary to limit the discussion to just a few key features. In what follows, I draw attention to three features of her experience which best demonstrate how Maddie took up writing in XML, when and how she drew on the shared knowledge of the schemas in her writing,
and how she negotiated her own identity and goals as a writer within the genres she composed. These features clarify, extend, and complicate the findings outlined in the previous chapters by providing a situated view of a writer working in and with XML. First, I outline how Maddie used markup as a form of reflection-in-action—using tags to make connections between her writing and that of her peers—demonstrated by examining her reflection after project 1. Second, I trace how she drew on and transformed the shared genre knowledge represented in the schema by looking at revisions to her second writing project. Finally, I trace Maddie’s shifting use of the schema over the course of the three projects. These features of her experience help me to articulate the rhetorical affordances of XML as a way of *interfacing* with genres. I use the verb form here to signal a departure from the notion of interface as a static location for analysis. My understanding follows Collin Gifford Brooke’s definition of interfaces, “those imperfectly bounded encounters where users, technologies, and contexts intersect” (200). He writes, “A turn toward the interface as our unit of analysis would be an acknowledgment that it is not necessary that these processes culminate in products (which can be decoupled from the contexts of their production), but rather that what we think of as products (books, articles, essays) are but special, stabilized instances of an ongoing process conducted at the level of the interface” (25). This notion of interface has much to recommend it. Brooke pushes us to think of interface as a “discursive space that is ongoing—one that is shaped both by the intentions of individual writers and contextual constraints” (200). Like Brooke, I see the imperfectly bounded encounters of students genre performances as imperfectly bounded encounters at the level of the interface—where their individual intentions, technological constraints, and contexts “intersect.”

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44 I am also influenced here by Chris Gallagher’s multimodal assessment framework, which looks to how texts—as interfaces—work (or not) to perform their contexts of production and
understanding helps me to unpack how students make meaning in the genre performances, because it understands these performances as imperfectly bounded interfaces which are not separated from the surrounding genre ecology—indeed, in many cases, the interfaces rely upon the larger ecology to make meaning.

**Leveraging Markup for Reading in Project 1**

Throughout the course, Maddie consistently leveraged the emergent vocabulary of the schema in her reading processes. In her first writing project for the course, an annotated bibliography, Maddie saw markup as particularly productive in reading processes—both for herself as a peer reviewer, and for guiding potential readers of her documents in their task.

Reading others’ encoded texts helped Maddie to learn more about the conventions of the genre and to draw on that knowledge to assess her own writing. Because of time constraints in the summer session, we did not have a peer review session for annotated bibliographies. Instead I asked students to read a peer’s annotated bibliography after the assignment was complete and to reflect on it in a design entry. In that entry, Maddie described the insights she gleaned from reading her classmate’s annotated bibliography after composing her own:

> In each of his annotations, he gave the procedure of the study and also the actual **application**, *which helped tie the subject together*. On at least one of my annotations, I separated the **application** from the research. I noticed he had a source with research associated with Northeastern too. *That was good to place the subject in perspective*, and I

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reception. This performative thread in interfaces is especially apparent in my unpacking of Maddie’s second genre performance for her second writing project.

feel that I should have looked into more local sources for my topic. I referenced the ReGame VR Lab, but I didn’t take a source from studies they’ve already conducted. Additionally, how he briefly explained technical jargon made the read understandable for those unfamiliar with the field. He also provided better backgrounds for the authors of the articles by citing their relevance to the problem. Our subjects were similar in that it covered concepts for rehabilitation and drew from different disciplines to solve the problem.

We followed the same markup schema. Our sources were scientific articles and were cited with APA. All of his “relevance” sections were tagged with “application…”

Overall, the formatting made it easier to follow. (Design entry 3, emphasis added).

In this reflective comparison, Maddie used the vocabulary of the schema (components in bold) to make explicit comparisons between her writing and that of her classmate. She drew on these comparisons to make judgments of the rhetorical effects of her classmate’s decisions (in italics). These moments of reflective comparison were bolstered in their specificity by the existence of the schema, and allowed Maddie to make meaningful connections between her own and her classmate’s annotated bibliography. She described her learning in project 1: “breaking [the annotated bibliography] down [in XML] was very good because, for past annotated bibliographies I’ve done, I guess it was mainly <summary>, but not really the <relevance> sometimes. And [<relevance> is] probably one of the more important points of a bibliography [laughs], an annotated bibliography!” (Interview 1). It is telling that, like her comparisons to her classmate’s annotated bibliography, Maddie framed this moment of genre learning in terms of the schema components. This suggests that creating and using the explicit vocabulary of the schema—both as a writer and as a reader—prompted new knowledge of the
genre that she did not glean from her previous experiences writing annotated bibliographies.

Maddie’s understanding of the role of markup in this project was that it encoded the intentions and thought processes of writers, Maddie writes, “[A]nnotated bibliographies provide a good reference for both the composer and others to review sources and see how they relate to current projects. With that in mind, structuring it with XML makes it easy for others to get a sense of our thought. It’s especially useful for peer reviewing later since our different concentrations shape how we write” (Design entry 2). Maddie theorized that the addition of markup in her final piece would be a boon to the typical social action of the annotated bibliography genre: “annotated bibliographies provide a good reference for both the composer and others to review sources and see how they relate to current projects. With that in mind, structuring it with XML makes it easy for others to get a sense of our thought” (Design entry 2). She expanded upon this thought in our first interview, “I guess I feel this is OK in that it’s supposed to convey information. So, if you organize it like that [in XML], then they know where to go directly” (Interview 1). When asked about the “they” in that claim—who the audience is for her encoded text—she responded, “I mean it can be a computer program. But I guess I was thinking in terms of whoever was reading it. Like, if you’re reading an annotated bibliography, it’s generally because you’re doing some research and you want to find some specific data and see if it’s an actual good source for whatever you’re working on” (Interview 1).

On a related note, Maddie joked that she would appreciate it if the conceptually difficult Rhetorical Genre Studies were encoded in XML: “So I know a lot of other people were talking about the reading. How you know, of course, [it’s] not formatted in XML [laughs]. But then, how some things bleed into each other, it’s kind of hard to grab the main point. But then, for this [annotated bibliography], it’s easy, you just kind of go to the tag and extract it” (Interview 1).
This was partially in jest, of course, but it does highlight Maddie’s use of marked up texts for certain reading practices, namely retrieving “the main point” and important information from the text. On the one hand, this is a good way to think about reading an annotated bibliography. On the other, this tendency might also signal a desire for reduced complexity, a wish for the kind of reading, for example, presented by textbooks and outlines. And Maddie may also be signaling a desire for reading strategies valued in other domains—standardized testing, for one, or her technical courses, perhaps. However, this form of reading— for targeted information retrieval— was not performed superficially in her first project. Maddie used the markup not simply to seek information, but to explore other approaches to the genre, leading to new genre knowledge (i.e. the importance of <relevance>). As well, she recognized the connection between the context of the genre and the form it takes, indicating that it helped her to see how students’ “different concentrations”—both disciplinary background and ways of thinking—shape how they perform a genre, even when they take up relatively similar topics. This insight aligns Maddie’s use of markup for reading and reflection with a rhetorical understanding of genre as rooted in context.

Her association—and use—of XML with orderly information retrieval was put into interesting tension with the less structured, less established genre Maddie and her group undertook for her second writing project: edutainment blogs. In this second project, I want to draw attention to how markup figured in Maddie’s revision process.

**Revising and Transforming Shared Genre Knowledge in Project 2**

After project 1, Maddie anticipated that encoded writing would be “especially useful for peer reviewing later” (Interview 1), because of how she used it to retrieve information from her peers’ writing and make connections to her own after writing her annotated bibliography. Because it was the most involved project undertaken in AWD, tracing Maddie’s second project
offers an opportunity to examine how she took up the schema and encoded writing in her writing process, and how the reading and reflection practices described above translate into writing. As I trace this process through her second project, I highlight how Maddie drew on, revised, and transformed the shared genre knowledge represented in the edutainment blog schema.

Maddie reported the schema to be “constraining” to writing her first draft, complaining that “the schema restricted my writing” in terms of how the *question* and *answer* sections could only be deployed once (Design entry 7). Some of these tensions resulted in revisions to the schema. For example, on Maddie’s prompting, the group changed the *roadmap* element—“A roadmap is a list in which several ‘section_headers’ that build upon one another to drive home an important point are specified before diving into each section independently. This allows the reader to understand the purpose of a section in context to avoid getting lost in its details”—to a more generic *list* element, changing the definition to accommodate Maddie’s desire for a step-like component. The group subsumed *roadmap* into this more generic, flexible element, defining *list* as, “A multipurpose list element. [required @type; values can be: ‘generic’ or ‘roadmap’]” (657-658). Finally, she signaled difficulty in leveraging two major rhetorical devices she identified in her analysis: “Another major problem I had was trying to keep the reader interested by using comparisons and images without losing what I wanted them to take away” (Design entry 7). Images and comparisons were identified by the group as two of the primary rhetorical devices that recurrent across edutainment blogs as they defined

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them. These rhetorical devices were codified in two global elements in the schema: 

<analogy>: “Analogies should be used to better illustrate important and difficult to understand topics put forth by the other elements” (649-650); and <visual>: “Visuals are any variety of in line imagery used to break up long lengths of text, and/or aid in the understanding of a topic. Comics, pictures and graphics are a few of the possible visuals that can be used…” (622-626).

These components appear several times in Maddie’s initial draft, especially the <visual> tag, which enabled her to draw on her background writing comics and gaming narratives in the production of her blog.

The schema played a mediating role in her initial drafting process, as she described in our second interview. In her initial draft, Maddie took up the schema as a “guideline” for her writing process, using the schema

As kind of like a guideline—like I should keep this like in mind and not go too crazy with how I structure it… I was looking back at the <background> and how it would actually tie in with the tags… Because basically how I write is I jump around, like I laid out the <roadmap> and then I start filling out sections… I didn't start with like talking about the first algorithm. I think I started with the second one because I'm like “Oh, this would be a good <analogy> because I feel like this algorithm, would be like easier for them to understand at first.” (Interview 2)

Although Maddie chose use Word to compose, rather than using Oxygen, we can still see how the schema was recruited as a mediating genre in her writing process. In this example, Maddie described making use of the schematic components as “guidelines” in the early invention process. These rhetorical resources, identified and defined in collaboration with her group, serve as places to begin. Because she thought of an apt <analogy> for her second algorithm—
ironically, called Best-First—she began writing that section of her blog before others.

Yet, Maddie felt that she “probably should have used the schema more,” comparing her own blog to that of her group mate, Finn, “I think for me, it wasn't as together. Like for [Finn], his topic was really tailored to the schema” (Interview 2). In a design entry she is more specific, “[Finn]’s paper fit much better with the schema. He used the optional <important_idea> to support his topic, which I can incorporate into mine. After reading his, I do see how some of the sections I were (sic) unsure of fit in with our tags” (Design entry 7). This idea of “fit” with the schema implies not merely that Finn used more of the schematic components, but that the schema played a more central role in Finn’s writing process, and, as a result, his blog is better positioned to accomplish the social action that the group conceived of edutainment blogs. As we saw in project 1, Maddie’s reading of her peers’ texts was bolstered by the encoding, as she mentioned noticing Finn’s use of <important_idea> in his blog post. As project 2 moved into the schema revision, peer review, and individual revision phases, Maddie leveraged this targeted reading practice to revise her draft; invention became palpably social in this process without fully determining Maddie’s writing. Indeed, as we will see, Maddie used XML to find space—we might say, create space—in which to enact her intentions as a writer.

As we saw above, Maddie noticed Finn’s use of <important_idea> in his edutainment blog post about personal computer security. Finn also mentioned <important_idea> in his peer review of Maddie’s draft: “Lastly, I noticed you aren't using the ‘important_idea’ tag. It doesn't seem to take away from the work, however you might find it

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useful for areas in which you are driving home the differences between various path-finding implementations” (Finn, Peer review report). This excerpt from Finn’s report sees him using a schematic resource as a rhetorical resource—he called for Maddie to not simply add a component as an annotative process, but to use the concept represented by that component to help her work through a difficulty in her draft. The component, then, is a shorthand—one that is explicitly defined in the schema—for a more complex engagement with the text.

Maddie took up the <important_idea> in revisions to her first draft. In her first update to the draft following the peer review, she added four <important_idea> elements, each explaining important aspects of search algorithms—heuristic values for the best-first algorithm, and weighted tiles, suboptimal paths, and comparison for the A* algorithm. The <important_idea> tag is a rhetorical component, defined in the schema as “Major points of interest relating to the topic [takes @n attribute]” (684-685). Although this definition may be lacking a bit in specificity, for the group, this was a feature, rather than a bug. Maddie used the flexibility of this component to create unique implementations of<important_idea>, for example:

<important_idea n="1"> There are various ways to get the heuristic value, but the most common way is with the Manhattan method. This method counts the distance traversed only horizontally and vertically to get to the end, ignoring any diagonal movement and obstacles. This distance, also called the taxicab distance, is named after the New York borough Manhattan, which is known for its grid-like streets. <visual type="comic"

The content of this element is less important for readers to understand than how she used the
<important_idea> element in comparison with other writers. Here, Maddie used <important_idea> as a broad container, and included within it a custom-made <visual> element (see Figure 1).

**Figure 1: Screenshot of formatted version of <important_idea> component**

The other three <important_idea> elements Maddie added to her composition following peer review are similar—each of the three comprised a lengthy prose description of the idea and at least one visual element, drawn or adapted by Maddie, that helps to explain the important idea (304-315; 318-339; 341-354). One of these <important_idea> elements (318-339) has five <visual> elements contained within it.

It is difficult to gather—and indeed, it is likely difficult for Maddie to know—whether receiving feedback from Finn or reading his composition led her to make changes. Likely it was a combination of the two. In a design entry, she credits reading: “[Finn]’s paper fit much better

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48 Again, interested readers can better understand the content of the element by reading it in context on the Digital Appendix.
with the schema. He used the optional important_idea to support his topic, which I can incorporate into mine. After reading his, I do see how some of the sections I [was] unsure of fit in with our tags” (Design entry 7). However, as, we saw above, Finn also made the suggestion to make use of <important_idea> to help “drive home differences” between the search algorithms. Whether or not the specific addition of the four <important_idea> elements was a result of reading or receiving feedback, the process of peer review seems to have been productive for Maddie, both in her conception of the process and in changes made to her draft.

In her revisions, Maddie’s invention process was a social one (LeFevre), one that was mediated, but not determined by, XML. In Genre and the Invention of the Writer, Anis Bawarshi demonstrates the distributed nature of invention as a social process when he writes that genres are “rhetorical ecosystems,” and, as such,

constitute typified rhetorical sites or habitations in which our social actions and commitments are made possible and meaningful as well as in which we are rhetorically socialized to perform (and potentially transform) these actions and commitments (81-82). For Maddie, the material of the schema and XML tags helped her to understand the contours of the genre being represented. This example of peer review and revision reveals Maddie’s complex coordination of rhetorical strategies recruited from the schema and transformed for her purposes and according to her individual intentions. Maddie received a comment from a peer, suggesting that she leverage a rhetorical strategy identified by the group research process. Maddie used the component flexibly, pushing on its limits and opening a space to develop agency within the genre through this transformative performance, which is to say, at the level of interface.

I want to focus on this flexible use of the <important_idea> element, because it illuminates how Maddie drew on her previous genre experience with game design and comic
drawing in her edutainment blog. It is important to note here that Maddie’s use of `<important_idea>` was radically different from how it was used by her group mates and how the project 3 group used the element. All four of Maddie’s `<important_idea>` elements are significant chunks of text and include at least one `<visual>` element, usually a drawing or an image modified by Maddie. By contrast, of the 26 other examples of the `<important_idea>` element used by seven other students in their edutainment blogs, only one other `<important_idea>` contained a `<visual>` element (and it is not a hand-drawn or modified image, as Maddie’s examples include). As well, the length of Maddie’s `<important_idea>` elements were unconventional when compared to her group. For comparison, below are included the `<important_idea>` elements from Finn’s blog, which Maddie read and commented on in peer review.

The length of Maddie’s examples and the centrality of hand-drawn `<visual>` elements shows how Maddie leveraged shared genre knowledge to open space in `<important_idea>` for her own intentions to be brought to bear within the framework of rhetorical convention. Doing so, Maddie recruited resources from her previous genre experiences reading and composing visuals for comics and video games. From the outset, this flexibility was a feature of edutainment blogs that appealed to Maddie. It felt related to and capacious enough to allow her to explore two of her interests:

[S]o, when we started off, what we were looking at was just different content, or works that educated in a fun way. And, I think a few times, I was like, “Let's make a comic,” and all that stuff. And also, since I'm really into, or sort of getting into, hopefully, educational games, I think it just kind of stuck in my head that, oh this is a broad topic.

(Interview 2)
And, indeed, when she described how she wrote her draft, she used her experience writing comics and “scripts” as a touchstone: “My writing style is very free-floating [laughs]. So, as you know, I don't— I kind of, like for the comics, I just wrote out a script and something and just go along” (Interview 2). We can see how she scripted these comics by looking at an example from an early draft (before she had drawn them), and that same example in her final draft.

**Box 1: Finn’s use of important ideas**

- **important idea n=1**: What you might not know, is that avoiding having this stuff stolen is not hard nor time intensive; it can be as easy as putting on a seatbelt or locking your door. 
- **important idea n=2**: there are a lot of tools already out there that you are either not using, or using incorrectly. You can change that for free, and a few hours of following instructions.
- **important idea n=3**: These servers are still vulnerable.
- **important idea n=4**: for the vast majority of cases this is not so. Most in-home security breaches occur because there are known security flaws that malicious hackers exploit.

**<visual>Square pic here w/ arrows pointing to nodes and edges</visual>**

**<analogy>**
The nodes represent some sort of data, so we don’t need to depict them as points like above. Think of constellations!

**<visual type="comic">**
Little dipper constellation

P1: Wow, would you look at the beautiful nodes tonight!
P2: You mean stars?
P1: Shut up.
Most of Maddie’s first draft was written out like the two <visual> elements here, with scripts and descriptions standing in for comics and other <visual> elements she would compose later. The draft section above was revised for the final version (Figure 2).

![Connect The Dots: Graphs](image)
A graph is a collection of nodes or vertices, connected by edges. A square has 4 nodes and 4 edges:

- **NODE**
- **EDGE**

The nodes represent some sort of data, so we don’t need to depict them as points like above. Think of constellations!

![Modified](https://www.johndenugent.com/images/big-and-little-dippers.jpg)

**Figure 2: Screenshot of “comic” <visual> elements rendered in Maddie’s edutainment blog**

What is evident in this (and other) examples in her edutainment blog is how she drew on her
previous experiences creating narrative scenarios for comics and games, including the *Dungeons and Dragons* game she described her writing process for in our first interview: “I do have a certain way I write narratives. It’s that I come up with a scenario and then just write that part out. And it’s like chunks. And then [I] connect them” (Interview 1). In the example here, we can see how she used specific scenarios—and, indeed, narrative—to chunk out her writing as she drafts.

The use of comics in the composition of her edutainment blog reflects Maddie’s experience of the course as a whole. Throughout the summer term, Maddie looked to her previous and concurrent genre experiences—coding on her two co-ops, applying for jobs, designing video and tabletop games, and (later in the semester) working on projects as a member of Northeastern’s Virtual Reality Lab—to bring to her writing projects. These informed her approaches to writing—how she took up the genres as she wrote—as the example above shows. These experiences and interests also influenced the genres she chose to research for her second and third projects. Maddie described the edutainment blog as “a great learning tool” that “appeals to a wide audience” and which functions as “a response to typical education techniques” (Design entry 5), by which she meant academic educational techniques. Maddie understood these techniques as flawed, especially through her experience in Engineering classes. She explained, “Engineering is very technical [laughs]. So, some classes I felt like I just, *[uses a robotic voice]* ‘I must learn this.’ But it was excruciating. So, we all decided to pick this topic, to make it fun and enjoyable” (Interview 2). As she looked to begin her third and final writing project, Maddie also connected each of the three genres modeled by other groups (public initiative

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proposals, feasibility reports, and cover letters) to specific personal, academic, and career interests. She writes,

All of the three other genres would be helpful to me. The cover letter is appealing because I’m graduating next year, and I need to start applying for jobs… But I’m also interested in the proposal. I’ve been framing my writing around my interests in game development, it’d be cool to come up with a proposal of how we can integrate them in school… The feasibility report would also be good to review. My capstone team and I constructed a bit of one for our project. I’m not too interested in creating one for any personal projects though since a project proposal would be more beneficial starting out. (Design entry 8)

Finally, these experiences and interests influenced the topics she took up in all three projects. Her annotated bibliography focused on her interest in using virtual reality (VR) technology for motor-related rehabilitation; her edutainment blog post was designed to teach the reader how three different path-finding algorithms—which are often used in game development—work; her final project was a cover letter for a Unity Programmer position at an educational game design firm in Boston.

I outline these connections in detail to elaborate on how Maddie’s disciplinary identity influenced the way she took up writing in XML. These connections enabled her to refigure her relationship toward writing, as she described in our final interview:

[M]aybe it didn't sound like it in my design entries, because I know, sometimes I said like, “Oh I wish I could have done this! It was so constraining.” But I really like this class! It was very good. I came in thinking: writing? No, make it stop! But yeah it made me really enjoy writing, and I think I'll explore like more genres.” (Interview 3)

Reading this moment, I can’t help but think back to Maddie’s initial assessment—that she didn’t
“consider [her]self a writer” (Interview 1). In that early moment, “writing” was a narrowly defined and feared concept, which foreclosed the possibility that the writing she was already doing was valuable or meaningful. XML enabled Maddie to interface with the “sites of articulation” (Bawarshi) offered by genres, to discover and (re)invent genres as accommodating her intentions; in other words, she found and made space for herself within the edutainment blog.

**The Role(s) of Markup in Projects 1-3**

Finally, and briefly, I want to draw attention to how Maddie conceptualized her use of the schema in her writing process across the three projects because it shows how the schema is not a static mediator; rather, its role shifts according to the contexts of its use. This brief outline draws attention to how certain genres in the ecology—the genre being modeled, the schema, the assignment prompt—influenced how Maddie used XML to interface with genres across her three projects. Each genre creates its own ecology of practice, each writer contextually engaging XML to create new performances at the level of the interface.

In interviews and reflective design entries, Maddie indicated she felt “constrained” by the schema in all three projects. Without exception, Maddie felt tension between the formal rules of the genre models and her own desires as a writer. Often, but not always, these tensions could be resolved in schema design when there were significant opportunities to revise the schema in small-group settings (projects 2 and 3).

Despite these concerns with the schema, Maddie also reported positive impacts of the schemas across her projects, ways in which the constraint proved simultaneously productive for her as a writer. In project 1, she claimed to have used the schema as a “guideline” for her writing process (Interview 1). She described her writing process in our first interview:

Kevin: So, how did you compose this assignment, this first assignment?
Maddie: I looked up the requirements. It was either, like <relevance> or <summary>...

Kevin: Right, and <background>.

Maddie: Yeah. And I just kind of wrote it out in a regular text editor [MS Word] ... I just kind of separated the parts and then put it into Oxygen...

Maddie: I remember trying to figure out what I needed for the annotations when I was writing it out in Word. And when I was putting it in I did change some things because I was like “Hmm, maybe this doesn’t go in like the interpretation or something.” And so, I added the lines or subtracted and rearranged. That’s how I did it. (Interview 1)

For Maddie, the schema structured how she composed her bibliography even though she wrote it outside of the Oxygen interface. And she did report the existence of the tags giving her pause and leading to some revisions. She admitted, however, that she didn’t “think that’s the best way to work in XML,” but she was “just more familiar with Word” (Interview 1).

In project 2, Maddie claimed that the group had designed for maximal flexibility, given the somewhat amorphous nature of their genre, edutainment blogs:

[W]hen we were researching we realized everyone structures theirs differently. You could have this huge blog post that went on for days. But then another one was just kind of short, to the point. So, we just wanted to be able to, I guess, try to put those different posts in one schema, which is why we had those global elements. Maybe you introduce the story first and then introduce background, or something like that. (Interview 2)

Despite this flexibility, Maddie still found the schema to be “constraining” to writing her first draft. She felt aspects of the schema were “helpful guides” for her as she composed, she complained that “Overall though, the schema restricted my writing” (Design entry 7). As we saw
elsewhere, though, she also saw constraints as simultaneously generative. Towards the end of her writing and revision process, Maddie’s conception of schemas had shifted somewhat. As a user of the schema, she saw schemas as providing a starting point from which to proceed in adapting the schema to her own purposes.

I'll explain it from my perspective at least. For the other groups, I wouldn't say I'm too familiar with those types of genres. Yeah, surprisingly, I have yet to write a real cover letter [laughs]. So, for me, how they break it down is really helpful to see how I would go about starting one. Because a lot of times when I start writing something technical I look at examples, and then... But sometimes it's also very difficult to draw the sections that would relate to your topic. (Interview 2)

In other words, schemas provided a flexible location from which to invent. For Maddie, schemas helped her to see the implicit patterns and structures of genres and imagine how those structures—“sections”—“would relate” her own contexts and goals as a writer.

For project 3, Maddie recognized the differences in schema design between edutainment blogs and cover letters even before drafting, writing, “The schema for it is stricter than my team’s edutainment blogging” (Design entry 8). Once she had drafted and revised, she reported that the schema was helpful for her, linking the strictness of the schema to the audience’s expectations for a cover letter: “I think it was because it was shorter and also it was more professional, so there’s an expectation that it’s structured in a certain way, broadly speaking. So, the outline schema really helped me out, like, ‘Oh, I should start here!’” (Interview 3). Maddie compared her experiences, noting that, “I did use the schema more strictly than the edutainment blog” (Interview 3), writing “it in chunks with the schema” (Interview 3). This notion of “writing with” the schema points to a shift in how the schema was recruited and used by Maddie to
coordinate her writing process in different projects, in the production of different genres, and in response to different schematic designs.

Yet, Maddie did not treat the composition of the cover letter like a fill-in-the-blank exercise, but rather understood the schema as a location from which to position her own writerly intentions, dispositions, and motives within the framework of the genre. She noted that, “The last sentence of my first paragraph may not fit in the <proposition> tag. I wanted to emphasize my enthusiasm in joining the company rather than saying that I have the necessary skills since I felt that that’s explained throughout” (Design entry 10). This tension led her group to revise the cover letter schema in project 3. She also noted that the schema served an additional, annotative role for her in this project, something she had not mentioned as part of her process for the previous projects: “I accidentally excluded certain tags (<accomplishment>, <skills>, etc.) from the schema because I had overlooked them, but inserting them after finishing my draft didn’t bother me” (Design entry 10). Because those elements were added as afterthoughts to Maddie’s text, they played little role in her writing process beyond a recognition that, ultimately, someone else would be looking at her encoded writing, and expect it to be tagged with these components. This can be read, I think correctly, as a recognition that this was an artificial—and graded—form of writing. But Maddie also continually referred to the potential for outside audiences to engage with her encoded writing. For example,

I feel like [the audience], it’s really broad, [for] the schema. If you want to write it, like if you want to write the genre, it’s a good guideline. But also, if I’m writing it, it’s good for me to kind of look back and see, like why I wrote that part. But also, for computers or something, or someone who wants to dissect a certain genre and pull out certain parts without like going through all of this [scrolls through her document]. It’s kind of like
notes. If you have to read through all of it without it broken up already, you kind of have to take your own notes. So, this is just pre-given notes [laughs]. Yeah. I still feel like it’s for a lot of different people. It’s obviously not for like people who aren't getting into any of this. Like, who aren’t looking at the subject or anything. It doesn't have to be like another writer or anything, but it can be just an observer. To see what you were trying to do, meant to do. (Interview 2)

Maddie’s conception of the multiple audiences for markup helped to clarify her annotative use of the schema in project 3. It was aimed, perhaps, at me, the instructor, but also informed by her understanding of this form of writing as a performative, ecological practice—that is, her cover letter is made meaningful to readers partially through the associative links of XML tags.

Leaving Maddie at this moment is fitting, as she looked outward to future readers and writers using XML. In what follows, I will draw attention to three aspects of Zoe’s experience in the FYW class, marking similarities and differences between that experience and the case of Maddie described above. While these experiences are not organized to mirror one another, they do animate—and complicate—similar insights into this form of digital writing, which I take up more fully in the discussion section of this chapter.

**Case 2: Zoe**

Zoe is a young woman originally from Puerto Rico but who moved to Massachusetts in 2009. When asked, she identified as female, Hispanic, and lower-middle class (Survey). As a first-year student, Zoe had a strong academic identity as a hard worker and high achiever. Her high school, a college preparatory academy about an hour from Northeastern’s campus figured strongly in developing this identity. During high school, she took dual enrollment classes at the
nearby Worcester Polytechnic Institute (WPI), through which she developed a great deal of confidence in herself as a first-semester college student, going so far as to call Northeastern “much less stressful” and “slower” (Interview) than her previous higher education experience at WPI.

A Bioengineering major considering a Computer Science minor at the time of the study, Zoe was also considering pre-med at the time of our interviews and planned to split her co-op experiences between engineering and health care. Zoe’s interests were reflected in the wide range of extra-curricular activities she was involved in, even as our first interview took place in October, only about a month into classes. Her activities could be broadly categorized as being concerned with her identity as a Hispanic woman engineer—Latin American Student Association, Society of Hispanic Professional Engineers, Enabling Engineering, Society of Women Engineers—and as a musical theater actor—NU Stage. The second of these identities fed into the content of her first assignment, a historical genre analysis of theatrical playbills. The former inspired her project 3 op-ed, “La Isla Del Espanto,” or “Island of Terror,” wherein she laments the economic “state of emergency” facing Puerto Rico at the time of writing, which, she writes, has turned the “Isla del Encanto” (Island of Enchantment) into one of terror.

Zoe’s identity as a writer was shaped by her time in high school, and especially by one teacher, her third-year English teacher, who had students undertake draft after draft, each time returning the paper “[C]overed in slashes, all marked up” (Interview 1), until a draft was deemed worthy of a grade. Zoe jokingly referred to this process in terms of corporal punishment. Recalling a previous collaborative writing experience in high school, she claimed, “I wasn’t a good writer yet because [my teacher] hadn’t beaten me into knowing how to write” (Interview 1). This shaping of writerly knowledge persisted in how Zoe described herself as a writer in our
first interview, “Pretty decent, not naturally talented, more like [I] put in the work to be better” (Interview 1). “The work” that Zoe considered central to writing was peer review, drafting, and proofreading. She reported not having experience writing genres outside of essays in high school (Interview 2).

Although she characterized herself as an average writer both in our first interview and on the survey, these self-reports belied the skill and confidence with which she undertook and talked about writing tasks in our classroom.

As I did with Maddie, I will draw out three aspects of Zoe’s experience in the class: 1) her use of markup as a scaffold for reading; 2) how she drew on the schema and markup to revise her second writing project; and 3) the shifting role of the schema in her writing processes. Again, these three features help me to articulate the multiple and shifting ways that Zoe recruited schematic resources to bring to bear on her writing projects, how she interfaces with genres through performance in XML.

Reading for Intent and Reflection

Like Maddie, Zoe reported that reading her peers’ encoded writing changed the way she understood that writing. When asked if reading in XML changed the way she understood her group members’ writing, she replied, “Looking at [Adam]’s and [Daniel]’s, I would say so. I can see what they thought while they were writing and why they thought using this specific tag at this point would be better than using it a different point” (Interview 2). For Zoe’s second project, this occurred during the peer review process. She continued, “[Reading] helped me

50 XML, formatted, and annotated versions of Zoe’s movie review can be viewed on the Digital Appendix site, “Writing in the Markup Classroom,” at
understand their [writing] and have a better idea on how to work on mine. We are all studying at the same time. Them having different ideas for where to use what specifically helped me understand where I should do the same” (Interview 2). She offered the example of the

<context type='director'> tag, offering, “If you’re talking about the director, should you be doing it at the beginning or at the end? Do you just fit it where you think it’s important? The director has prior experience with this kind of movie, that’s what led to this movie being a certain way. They’ve [my group members have] used it in different parts of [their movie reviews]” (Interview 2). Finally, when asked if she would have noticed these differences without the aid of markup, Zoe responded, “I don’t think so. I would have, but I wouldn’t have made the connection that, ‘Oh, this is why they’re doing that’” (Interview 2). Thus, reading her peers’ encoded writing enables Zoe to conceptualize her peers’ thinking and writing processes, leveraging the connections between texts made visible through XML tags. This insight enabled her to make connections between her own and her peers’ writing and, ultimately, revise her movie review.

Read alongside Maddie’s use of reading and peer review in project 2, this example clarifies how typical reading and writing processes undertaken in writing classrooms—primarily peer review—were bolstered through the encoding of student writing, enabling meaningful and specific engagement, targeted comments, and connections between what others have written and their own deployment of schematic resources. This is to say very little of the content of the peer review, which I found to be more robust and specific than they have been in my previous uses of the same peer review approach sans markup in many cases. I believe this is because students had

specific rhetorical resources to offer their peers when advising on revisions, as we saw in Finn’s
directive for Maddie to bring <important_idea> to bear on her edutainment blog.

Zoe had access to an additional resource—another genre in the ecology—which was
unavailable to Maddie and which bolstered her reading practices and writing: the annotated
version of the text. As she moved across projects, Zoe indicated that the annotated version of her
peers’ writing projects bolstered her ability to understand their writing, especially when moving
to a new genre in project 3. For project 3, Zoe described using the visualized version of her
classmates’ op-eds to try to better understand the genre as she came to it as a newcomer.

Zoe: After project one, I saw that it was a thing. I thought it was cool. That's where
that came from. Project two, I couldn't actually look at it until after my thing was done
and up there … For project three, I looked at the annotated version of the people who had
done the op-eds before… [I]t helped me understand their schema more.

Kevin: You could look at their XML documents if you wanted to?

Zoe: I did, but it wasn't the same. (Interview 3)

For Zoe, the annotated version helped her to see her peers’ writing in a different way and to
understand more deeply the relationship between that writing and the schematic representation of
the op-ed genre. She thought of different visualizations as different ways of understanding her
own writing as well.

Kevin: There's three versions of each of your first two assignments. There's the one

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51 The annotated version of student texts was an addition to the pedagogy that I made between
the AWD and FYW courses, as describe in chapter 1. The decision to provide this additional
visualization—which both formats the document and also makes the most important markup tags
for each genre visible and color-coded—to FYW students grew out of the frustrations expressed
by AWD students as they had to shuttle back and forth between the formatted and XML versions
of their text.
where you can see the XML, you could see all the text, and everything. There's one that just looks like a piece of paper or like a movie review would look, and then there's the annotated one where the text are different colors. Do you consider one, or all, or several of those the final thing? What's the thing that you did?

Zoe: The thing? They're all the things that I did, but the one that I will present is the one that looks like a piece of paper. Then the other one is the skeleton. If you're looking at the human body, the paper one is the body, and then the other ones, the one with the different colors is the one where you can see the muscles and the circulatory system, and then the other one is the skeleton.

Kevin: What are those other ones useful for, the muscular system and the skeleton?

[laughs]

Zoe: The muscular system helps you look at how things interact, and then the skeleton shows you the structure of it and how you're building upon it to get to the human body. I think weird, I'm sorry. (Interview 2)

This description reveals how, for Zoe, reading processes were not only conditioned by the existence of XML tags, but that those processes were refigured through different ways that the encoded writing was recomposed. The markup, then, depending on the context in which it was read, served and facilitated multiple purposes for Zoe.

Zoe found this process useful, to be sure. So much so that she offered other ways of leveraging markup to visualize student writing—“multiple colors” indicating nested tags, “boxes” to represent the abstracted structure of each document, and a combined view that is “both zoomed out and zoomed in at the same time” (Interview 3). When asked how she thought these visualizations would help writers, she said, “People who think like me see what it’s like”
(Interview 3). Zoe recognized ways of visualizing—ways of recomposing—her writing as akin to different ways of thinking about that writing. She offered these potential visualizations because they represented how she approached a text—alternative ways that the marked writing could be recomposed in effective ways. In fact, the annotated version of documents did not just reflect Zoe’s thinking about texts, but actually became a touchstone for how she described applying her learning about genre as she moved outside of our classroom. There was a hint of this in her final reflection, where she wrote:

Using XML didn't exactly change the way I read, but it has made picking out specific parts of writing to analyze what was discussed in it easier. I’m specifically referring to how on the project site we can see the tags in a specific color and see which parts of the writing are in each color. I know that is not directly XML, but it wouldn't be possible if we didn’t have to mark up our writing. This was helpful for Project 3 when we had to create our own pieces of a specific genre based on other groups’ schemas. (Final reflection)

This quote points to another feature of Zoe’s experience—looking forward to how the concepts developed in the class could be applied in her future academic career. I take this up in the last section of her case. First, I want to describe how these reading practices manifested in revisions to her second project.

**Drawing on Shared Genre Knowledge in Project 2**

Looking to Zoe’s revisions to her second project can help trace how her reading and reflecting on markup manifested in her writing. After peer review, she heavily revised her draft. Her initial draft began with an `<intro_para>` tag, which read:

```
<intro_para> Hocus Pocus (1993) was the second film former
```

dance choreographer Kenny Ortega directed. Ortega has since mostly worked in TV but has had other successes with Disney Channel TV movie High School Musical (2006) and sequels, as well as the Michael Jackson documentary This Is It (2009)...

After reading her peers’ movie reviews and making changes to the genre model, she revised this section of her paper. In her revision, she took this information about the director and used it in two `<context type="director">` tags, each making a claim about how Ortega’s background and inexperience influenced his approach to *Hocus Pocus*, and how his later success relates to Zoe’s perception of his shortcomings as the director of *Hocus Pocus*. These two examples resemble in content and purpose the `<context type="director">` tag
deployed, for example, by Daniel (Box 2).

Both Daniel and Zoe deployed the tag to relate the background of the director to the success of the film. This example suggests that the shared knowledge of the genre codified in the schema strongly mediated Zoe’s writing process and that Zoe’s deployment of the tag in her revision was influenced by reading her peers’ texts. Like Maddie’s process, then, Zoe’s process of invention was a distributed, social one, relying not just on her abstract understanding of the movie review genre, but on the precise deployment of rhetorical resources by her group.

**Box 2: Comparing <context type="director"> tags**

**Zoe**

<context type="director">Being only the second film directed by former dance choreographer Kenny Ortega, it is understandable that he would have wanted to go all out, so to speak, with the special effects in this movie in order to give it a “wow” factor.</context> (Zoe 78-81)

<context type="director">It seems as though Kenny Ortega did not enjoy directing a “scary” Disney film, because since then he has stuck to directing wholesome shows such as the High School Musical franchise</context> (Zoe 121-123)

**Daniel**

<context type="director">What makes this film even more interesting is its director James Gunn. Gunn's background includes a large list of mediocre comedies, like <style type="italics">Scooby-Doo</style> and another superhero film, <style type="italics">Super</style>. All in all, it was a not very promising track record now that he was at the head of a huge summer blockbuster. Which made it all the more surprising just how good <style type="italics">Guardians of the Galaxy</style> turned out to be. It turns out all his time working on self-referential and cheesy films worked greatly in <style type="italics">Guardians of the Galaxy</style>'s favor, as the movie is partly a parody of the superhero-genre while also mimicking it.</context> (Daniel 76-85)
The addition of these two `<context type="director">` elements was one of many changes Zoe made to her movie review after peer review—she also, for example, added no fewer than seven `<context type="actor">` tags, a schematic resource closely related to the `<context type="director">` tag. These changes are indicative of how she described using the markup tags to make connections between her peers’ writing and her own movie review. As Zoe herself made clear: “[Peer review] made me see where I should be using my tags in relation to how they wrote theirs, and seeing the deficiencies in mine. That’s the point of a peer review, so I don't think that counts” (Interview 2). I read this moment as Zoe not perceiving XML markup as fundamentally changing her peer review practices—thus, this insight didn’t “count.” These are the strategies she would have employed even if writing had not been marked up. Although there are clear traces of the role of markup in Zoe’s reading and revision practices, her conception of peer review as an intellectual activity was unaltered by reading and writing in markup. And yet, the mere fact that she mentioned tags—both in the sense of where they were located and how her peers used them—indicates that they were significant in offering her a place to conceive of revision, even if the practices themselves were familiar.

It is difficult to glean the exact impetus of Zoe’s revisions—her reading, Daniel’s review (which mentioned no tags explicitly), something else—and it is likely a combination of factors. When compared to the case of Maddie, there are some definite similarities. Zoe’s case offers an amplification of Maddie’s in terms of the role that XML played in the invention process, stemming from explicit connections made through reading marked texts. Reading and peer review processes singled out particular schematic components that were later leveraged in revision. There are also differences. In contrast to Maddie’s transformation of the
element, which I argued represents her recruitment of prior genre knowledge in the deployment of a shared rhetorical resource, Zoe’s revisions appear more closely aligned with the definition and use of the `<context>` tag by her peers. It is possible the relatively narrow set of genres Zoe was able to access from her prior writing experiences influenced her deployment of the `<context>` tag. Regardless, Zoe’s revision improved her argument in that she was able to better articulate how the director’s particular background influenced his directorial choices, and how his post-*Hocus Pocus* career reflected his experiences (and failures) as a director in this case. In short, the revised version better explains why this information matters to her review. In this moment of revision, Zoe effectively leveraged the shared genre knowledge represented in the schema.

The Shifting Role of the Schema from Project 2 to Project 3

Zoe’s process composing an op-ed in her third project was significantly different than her process of composing a movie review. Before drafting her op-ed, she anticipated the process for project 3 being much easier.

[T]hey've done the research. I found the research to both be the most interesting and the most annoying part … Now that the annoying part is out, I can write. The hard part has already been done for me. I just get to do my thing and like something I'm interested in.

(Interview 3)

While she did write an op-ed that interested her personally, the process was not quite so smooth as she anticipated.

I looked at their template file, and template file confused me. I started writing. I was thinking about the things they had, and then trying to fit what they had, like their tags into the writing after I'd done it, and, seeing that it didn't work for what I wrote, I changed the
schema so I wouldn't have to change my writing. (Interview 3)

This moment stands in stark contrast to Maddie’s experience. While Maddie sought out space for agentive performance from within the framework of the genres she wrote—as I discussed for both her edutainment blog and her cover letter—Zoe asserts agency from without, redefining the schema according to her individual intentions and dispositions as a writer. I think this difference relates to Zoe’s relative lack of genre experience when compared with Maddie, and to her predisposition toward resisting constraints of all kinds in her writing.

The changes she made to the schema changed it significantly. As opposed to the function of the schema and markup for the first two projects, Zoe used the schema as a place to 1) transfer rhetorical resources from the movie review genre, and 2) impose her dispositions and conceptions as a writer. As Zoe came to that initial op-ed schema, she perceived it as lacking:

Zoe: I didn't take into account [the op-ed] schema, because it was kind of crappy.

Kevin: What made it crappy?

Zoe: You couldn't put things everywhere. They weren't very defined. I added the general opinion tag. I don't even remember what they had. It just wasn't good. It didn't encompass everything. (Interview 3)

In this revision to the schema, instead of relying on reading practices to discover available strategies, she used them to assess the schematic design and the possibility space for writing created by it. Finding her peers’ work insufficient as a material space for invention, Zoe recruited resources from her previous genre modeling experience. When asked if her work on movie reviews in project 2 influenced how she approached the redesign of the schema in project 3, she said, “Yeah. I modeled the new schema on a project two schema” (Interview 3), which she based on a central rhetorical similarity between the genres: “They are both very opinionated”
Zoe claimed in interviews that she took the lead on revisions to the op-ed schema; there are many ways in which Zoe’s previous experience can be traced through intertextual links between the movie review schema and the revision of the op-ed schema:

- The revisions made to the structure of the op-ed genre model—comprising a shift from separate `<intro>`, `<body_para>`, and `<conclusion>` elements to one container `<body>` element containing multiple `<p>` (paragraph) elements with the attribute type values of “intro,” “body,” and “conclusion”—do not make the structure exactly like that of the movie review model. However, the shift to a container element, `<body>`, does resemble the container element, `<content>`, designed for the edutainment blog schema and the `<body>` element of the essay schema.

- In revisions, two @type attribute values were added to the `<opinion>` element: general and critique. Critique, defined as, “An opinion on how the author thinks the situation could be improved” closely matches the critique attribute value available in the movie review’s version of the `<opinion>` element, defined as, “An attribute of opinion of how the author thinks the movie could be better. It might be a simple complaint, or a detailed analysis of how the director could improve their work in some way.” Both of these versions of critique focus on providing opportunities for the author to offer suggestions for improvement, either of the situation inspiring the op-ed or the movie being reviewed.

- A change to the available attribute values of the `<evidence>` element expands the available types of evidence deployed in op-eds from personal experience (“pers_exp”) to a wider “anecdote” value. This change “allows [the] tag to be more inclusive of all types of stories” (Op-Ed Group Report 2), and is reminiscent of the strategy that Zoe’s group adopted in designing their review.
• The major rule-based strategy adapted from the movie review schema to the op-ed schema is allowing global elements within elements. The definition for the movie review `<opinion>` element includes the phrase: “This tag can be used anywhere, within any other tag,” which describes this rule. This exact phrasing is included in several elements in the op-ed schema: `<opinion>`, `<quote>`, `<bg_info>`, and `<evidence>`. The general approach here—to make elements available more globally and to allow elements to appear in other elements—resembles the tack taken in designing the movie review genre. In interviews, Zoe confirms that she drew on her previous experience in spearheading the revision.

While there is not room here to discuss each of these in detail, it suffices to say that Zoe brought with her a number of rhetorical resources discovered and designed for movie reviews to op-ed. She writes in her final reflective essay:

[B]ecause I had really good group mates who were not struggling with the same things I was struggling with, they really helped me understand what everything meant and how they were relevant to what we were specifically writing about. This knowledge I gained through them transferred over into Project 3 in the way that since I knew the rhetorical situation that Op Eds respond to, I was able to improve on the schema so that it would better help me comment on my specific situation. (Final Reflection)

This transfer of resources indicates that Zoe was thinking across her writing experiences and across the genres of the course. When faced with what she felt was an insufficient framework within which to proceed with her op-ed, Zoe looked to the resources available in another genre in the ecology—the movie review schema—and transferred them to the op-ed, redesigning the composing space according to her needs and goals as a writer. Comparing her claims about what she learned about each of the two genres across projects 2 and 3 highlights this conceptual
approach. First, reflecting on movie reviews, Zoe said that she learned that it was important,

   To be very flexible. It all depends on the authors. I don't think you can ever come across
two that are exactly the same, like two different movie reviews for Hocus Pocus will
never be the same. Maybe they'll have the same synopsis, but they won't be written in the
same order. (Interview 2).

And, when asked if there were things she learned about op-eds through schema revision and use,
she replied,

   More like how everything really depends on how the author wants to say things, the way
they structure it, so you can’t really have it be like a resume, where it’s, “This goes here,
this goes here, this goes here, this goes here.” It can go anywhere. You could have your
anecdote at the beginning or the end, all that. It’s very flexible. (Interview 3)

These connections helped her to revise and consolidate schematic resources, simultaneously
making the genre model more specific (in terms of definitions of components) and more flexible
(in terms of how those components could be used). And yet, there are significant drawbacks to
her approach—because she unilaterally changed the schema before contending actively with the
constraints of the initial op-ed schema, she did not consciously or materially negotiate
differences between the genres in practice. Nor did her group members benefit from the kind of
negotiation of genre variation discussed in chapter 3.

   The schema, then, is never taken up in Zoe’s writing process for project 3. Instead the
schema serves a perfunctory role—validating the writing that Zoe would have done anyway.

   Kevin: Despite the very different genres that you were working in, your process was
the same?

   Zoe: Yeah. I wrote it after I fixed the schema, so in my mind, the same way project
two was. They are both very opinionated. I just said what I thought.

Kevin: You wrote your first draft after you had already made decisions about how you were changing the schema? Interesting. How did the schema figure in your writing for the third project?

Zoe: I knew all the elements I had changed and added and like the organization, and I made it so that I could just put the tags anywhere, so then, I didn't have to change my writing to fit the schema. I made the schema so it fit what I would write.

Kevin: How did those changes come about? How did you decide to make those changes?

Zoe: As a general rule of thumb, I like being able to do whatever I want. That's a recurring theme with the schemas. I knew the changes I wanted to make to the schema when I wrote my first draft. I just hadn't made them yet. I wrote my first draft based on what I thought the schema would be after. (Interview 3)

I want to note two important things. First, as discussed in chapter 4, the initial op-ed schema failed to account for the unique rhetorical conventions and dynamism of the op-ed genre. It needed significant revisions. Second, the writing that Zoe did complete for this project was creative, meaningful, and even pushed on some language conventions in op-eds. But, tracing her process reveals much different roles for the schema and markup than we saw in her previous projects or in Maddie’s experience.

Findings from Maddie and Zoe

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52 See the following link for Zoe’s third writing project, “La Isla del Espanto”: http://markup.kevingeraldsmith.com/php/project_page.php?id=to.fr&proj=3&genre=op-ed
Reading Encoded Texts

In chapter 3, I outline a pattern of increasing flexibility that I argue is the result of students negotiating the tension between genre variation and rhetorical convention. Moments where students revised to make schemas more flexible represented decisions made when genre variation pushed on—and expanded—the boundaries of their genre design. But genre variation did not necessarily result in revisions to the schema. Variation in the genres produced were also evident in how students would deploy schematic resources in different ways in their individual writing (see Box 3).

Of course, it is no surprise that students use rhetorical conventions differently in their individual writing. What is evident in Box 3 is the considerable rhetorical variation possible even within what look like stringent genre conventions. While these differences did not necessarily result in the expansion of the model itself, the different uses of agreed upon rhetorical conventions were marked—literally—on their writing, serving as resources to other students for the many possible implementations of schematic resources.
Both Maddie and Zoe better recognized this form of genre variation as variation because students’ text were encoded. Each of them discussed leveraging markup in her reading practices—especially for peer review—to make connections between their peers’ texts and her own. For both students, these reading practices translated into revisions to their drafts. Interview students in both courses consistently pointed to markup as a productive touchstone for peer review, and some, like Zoe, anticipated that the practices developed through reading in markup

**BOX 3: Samples of students’ uses of <argument type='main'> from FYW genre analysis essays**

<argument type="main">But, when one analyzes the genre of <q>gaming articles</q>, one can begin to see just how much their uptake affects both a video game's community and the game they discuss as well, as shown by how much articles like Tassi’s impacted the game of Heathstone.</argument>

<argument type="main">an effort to teach the audience something that can be very helpful to people of all ages, which suggests that overall, as a genre, songs in children's shows have the potential and ability be highly educational—and for more than just learning the alphabet.</argument>

<argument type="main">Considered by many to be the most influential car of our time, this essay attempts to analyze the very flexible genres of historical, cultural and economical changes that made the Volkswagen Beetle achieve its status of “the people’s car”.</argument>

<argument type="main">In the genre of Ebay listings, recurring language and actions are a determining factor in what ends up happening. If a seller wants to attract attention to their product and have more bidders, they need to use generic conventions and predictable language to describe their product. A buyer must know the ways the genre can be taken up, and how to ask questions about a product. Buyers and sellers have the same goals of wanting fair and fast exchanges of products and money, so naturally Ebay listings have common rhetorical actions and language.</argument>
would transfer to other contexts. AWD student Jack provided a telling example:

I think the intent is the important part with the XML that you get, being able to see that written down, you just notice it everywhere. You can almost see people’s skeletons that they've made for their writing before. And it's really kind of, it's cool. It allows you to empathize with an author a lot more when you can understand their writing process a little bit. And maybe you're not always right, but you can sort of see where they're coming from a little bit … I definitely have a lot more empathy for reading works that I've been reading now. (Interview 3)

This finding suggests that explicit modeling—schematizing—and the development of controlled, but dynamic, shared vocabularies can be productive scaffolds for peer and group work. Building on Elizabeth Wardle’s claim that “[G]enre knowledge may at least partially be gained through participating in the work of creating a new genre with the help of a community of supportive peers” (101; see also Freedman; Coe; Soliday; Devitt), the peer review process as described in these cases extends the findings of chapter 3. Not only do schemas serve as a location within which students can negotiate the tension between individual genre performance and typified conventions through schema revisions, but they can also serve as a locus to which the associative links created through tag use can be traced—offering students different ways of understanding and deploying rhetorical conventions.

Additionally, Zoe drew on the additional visualization of encoded texts in different ways than she drew on the XML versions of encoded texts. We see in this example how the addition of a new genre to the textual ecology changes the way that students coordinate and mediate their work. The annotated visualization of students’ texts draws attention to certain tags by design. It brings to the fore the associative links between XML documents by color-coding them and
making them available on a formatted text. Small changes, to be sure, but this visualization
served a central role in Zoe’s experience, suggesting that future implementations of XML writing
might frame visualization more centrally in the genre ecology. Luckily, as discussed in chapter 1,
students have already suggested a range of potentially productive ideas in this regard. These
suggestions of alternative visualizations highlight students’ conceptions of the rhetorical velocity
of their XML texts—that is, they composed with the understanding that their texts would be
recomposed. Zoe’s recommendation of three alternative ways of recomposing the texts of the
class is a case in point. As students composed within this ecology, they became more aware of
the capacities and limitations of the ecology and sought to intervene in it for new and productive
ends (see chapter 1, 2).

Invention and Genre Knowledge

Zoe and Maddie both recruited resources from other genres in their individual genre
performances as they took up (and sometimes rejected) the shared genre knowledge represented
in the schemas. For Maddie, these resources were recruited from her prior genre experiences. In
project 2, she drew on these experiences to transform schematic resources to better align her blog
with her nascent identity as a game designer. It is important, though, that these transformations
occurred within the shared framework of rhetorical constraint designed by the group. While
Maddie discovered moments of agency in her deployment and transformation of schematic
components, she never rejected the idea of constraint itself. Indeed, for all three projects, she
repeated that she felt constrained while simultaneously attesting to the value of that constraint as
an aid for invention. We see in her examples from project 2 and project 3 that she makes space
for herself within the schema, the material mapping of the genre.

Zoe’s deployment of schematic resources in project 2 closely resembled those of her group
mates and aligned closely with the definitions outlined in the genre model; she displayed less of a tendency to transform shared resources in her individual writing. This may have been due to a lack of palpable constraint from the model (a point I make in the op-ed example of chapter 4). It stands in stark contrast to her experience composing her op-ed for project 3, where, instead of finding (or making) space to fulfill her intentions as a writer within the genre model, she eliminated the possibility of constraint. In many ways, this reflects Zoe’s disposition as a writer. As she herself said, “As a general rule of thumb, I like being able to do whatever I want” (Interview 3). But, as I outline above and in chapter 4, constraint is productive of genre knowledge in that it is when students (or their fellow group members) limn the bounds of their

53 In an email exchange with Zoe, she contested my reading of this moment, writing: I definitely agree that having been a first year made me more “rebellious” in a way; now that I'm on coop, I have to follow the standard format (what's included, what goes where, the language conventions) for whatever I'm writing or else that document won't get through DocControl. However, I think it makes sense that things have to be written in a certain way, because their express purpose is to be understandable and followable … by everyone in the company, regardless of which department they're in. With opinion pieces though, their goal is to convey a feeling or an idea or an opinion the author has. That, to me, means that the author is the most important factor when it comes to the piece they're writing, more so than the traditional format of the genre they're writing in. While I did change the schema around to fit my needs as a writer, I don't think it was from a lack of recognizing that a schema can have value in helping generate a specific instance of a genre, but rather it was from a belief that opinion pieces, such as op-eds and movie reviews, vary so much from one instance to another that the constraints a schema would put on the genre should not apply. I think that a more structured genre, such as resumes or protocols, would be much better suited for and would be created more easily using a schema … honestly, I don't know if I had the same opinion about changing the schema back then as I do now, but I just wanted you to know my current opinion. (Zoe, email) I include this lengthy excerpt because I think it points to an important point: Zoe’s decision to overhaul the schema was not impulsive or purely rebellious, but stemmed from a conscious decision based in an understanding of the central feature of an op-ed being based on the author’s opinion, a feature that she connected to the movie review genre. By my reading, this is not altogether different from how I interpreted the moment, but a useful clarification of her motives for readers.
schematic representations that they revise and alter their conceptions of genres. Zoe herself indicated that she learned more about movie reviews than she did op-eds, certainly a product of the extended length of project 2, but also indicative of how her group worked through and revised the material representation of movie reviews through practice-based moments of tension (see chapter 3 for an extended discussion).

Zoe also had access to a more limited set of genre experiences from which to draw, and struggled at times to connect her learning to other contexts. She did make meaningful connections across genres in the context of the course, as we saw in her overhaul of the op-ed schema in project 3. And while she drew on strong personal interests tied to her identity in projects 1 and 3, she did not as obviously transform the genre knowledge represented in the schema.

These students were at different curricular moments in their academic careers, of course. But this finding suggests that there are several features of writers’ identities that are important to recognize in understanding how students take up genres. The first is their relationship to constraint, which emerged as an important disposition to track. As I outlined in chapter 4, FYW students resisted the constraints of XML writing from the outset by declaring that all schematic components in the genre analysis essay be optional. The second, which is related, is their range of prior genre experiences. Maddie had been on two co-ops and had written for many different kinds of classes and contexts. AWD students had all had significant experiences with writing outside of writing classes. It should not be a surprise, then, that they are more comfortable working within constraints. To offer a more granular and situated interpretation, we see throughout projects 2 and 3, Maddie worked within constraints to locate space within which to transform rhetorical resources for her goals (e.g., the <important_idea> tag in project 2; the
Zoe, by contrast, mainly found ways to bring her identity to bear in the content of her writing projects. She shows less of a willingness to contend with constraints as such; we might say that Zoe doesn’t recognize the potentially generative value of constraint and so is most fulfilled when writing without it—or, more accurately, without the material reminder of constraint.

This is not meant as an indictment or critique of Zoe; this is difficult and unfamiliar work, especially for writers with a limited range of prior genre experience to draw on. I also think that, given the influence of prior genre modeling experiences (chapter 4), Zoe’s resistance to constraint was primed by the approach of the whole-class modeling of the genre analysis essay (project 1). The overall resistance to constraint established in project 1 can be traced through the later models and uptakes of XML by FYW students.

_Shifting Projects, Shifting Processes_

In both cases, we see how the precise role(s) the schema and markup play in students’ writing processes are not static. It is interesting to note here that both Maddie and Zoe found the approach to project 2 to be the most productive for them in terms of learning about the genre. Maddie, for example, said that she learned more about edutainment blogs than cover letters “because of the amount of time we spent with it … I did more research for it … genre analysis and producing my own piece. I spent more time with it and trying to figure out how I wanted to convey the issue” (Interview 3). These responses were typical across the two courses, regardless of the genre modeled in project 2. This suggests that there is value in building a genre model from scratch in a small group, rather than as a whole class or rather than coming to a pre-constructed genre model.

To follow up on the premise which began these cases—that XML is a way of interfacing
with genres. If this is true, then those interfaces cannot be understood as perfectly bounded or stabilized. As a way of developing interfaces with genres, XML has affordances. Yet, technology is never just one thing. We cannot simply, statically, analyze affordances and limitations of a particular technology for writing (or interface) divorced from the context of its use and its users. As we see in these two cases, XML is shaped by “the intentions of individual users and contextual constraints” (Brooke 200)—context of genre, previous schematic designs, procedures of the assignment prompt(s); as a way of interfacing with genres, it is taken differently by different groups (see, chapter 4), leveraged the genre being studied, their dispositions towards the genre and schema, their other genre experiences, and so on.

So, where does this leave us, future teachers of (digital) genres? I think that it calls for additional research. In particular, I think that there is a larger point to be made here—beyond Maddie and Zoe’s specific experiences interfacing with XML—which is methodological in nature. The insights gleaned from these two brief cases suggest the value of continued local, situated research of composing processes, especially for digital genres. In making this call, I join something of a (re)turn to process research across writing studies. Writing recently, Hannah Rule argues that theorizations of writing on “expansive networked, social, and ecological scales” have contributed to a turn away from writing processes in the field:

The persistence of zoomed-out perspectives is, in part and in oversimplified terms, owed to the drive for comprehensiveness in writing theories in combination with postmodern impulses that question the autonomy and unity of—and consequently, focus on—individuals as agents. In turn, seeing the material situatedness of writing on a radically local or composing process scale has gone mostly unexplored. (404)

Rule’s return to process echoes Jody Shipka’s own call for a return to process studies through a
mediational means framework in her book *Toward a Composition Made Whole*. Shipka suggests that working toward a composition made whole requires both an expansion of “our disciplinary commitment to theorizing, researching, and teaching of written discourse to include other technologies and forms of representation” and, “rethinking the value of composing process research” (14). What I hope to suggest in this chapter is that, through the careful articulation of technologies, users, and contexts, we might continue to unpack both the novel and familiar rhetorical skills employed in these processes, and whether and to what extent they support our rhetorical goals and those of our students. In the conclusion, which I will turn to now, I will take up some of the findings of the past five chapters and offer what I think they suggest for teachers and researchers of genre and digital forms of writing and communication.
Works Cited


Conclusion

This study introduced a novel form of digital writing as an intervention in rhetorical genre pedagogy and as a response to the evolving nature of digital writing. Building schemas and writing in XML pushes us to notice “the often-invisible compositional skills” (Kennedy 175), behaviors, and processes brought to bear in managing complex, networked ecologies. It invites us to think about ways those skills can be incorporated into—and potentially transform—the pedagogical approaches we design for writing classes. In this study, I brought this understanding to bear on the teaching and learning of genre, to see what students might learn from interfacing with genres in XML. I analyzed the pedagogy at three scales: the classroom, the collaborative writing group, and the individual writer. Each of these scales foregrounds different relationships between genre, context, and technology. In this conclusion, I want to take up a few of the key findings, put them in conversation with one another, and explore the implications for theory, methodology, and pedagogy.

From a broad perspective, this study offered a sustained view of local, situated digital writing practices of groups and individuals. I joined a recent (re)turn to process “as a focus of research and teaching,” especially for novel forms of composing, in composition studies (Rule 404; see also Shipka; Takayoshi; Pigg; Devitt “Written Language”). Out of this local view of writing with technology, I developed a framework, procedural design, which is intended to alert scholars in writing studies to the role of procedures—rule-based processes of constraint—in the shaping of the possibility spaces of composing for students. Procedural design offers a vocabulary with which to examine the designs of our classrooms, the procedures enacted there, the arguments those procedures make, and the writing spaces they shape. It invites us to open these designs to offers an opportunity to examine, critique, and intervene in those procedures that
we can control to promote more democratic designs; to, as I say, invite students to help us interrogate and shape the designs of possibility.

On a more granular level, this study has been about a novel, digital approach to rhetorical genre pedagogy. If we follow Anis Bawarshi and understand genres to be dynamic locations, or ecosystems, then it behooves us as teachers to seek ways to make these spaces more analytically—and I would add, materially—visible. I have argued at length that this particular approach to genre pedagogy—at times—did just that. In the best cases, engaging students in the explicit, collaborative modeling of genres through schema design offered material representations of these conceptual spaces that bolstered students’ understandings of genres as dynamic, constructed, and contextual, as “structured structures that structure” (Schryer 95). Yet, while I do believe that XML had particular affordances for these students, the extensibility of this approach depends not on teachers adopting my precise approach and bringing XML into their classrooms. Rather, the extensibility of my approach rests on abstracting pedagogical principles and recommendations by which we can facilitate the kinds of insights that, in the best cases, my students came to in this study. To that end, the majority of this conclusion is given over to a discussion of implications of the study for teachers of writing.

The three scales of analysis I employed in this study are inflected—down to the very core—by my perspective; they are far from disinterested. The questions I ask, the interpretations I make, the details I represent and leave out are influenced and enabled by my varied social identities, my role as instructor of the course, and my disciplinary and institutional positioning. The pedagogical approach itself relied upon technical skills that I brought with me to the class, skills I developed through work and research experience in my MA and PhD programs. My ethos as an instructor enacting an experimental pedagogical approach in required writing courses was
also likely bolstered by my identity as a white male, and relied upon power dynamics that are inherent in student-teacher relationships. The NU Writing Program allows and encourages experimentation with novel pedagogical approaches—so long as instructors address the shared learning goals for the program. This flexible framework for teaching Composition is certainly not the norm across institutions. As well, my position in the NU Writing Program—funded through a Graduate Student Assistantship—enabled me to experiment in this way with little fear that it would jeopardize my job. While, of course, I cared deeply about teaching evaluations, my employment in the Writing program was in no way precarious. This is an important benefit that many—maybe most—teachers of writing in higher education are not afforded. These and other manifestations of my varied social identities underlie the very existence of the study and inflect it in these ways and others.

As well, this dissertation depends largely on students’ representations and recollections of their writing processes. While these accounts are supplemented by and triangulated with their writing (and histories of their processes), their interview responses should be understood as shaped by the context in which the interviews took place and by the vagaries of memory and their abilities to perceive and articulate their experiences. My dual position as both interviewer and instructor is a significant component of the rhetorical situation which shaped students’ interview responses. That the first two interviews were conducted while the course was ongoing is significant in that students’ responses can also be understood as intended to shape my perceptions of the interviewee and my actions as the instructor of the course.

The limited scope of the study is also important. This study was very much a product of the context in which it was undertaken—two different writing courses, with students at different curricular moments, at a mid-sized, selective research institution with a strong emphasis on
experiential learning through co-op and other focuses. The pedagogy relied upon a context where participants had access to laptops, for one thing. No students in the courses took me up on the offer to arrange for access to hardware. Northeastern’s significant investment in infrastructure and software to support the digital humanities was extended to my classes in the form of a class license for Oxygen, and so on.

As a matter of pedagogical approach, then, I don’t claim generalizability. Yet, I do think that this study—and the insights I have offered in reporting it—does have implications for teachers of (digital) writing, particularly those taking an RGS approach, whether or not they choose to use XML specifically. In the remainder of the conclusion, I take up some key findings and offer a discussion of the implications of this study for digital writing, rhetorical genre studies, and digital humanities.

**Implications for (Digital) Writing**

*Distributed Writing*

Students in these courses engaged in a range of rhetorical activities. They filtered information from document analysis and (often) interview or observational data, drew on these sources to taxonomize and model their conceptual understandings of a genre, represented that genre with attention to rhetorical velocity (chapter 3), and recomposed their collaborative texts in individual genre performances (chapter 5). As others have argued, these kinds of activities align with the new work of composing in networked and distributed digital environments (Kennedy “Textual”; Nicotra; Johnson-Eilola; Ridolfo and DeVoss), and can help prepare students to move into those environments.\(^5^4\) The recent developments in ubiquitous, embedded, and embodied

\(^{54}\) William I. Wolff’s article “Interactivity and the Invisible: What Counts as Writing in the Age of Web 2.0” provides a nice overview of the work of writing in Web 2.0, to which I would add
computing only highlight the necessity to continually evaluate the forms of rhetorical production in which we engage our students; these developments should encourage us to examine technologies, trace networks and ecologies, to locate new and alternative forms of rhetorical engagement (Boyle; Kennedy Textual; Emerson; Bratton; Brunton and Nissenbaum).

Part of the work of this project has been to do just that—to trace the rhetorical practices of student writers working within the distributed writing system developed in these classes. I sought to better understand why and how students recruited particular genres, resources, and technologies as they composed in order to offer a sustained view of local, situated digital writing. Yet, as I argued in chapter 2, it is crucial that we not only engage students in these emergent—and important—rhetorical practices, but it is also imperative that we open spaces for students to interrogate the designed spaces of writing (analog and digital), to recognize them as designed and rhetorical, and to turn their attention to critiquing and imagining new productive arrangements for composing.

One way of doing this is to develop distributed systems of writing that are more bounded and locally controlled rather than looking to already-existing systems of authorship like Wikipedia (Kennedy “Textual”), Flickr (Nicotra), and others. This method may have some drawbacks, though, such as the inauthentic nature of production in such systems. At times, students drew attention to the inability of their writing to circulate in the wider networks that characterize the typical distribution patterns, and sometimes social actions, of their genres. Finn, recent work by John R. Gallagher (“The Rhetorical Template”; “Five Strategies Internet Writers Use”; “Writing for Algorithmic Audiences”) and Chris W. Gallagher (“Staging Encounters”). The point is that these conversations are vast and ongoing, owing to their importance to the future of composition as a discipline.
for example, reflected on composing his edutainment blog, saying,

I think a realization was how much the community was at play … It's not just comment sections, like merchandise is a big thing. And so, you realize the role the community plays, which is something I hadn't really thought about before. You just hope that every person writing is doing it for the reader, with them in mind. Maybe that would be something that came to light. (Finn, Interview 2)

Daniel similarly described writing a satirical news article (modeled on *The Onion*) as “weird” because his article did not circulate on Twitter and other social networking sites that are so essential to the genre’s social action. Instead, the article was uploaded, like all other writing for the class, to the course website. He claimed, “the way these things get profit is by sharing and stuff … It is kind of weird to do that in a writing class where it's like, “I don't want to put my real Facebook and my real email” … I don't know who’s going to see it.” It was weird, but I understand why they’re there. (Interview 3).

Despite this potential critique, I think that bounded systems do have the potential to engage students in many of the same rhetorical skills valued by and coordinated in larger, networked environments. Locally developed systems have the advantage of being more controlled and thus, potentially, more open to critique and redesign. The examples above actually attest to this. The critique of inauthenticity made by these students is implicitly a critique of the procedural system set up for class, a recognition of the limits placed on students’ rhetorical possibilities by writing within this particular distributed system.

*Procedural Design and Procedural Rhetoric*

As a digital writing pedagogy, this study also sought to develop a framework by which teachers might unpack the rhetorical role(s) that technologies play in our classrooms, whether or
not those technologies are explicitly recruited to facilitate a particular pedagogical approach. Procedural design, which provides a way of accounting for the rhetorical capacities of procedures that enact and are enacted by the genres of the writing classroom and how they shape the possibility spaces of writing, represents my attempt and contribution in this regard. Building into RGS pedagogy attention to Bogostian procedural rhetoric, I argue at length in chapter 2, can help us to understand how and why the spaces of (digital) composing are shaped by rule-based processes of constraint that are often implicit in genres. Because computers are particularly adept at enacting procedures, this is an especially important concern for the analysis and production of digital genres. The procedural constraints enacted by digital genres may be black boxed, obfuscated, hidden from view, embedded, or embodied. I suggest that procedural rhetoric offers a way to understand the black boxes of digital genres rooted in the contexts of their use, which is to say, to understand them through interaction; and procedural design, by extension, orients us—teachers and learners—as designers of the genres and technologies, genres of technologies, and the technologies of genres that circulate in our classrooms.

Understanding procedures as rhetorical—as I argue at length in chapter 2—can provide a framework for tracing how digital genres function rhetorically through the imposition of constraint. It is not enough to say that the genre of the blog—a common object of inquiry for genre theorists—remediates features from other genres (Miller and Shepherd; Grafton and Maurer), that blogs are developing into multiple genres (Grafton and Maurer); or that different types of blogs motivate students differently (Brooks, Nichols, and Priebe). We must also ask ourselves as teachers of genre: what procedures are enacted by asking students to write blogs? What constraints are imposed by these procedures? What are the arguments that these procedures make about writing? Do these align with our pedagogical goals?
I also think that the framework extends beyond digital forms of composing—thus the parenthesis in the heading of this section. As I argued, constraints are not unique to digital genres, nor should our approaches to procedural design be relegated to screen-mediated texts. I offered examples of non-digital procedures at work in our writing classrooms—and ways that some writing teachers already invite students into designing those procedures—in chapter 2, and I want to briefly return to my example of peer review, that most venerable of collaborative writing activities, to offer another brief sketch of what a procedural framework might allow.

In a recent presentation at the Conference on College Composition and Communication titled “Writing Workshops in the Public Turn,” Charles N. Lesh questions why the “public turn” (Mathieu) in composition has not influenced the way we carry out writing workshops in our classrooms. Although he is not explicitly working from a procedural design framework, Lesh points to a dissonance between what the public turn has revealed about writing and the orientations to writing that students are persuaded towards by traditional models of the writing workshop—namely, that writing is something that happens in academic spaces (writing classes). His solution is to introduce more diverse workshops, drawn from non-academic writing communities as well as students’ own extracurricular experiences. This re-orientation makes the design of the workshops—and the kinds of rhetorical production they might facilitate and limit—an object of critique in the class. I read this work as consonant with a procedural design framework in that Lesh interrogates the arguments made by the procedural constraints of the writing workshop and invites students to analyze, critique, and redesign those constraints to imagine new possibility spaces for the classroom writing workshop.

**Implications for Rhetorical Genre Studies**
Critical Genre Awareness

In this study, I follow RGS scholars who call for the teaching of genre awareness (Devitt *Writing Genres*; Bawarshi; Devitt, Reiff, and Bawarshi). Bawarshi and Reiff suggest that “such approaches to genre analysis do not focus so much on the acquisition of a particular genre as they do on the development of a rhetorical awareness that can transfer and be applied to various genres and their contexts of use” (196-197). My approach builds on earlier, implicit genre acquisition models, like that of Aviva Freedman. I agree with Freedman that students develop genre knowledge as their “dimly felt sense” (“Learning to Write” 101) of a genre slowly coheres into a conceptual “schema” which can be “brought to bear as tacit, shaping knowledge in the course of their writing” (“Show and Tell” 227). I am also persuaded by Freedman’s account of genre acquisition, which describes an interrelation between students’ sense of the genre, their composing processes, and the “unfolding text” (“Learning to Write” 101). And yet, I think that there is value in diversifying Freedman’s account of the role of feedback—through a grade—and including in it other genre learners’ conceptions of genres. I think there is value in sharing these conceptual schema—however dimly felt—making them visible, and putting them into conversation with the maps of their peers—to build larger networks of texts and genres to “interrelate and modify one another” (101). I hope that the accounts that I have developed in this dissertation attest to the value of this bottom-up form of explicit genre study and pedagogy for the teaching of genre awareness.

The central goal of critical genre awareness—recognition that “genres carry with them the beliefs, values, and ideologies of particular communities and cultures” (Bawarshi and Reiff 197)—offers a potential critique of the approach I outline here: that modeling genres in a procedural system of constraint has the potential to elide and/or normalize the ideological
underpinnings of genres. As Freedman and Medway point out, “the slide is easy from the
discovery that conventions are not arbitrary or unmotivated to the assumption that they are right
and should be acquired” (14). This a fair criticism, I think, especially given the sometimes
totalizing or naturalizing aura that procedural constraints can exude when computationally
enforced. But, as I argued in chapter 2, procedures need not be totalizing or over determining.
Bogost makes this point well, arguing that procedurality is not necessarily restrictive, but that
computers—those great executors of procedural processes—are often thought of as restrictive
because of the way they are programmed—“to execute simplistic processes” (7). The restrictions
are really human decisions at the level of code and design. 55 In the case of modeling genres in
XML, I do think that the group and individual reflective writing were positioned for critique, and
that students could, and often did, build idiosyncratic models, or models of fuzzy genres, that
resisted the uncritical adoption of genre conventions. Indeed, as I have argued at length,
students’ genre models were flexible rhetorical structures, not arhetorical—that is, acontextual—
templates.

Yet, I do think that genre critique and tactical genre change could be built more explicitly
into the approach. For example, one might build critique and genre change into explicit
collaborative modeling through follow-up assignments that seek to change aspects of the genre
through the building of alternative models, the creation of invalid genre performances (invalid

55 Writing very recently, Ryan Cordell makes a related point in his blog post, “A Quibble with
Binary.” Cordell points out that, while it is true that—on a small enough scale—all computation
resolves to ones and zeros, most invocations of binary as an intractable problem of
computational logic might be more properly addressed at the level of the database, or the
interface, or design, or whatever. At scale, the fact that binary is the underlying logic of
computation should not really be a concern. At least, it should not imply that all computational
model and/or tools are inherently reductive.
meaning deliberately violating rules of the schema), or the critical annotation of genre models directly (through XML comments, for example), which would build critique into the genres models themselves. Some of these methods—like the invalid documents—would disrupt the larger genre ecology by rendering the stylesheets—and thus the visualizations—invalid. This kind of approach would be rooted in the performance of critique and has affinities to the digital humanities concept of “deformance,”—the performative deformation of an object of inquiry (McGann)—the media studies concept of “glitch,” also popular in digital rhetorical theory—those moments of rupture when systems fail or “when some occurrence foregrounds the means of its mediation” (Boyle “Question” 12)—and the RGS concept of “disruptakes”—“uptake affordances that deliberately create inefficiencies, misfires, and occasions for second-guessing that could thwart automaticity-based uptake enactments” (Dryer 70). It is not the goal of this project to fully define and theorize these overlapping terms, but I do think that they all drive at a similar goal of calling attention to—making visible—often-invisible or tacit forms of mediation. In this way, we might even more productively turn the gaze of students back on the procedural system itself, performing critiques of how and what XML allows and disallows in the representation of genres.

These speculations aside, I have a few more concrete recommendations for RGS teachers and researchers given the findings of my study, which I summarize under two headings: collaborative genre learning and explicit modeling, and boundary setting and productive constraint.

**Collaborative Genre Learning and Explicit Modeling**

One of the key findings of this dissertation has been the value of collaborative and explicit genre modeling for creating material “sites of invention” (Bawarshi 119) in which
students can explicitly articulate and position their own rhetorical goals with respect to a shared notion of genre. From the perspective of genre pedagogy, schema design offered students a mechanism by which communal genre knowledge could be built—quite literally—into the foundations of their individual genre performances. As reported in chapters 3 and 4, students in these classes leveraged the material existence of the schema as a location of collaboration, a tool of facilitation, and an artifact of representation as they developed shared genre knowledge. In chapter 5, I described how two students, Maddie and Zoe, each drew on the controlled vocabulary of the schema to make connections between their peers’ writing and their own, reflect on their own writing, and to invent discourse appropriate to their individual rhetorical situations and reflective of their prior genre experiences.

Many genre scholars have noted the benefits of peer interaction and collaborative work for developing genre knowledge (Wardle; Johns; Freedman “Show and Tell”; Coe; Soliday). Yet, this collaborative aspect of genre knowledge development is often occluded in classrooms because, as Wardle suggests, it occurs primarily in discussion, rather than written critique, or because it is relegated temporally and conceptually to a single (or a few) structured peer review activities toward the end of the composing process.

My suggestion is that collaborative explicit modeling can offer both a pedagogical approach and a method of tracing the development and influence of collaborative genre knowledge on individual genre performance. My methods leveraged XML, which I believe has its own benefits, but our approaches to collaborative modeling need not be so technically complex. In fact, my approach is similar to Richard M. Coe’s directive in “Teaching Genre as Process.” In this chapter, Coe offers some potential assignments that, “create situations in which students can reinvent the wheel of a genre, thus experiencing viscerally its connection to
“rhetorical situation and context” (163-164, my emphasis). The conceptual similarity to my approach may be obvious, but one of his assignments bears some elaboration. He describes an advanced writing course wherein,

[S]tudents are assigned to choose a specific type of writing—feminist criticism of Shakespeare, storybooks for young children, feature articles for ski magazines, term papers that get As from literature professors—and then to create a mini-manual for people who might want to do that type of writing … Although our students may refer to published manuals as secondary sources, their research must be empirical, based on analyses of samples of the genre … The heuristic … helps students generate a description of the constraints within which writers produce the genre. (164)

Collaborative explicit modeling does not entail any specific representation medium in which to model. Coe’s assignment brings the analog possibilities for collaborative modeling into focus. In my pedagogy, schemas were used to represent genres as models, but alphabetic text composed in a word processor (or by hand) is also a form of representation. A “heuristic” model in the form of a mini-manual is its own representational system, and composing within the constraints outlined in the heuristic is its own form of interfacing with a genre. I would add to Coe’s example that a recursive approach—one that allows students to build and revise a material representation of collaborative genre knowledge—can help to animate students’ understandings of genres as both shaping and shaped by their use.

As I outlined in chapter 2, one of the advantages of using computationally-mediated systems of modeling are that those models are put into a procedural relationship with students’ individual texts—the schema validates their writing and shapes the composing environment of students. This is no less true of the mini-manual example, though the flexibility of the procedural
relationship may entail greater flexibility and less palpable feelings of constraint for students than in the case of composing in XML. The fundamental conception of the two approaches, however, rest on the same foundation: the collaborative, explicit building and enacting of genre knowledge as a way to identify, work through, and, maybe, critique and transform the constraints of genres.

We might also have students map genres in more abstract ways, as the movie review group decided to do in their Group Report (Figure 1). One approach could entail students collaboratively building a spatial model like this one through genre analysis, fitting their writing into the model, revising the model, and so on. Students would feel viscerally, to use Coe’s term, the productive nature of working within and through constraints, and, crucially, the changeability of those constraints.
Boundary Setting and Productive Constraint

In chapter 4, I outlined how two groups took up schema design in different ways and pointed to how boundary setting was a foundational activity for students who took up schema design with a dynamic conception of genres. As I indicated in chapters 4 and 5, students who did not experience practice-based tensions in the production of genres did not benefit from the same negotiation of genre variation within the framework of rhetorical convention. Looking to the more successful groups, the findings suggest three additional pedagogical practices for teachers looking to incorporate collaborative modeling into their classrooms.

First, actively engage students in considering edge cases as a way to have them draw distinct, but flexible, boundaries around the genre. This activity may be more productive when the genre being modeled is less “ossified,” or typified (Medway), as in the edutainment blogs (chapter 4). Yet, students across the courses benefitted from these considerations. The public initiative proposal group narrowed their genre from general public proposals to the public initiative proposal after comparing proposals at different stages of the proposal process (Proposal Group Report).

The second pedagogical practice is to engage students in analysis of the wider genre ecology (or set, repertoire, or system, depending on where your theoretical loyalties lie) to examine other genres that are important to the social action of the target genre. These considerations can help students to recognize important connections between genres that may refigure their understanding of the target genre. The AWD cover letter group noted that the uptakes between resumes and cover letters are so important that they created resumes for their
group presentation to help make intelligible their understanding of the genre.

Third, prompt collaborative groups to make connections between the genre being modeled and their previous genre experiences (from within the context of the course or from without). Successful groups were able to adapt resources from other genres to the new contexts of the genre being modeled; less successful groups imported schematic resources with less attention to shifts in the recurrent situations of the genres.

These three activities helped students in my classes to more narrowly define their genres according to specific social actions, and to design rhetorical resources aimed at producing this social action. These activities also highlighted the dynamic and changeable nature of genres and prompted students to think critically about their own intentions within the constraints they designed. All three activities enabled students to more fully analyze the rhetorical resources offered by genres as conventions within which to articulate and enact their desires as writers.

Implications for the Digital Humanities/Writing Studies

Finally, and as a way of closing, I want to offer some brief reflections on the intersections of the two fields that I think of as my disciplinary homes, and why I see this study advancing mutually beneficial interaction between the two.

The value of collaborative explicit modeling as a pedagogical approach was predicated on a fundamental concept in the digital humanities—inasmuch as an interdisciplinary field like DH can be said to have fundamental concepts—that there is value in (re)presenting our disciplinary objects of inquiry in new ways because it is productive of insights about those objects. This phrasing is deliberately broad, because I want it to be able to speak across a range of methodologies—text encoding, text analysis, mapping, visualization. What I hope my study
offers researchers and especially teachers in DH is the value of thinking of those processes as productive of learning that are amenable to adaptation to the classroom. And that it is these processes of students that we should be paying attention to as we design, enact, and assess our classroom practices.

This ties into an increasing interest in pedagogical practices in DH scholarship (see, especially Hirsh). Much work in DH has been undertaken in the realm of pedagogy since Stephen Brier asked, “Where’s the pedagogy?” The notion that DH “has tended to focus too narrowly … on the academic research and publication aspects of the digital humanities” (Brier 390), to the detriment of teaching and learning may be outmoded. Writing studies has much to add to this conversation, particularly given its long history of qualitative research into classrooms. In their introduction to *Rhetoric and the Digital Humanities*, along with a slew of other questions they hope to address, Jim Ridolfo and William Hart-Davidson pointedly ask,

> What research methods in rhetoric studies/C&W [Computers and Writing] complement the work that is currently under way in DH? How might DH as a field benefit from qualitative approaches to rhetoric research? (10)

Writing studies scholars have spent a considerable amount of time developing these research methodologies. This study provides a clear example of the potential of classroom-based research in DH. Methodologies long used in writing studies and education research, like the teacher-research design used in this project, can be adapted to DH classrooms to more systematically study the pedagogical innovations underway in our classrooms across the Humanities.
Second, rhetoric and writing studies theories should be brought to bear not only on the phenomenological aspects of digital projects—their outputs, interfaces, and structures—56—but also on the very techniques of data gathering and curation. How can rhetorical theory interrogate the material of our representational systems? If we take a capacious view of writing to include things like markup languages, database structures, and data of all types, then we can apply analytical frames from rhetoric to these forms of writing. This project experimented by applying frameworks from digital rhetoric, new media, and rhetorical genre studies to XML, seeking to better understand its meaning-making potential. The findings of this study contribute to an understanding of the rhetorical capacities of markup, especially as it is deployed in social collectives. Qualitatively tracing the relation between text, markup, and context is a potentially fruitful area of future research for TEI projects for self-assessment and to better understand how our objects of research—student writing, literature, or whatever—are mediated not only by the application of markup, but by the larger contexts of their encoding. Foregrounding context in analyzing the meaning of markup can provide an important supplement to formal models of the meaning of markup (e.g., Sperberg-McQueen, Huittfeldt, and Renear).

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The implications offered here are not exhaustive and I hope that this work is generative of continued thinking and innovations in teaching, research, and methodology. We owe it to our students to adopt stances towards methodology and pedagogy that examine and interrogate the

56 This is, of course, a very useful area where rhetorical studies can intervene in digital humanities projects. For example, influential Computers and Writing scholarship like Selfe and Selfe’s, “The Politics of the Interface” (1994) has been wrestling with issues of power and representation in our digital interfaces for over twenty years.
environments available for writing, how they’re shaped, and how we might intervene, together, to imagine new possibilities for the future(s) of writing.
Works Cited


Freedman, Aviva. “Learning to Write Again: Discipline-Specific Writing at University.”


APPENDIX A: STUDY MATERIALS

Northeastern

Notification of IRB Action

Date: May 19, 2016
IRB #: 16-02-19

Principal Investigator(s): Chris Gallagher
Kevin Smith

Department: English

Address: 420 Renaissance Park
Northeastern University

Title of Project: Designing XML in the Composition Classroom

Participating Sites: N/A

Informed Consent: One (1) signed consent for interviews

DHHS Review Category: Expedited #5, #6, #7

Monitoring Interval: 12 months

APPROVAL EXPIRATION DATE: MAY 18, 2017

Investigator's Responsibilities:

1. Informed consent form bearing the IRB approval stamp must be used when recruiting participants into the study.
2. The investigator must notify IRB immediately of unexpected adverse reactions, or new information that may alter our perception of the benefit-risk ratio.
3. Study procedures and files are subject to audit any time.
4. Any modifications of the protocol or the informed consent as the study progresses must be reviewed and approved by this committee prior to being instituted.
5. Continuing Review Approval for the proposal should be requested at least one month prior to the expiration date above.
6. This approval applies to the protection of human subjects only. It does not apply to any other university approvals that may be necessary.

C. Randall Colvin, Ph.D., Chair
Northeastern University Institutional Review Board

Nan C. Regina, Director
Human Subject Research Protection

Northeastern University FWA #: 4630

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Appendix A – Recruitment email for case study participants

Dear student,

We are writing to ask if you would participate in additional research activities around your writing course. In addition to being your instructor for this course, I am also a Ph.D. student and researcher in the English Department here at Northeastern University. I am working on a research project that seeks to investigate how students might use XML markup to describe their writing choices and processes. I plan to use this research to help me better understand student writing, to improve my approach to this pedagogical technique, and to report on this study for my dissertation. To participate you must be at least 18 years old.

**Your commitments:** If you choose to participate in this research, you will be asked to participate in 3 interviews over the course of the semester. The interviews will last 30 to 60 minutes each, or 1.5 to 3 hours over the course of your participation. They will occur roughly at the beginning, middle, and end of the semester at Northeastern University.

**Other information about the research project:** All research activities will occur on the campus of Northeastern University in confidential locations, such as the researchers’ offices. The investigators of this research are Kevin Smith and Chris Gallagher (see contact information below), who are affiliated with the English Department at Northeastern University. Your participation in this research will be confidential. Anything you say during the interview is for research purposes only, and will not affect your grade or standing in the course or with the university in any way. Likewise, your decision whether to participate in interviews has no bearing on your grade or standing in the course or with the university in any way.

**If you would like to participate,** please send a brief email to Kevin Smith at k.smith@neu.edu to express your interest. After contacting him, he will arrange a brief meeting time and place convenient for you to go over the study and consent forms.

Due to limited resources, we might not be able to accept everyone who expresses interest in participating. Any decision to turn down potential participants will be made solely due to financial and time constraints.

Thank you for your consideration!

Sincerely,

Kevin Smith, Researcher
360 Huntington Ave., 405 Lake Hall
Boston, MA 02115

Chris Gallagher, Principal Investigator
420 Renaissance Park, 360 Huntington Ave.
Boston, MA 02115

(617) 373-2193

APPROVED

NU IRB
VALID THROUGH 5/4/17
Signed Consent Form

Northeastern University, Department of English
Name of Investigators: Chris W. Gallagher (Principal Investigator); Kevin G. Smith (Student Researcher)
Title of Project: Designing XML in the Composition Classroom

Informed Consent to Participate in a Research Study We are inviting you to take part in a research study. This form will tell you about the study, but the researcher will explain it to you first. You may ask this person any questions that you have. When you are ready to make a decision, you may tell the researcher if you want to participate or not. You do not have to participate if you do not want to. If you decide to participate, the researcher will ask you to sign this statement and will give you a copy to keep.

Why am I being asked to take part in this research study? You are being asked to participate in this research study because you are a student in an XML-based writing course taught by Kevin G. Smith.

Why is this research study being done? The purpose of this research is to better understand digital writing as a complex literacy practice and to consider what students learn from coding in XML (Extensible Markup Language) about their writing processes and products.

What will I be asked to do? You will be asked to participate in three (3) audiotaped interviews with the researcher outside of class. The researcher will ask you questions regarding your experiences in your writing class and the work you complete for that class.

Where will this take place and how much of my time will it take? If you choose to participate in the interviews, you will be interviewed at a time and place that is convenient to you. Each of the three interviews will take roughly 30-60 minutes.

Will there be any risk or discomfort to me? There are no foreseeable risks or discomforts to you for taking part in this study. Neither your decision whether to participate nor the content of your answers will affect in any way your relationship with anyone at Northeastern University, your status or standing at the university, nor your grade or standing in this writing course. The information gathered during this study is for research purposes only.

Will I benefit by being in this research? There are no direct benefits to you for taking part in this study. However, in other research studies like this, students have reported that their participation in research helped them to be engaged in their courses. Participants who choose to participate in interviews may benefit from additional time to reflect upon their processes of thinking and writing. The information learned from this study may help the researchers learn more about digital writing and computer coding as a pedagogical approach.

Who will see the information about me? Your part in this study will be confidential. Only the researchers will know that you participated in this study. Any publications or presentations based on this research will refer to you using an alias. Transcripts, audiotapes, and all research materials will be stored digitally in a password-protected and encrypted folder accessible only to the researchers.

If I do not want to take part in the study, what choices do I have? The decision to participate in this research is up to you. You do not have to participate, and you can refuse to answer any question. Even if you begin the study, you can withdraw at any time. Your grade in the course will not be affected by choosing to participate in the study. Neither will your grade be affected by choosing not to participate in the study.

Can I stop my participation in this study? Your participation in this research is completely voluntary. You do not have to participate if you do not want to, and you can refuse to answer any question. Even if you begin the study, you may withdraw at any time. If you do not participate or if you decide to quit, you will not lose any rights, benefits, or services that you would otherwise have as a student.
Interview Guide

This interview guide is purposely open-ended to promote a more organic conversation between the researcher and research participant. The goal of this approach is to promote a more fluid research moment, one allowed to diverge away from the guide so long as the topics covered are relevant to the current project. Since each research participant will complete three semi-structured interviews, the questions and concerns may evolve over the course of the semester. While the broad categories of questions will remain the same for all three interviews (perceptions of digital writing/environments; writing processes; collaborative writing; and markup and formalization), the questions for each of the three interviews will be different: interview 1 will focus on initial impressions and expectations for the course; interview 2 will be discourse-based (meaning it will seek to use specific pieces of writing to examine specific choices the interviewee has made during the writing process) and focus on in-process perceptions of specific assignments; and interview 3 will focus on retrospective accounts of the course while maintaining a discourse-based approach centering around specific documents and decisions made by the student. The guide contains rough outlines of topics to be covered for each of these three interviews. If a given interview strays too far afield, the student researcher will return to the guide to ask a new question. This more interactional interview approach allows the student researcher to pursue lines of inquiry that might have been overlooked while following more rigid guidelines. For more information on qualitative interviewing, see Robert S. Weiss's Learning from Strangers: The Art and Method of Qualitative Interview Studies (1994).

Interview Protocol

INTRODUCTION: Thank you again for agreeing to participate in this interview. In addition to being your instructor for this course, I am also a Ph.D. student and researcher in the English Department here at Northeastern University. I want to talk to you about my research project. The goal of the research is to better understand digital writing as a complex literacy practice and to consider what students learn from coding in XML (eXtensible Markup Language) about their writing processes and products. I plan to use this research to help me better understand student writing, to improve my approach to this pedagogical technique, and to report on this study for my dissertation.

EXPLAIN PURPOSE: The purpose of this research is to better understand digital writing as a complex literacy practice and to consider what students learn from coding in XML (eXtensible Markup Language) about their writing processes and products. To do so, I am hoping to gather as much knowledge as I can from students who are taking part in the course.

EXPLAIN SELECTION OF RESPONDENT: I have asked to speak with you based on your interest in further participation in this research study. Selection was on a volunteer basis.

ASSURE CONFIDENTIALITY: If you agree, I would like to audiotape this interview to ensure that I am able to fully and accurately represent your responses. After the interview, I will transcribe the audio recording. Your name will not appear on the audio recording or the interview transcript. Nor will you be identified by name in any reporting of the results of this
study. After transcription, the audiotape and the transcription will be stored digitally in a password-protected, encrypted folder accessible only to me.

I ask to record the interview so that I don't miss or forget anything you say. I would rather not take the chance of relying on my notes and maybe missing something that you say or inadvertently altering your words in any way. However, if you would prefer that I don't record the interview, I will take written notes and reconstruct the transcript immediately following the interview. If at any time during the interview you would like me to turn off the recorder or stop the interview completely, please let me know and I will do so.

It is important that you understand that anything you say during the interview is for research purposes only, and will not affect your grade or standing in the course or with the university in any way. Likewise, your decision whether to participate in interviews has no bearing on your grade or standing in the course or with the university in any way.

[At this point, before interview 1, I will give participants the signed informed consent document]. Please read this carefully. If you choose to participate, please sign it and I will give you a copy to keep.

Feel free to stop the interview at any time to ask questions. Do you have any questions before we begin?

Do I have your permission to begin the interview?

INTERVIEW 1

1) Perceptions of digital writing and environments
   a.) What sites do you frequent regularly and why?
   b.) How is writing online or on a computer different from other writing?
   c.) Develop a definition of digital writing
   d.) What kinds of digital writing do you undertake on a regular basis?
   e.) Publics and digital writing (Who is your audience? Do people respond? How?)

2) Writing processes
   a.) Describe your typical writing process for an academic task/for a personal task
   b.) How might writing in with markup affect your writing process?
   c.) How do you see writing fitting into your academic goals/plans?
   d.) How do you see writing fitting into your career goals/plans?

3) Collaborative writing and design teams
   a.) Personal history with collaborative writing (What experiences have you had with collaborative writing? What have you learned from group writing or projects?)
   b.) Describe your ideal dynamics of a team/group project
   c.) Have you experienced conflicts working in teams? How have they arisen? How were they resolved?
4) **Markup and formalization**
   a.) How would you define markup?
   b.) Do you have experience with markup of any kind (website design, etc.)?
   c.) What are your initial impressions? How do you feel about writing in markup for this class?

INTERVIEW 2
1) **Perceptions of digital writing and environments**
   a.) How do you view the markup you’ve written in this course compared to the visualized output of that markup? How are they alike? How are they different?
   b.) Publics and digital writing (Who is your audience? Do people respond? How?)
   c.) Reflections on this course and digital writing/digital environments (Has this course made you think differently about how you read and/or write in online spaces?)

2) **Writing processes**
   a.) Discourse-based questions about specific assignments/changes made to documents
   b.) Describe your typical writing process for this course
   c.) Is your writing process affected by the tagging of your writing in XML?

3) **Collaborative writing and design teams**
   a.) Discourse-based questions about specific journal and/or audio data from design team meetings
   b.) Describe the dynamics of your design team
   c.) Conflicts in your design team (How have they arisen? How were they resolved?)

4) **Markup and formalization**
   a.) Discourse-based questions about specific aspects of the markup schema
   b.) Genre and markup (Describe the development of the markup schema with respect to specific writing tasks)
   c.) Audience and markup (Who is the intended audience of markup—in this class/in general?)
   d.) Markup and intent (What can markup tell us about what the writer was thinking or intending?)

INTERVIEW 3
1) **Perceptions of digital writing and environments**
   a.) How do you view the markup you’ve written in this course compared to the visualized output of that markup? How are they alike? How are they different?
   b.) How is writing online or on a computer different from other writing?
   c.) Publics and digital writing (Who is your audience? Do people respond? How?)
   d.) Reflections on this course and digital writing/digital environments (Has this course made you think differently about how you read and/or write in online spaces?)

2) **Writing processes**
a.) Discourse-based questions about specific assignments/changes made to documents
b.) Composing in XML (What has it been like to compose in XML for this class? How is it different from other writing courses you have taken?)
c.) Was your writing process affected by the tagging of your writing in XML?
d.) Has your writing process changed over the course of the semester?
e.) How do you see writing fitting into your academic goals/plans?
f.) How do you see writing fitting into your career goals/plans?

3) Collaborative writing and design teams
d.) Discourse-based questions about specific journal and/or audio data from design team meetings
e.) Describe the dynamics of your design team
f.) Conflicts in your design team (How did they arise? How were they resolved?)

4) Markup and formalization
e.) Discourse-based questions about specific aspects of the markup schema
f.) Genre and markup (Describe the development of the markup schema with respect to specific writing tasks)
g.) Audience and markup (Who is the intended audience of markup—in this class/in general?)
h.) Markup and intent (What can markup tell us about what the writer was thinking or intending?)
i.) Reflections on using markup in a writing course
Permission Form for Written Work

Instructor Name: Kevin Smith  
ENGW 3302/ENGW 1111  
Semester: Summer/Fall 2016

I am working on a research project that seeks to investigate how students might use XML markup to describe their writing choices and processes, as you will be doing in this course. I plan to use this research to help me better understand student writing, to improve my approach to this pedagogical technique, and to report on this study for my dissertation. This form asks for your permission to use the work you complete in this class for this research. Your decision will not be shared with anyone besides myself and in any presentation of the results, I will not include your name or any identifying details. If I plan to quote extensively from your work, I will follow up with an email to check that this is acceptable to you.

It is important to know that your decision to grant permission is completely voluntary and will not affect your grades or standing at the university in any way. Additionally, if you do grant permission, you may revoke it at any time. Please complete the information below.

I, ______________________________, give my permission / do not give my permission [circle one] for my instructor to use any of my written work for ENGW1111 in the research project described above. I understand that my work will be used anonymously.

Signature: ___________________________ Date: __________________

If I do plan to use any of your writing or represent you or your work in any way, I will contact you. Please provide your preferred contact information below.

Email ____________________________

Phone (optional) ____________________

Address (optional): ______________________________________________________

As I mention above, any presentation of the results of this study will not include any identifying details, including your name. If you would like, you may indicate a pseudonym/alias you would like me to use in place of your first name.

Pseudonym/alias _________________________________
Survey

Name: ___________________

Note: all answers are optional and will be kept confidential

1. What is your major at Northeastern?
2. What gender do you identify as?
   ___ Male
   ___ Female
   ___ Transgender
   ___ Other: __________
3. Please describe or label the race or ethnicity that you identify with?
4. Please estimate your family’s annual household income in U.S. dollars:
   ___ 0 – 50,000
   ___ 50,001 – 100,000
   ___ 100,001 – 150,000
   ___ 150,001 – 200,000
   ___ 200,001 or more
   ___ No estimate
5. Rank your confidence in your writing:
   ___ very strong   ___ strong   ___ average   ___ weak   ___ very weak
6. Rank your proficiency with computers and computer-based tasks:
   ___ very strong   ___ strong   ___ average   ___ weak   ___ very weak
7. Do you have any experience with coding and/or markup languages? If yes, please explain.
8. How many hours per week do you spend on a computer (phone, tablet, laptop, etc.) for academic tasks?
   ___ < 5 hours   ___ 5-10 hours   ___ 11-20 hours   ___ > 20 hours
9. How many hours per week do you spend on a computer (phone, tablet, laptop, etc.) for personal tasks?
   ___ < 5 hours   ___ 5-10 hours   ___ 11-20 hours   ___ > 20 hours
10. What sites do you use most frequently? What do you use them for?
11. What do you expect to learn, or what content do you expect to be taught, in a writing course?
12. What are your initial thoughts and feelings about using a markup language in a writing course?
APPENDIX B: ADVANCED WRITING IN THE DISCIPLINES SYLLABUS

AWD 3302: Advanced Writing for the Technical Professions
Markup for the Technical Professions

Instructor: Kevin G. Smith
Email: k.smith@neu.edu
Office: Holmes Hall 435
Office hours: 3:10-4:10 PM, MW, or by appointment

ENGW 3302
Summer 2, 2016
MTWR 1:30-3:10 PM
Ryder Hall 460

Description of the Course: This course is oriented around a shared collaborative project: the creation of a system of markup to structurally and rhetorically describe the kinds of writing and choices you make as writers in the technical professions. In order to do this, we will be using XML (eXtensible Markup Language), which will allow us to define a set of tags and rules for using those tags in our writing. Though XML is designed to be intuitive and easily readable by humans, there is no doubt that, for those of you who have no experience with writing XML, there will be a technical learning curve. This effort, though, will be fruitful in that it will allow us to develop an explicit, shared vocabulary for talking about the kinds of writing you undertake in your chosen fields of study; and not only will we develop this vocabulary, but you will leverage it in the completion of a range of genre-based writing tasks.

Course Materials:
• AWD Toolkit (available via PDF on Bb)
• Selected Readings (PDFs and links on Bb)
• A back-up method for all course work, such as Dropbox, a flashdrive, cloud, etc. (“my computer is broken” or “my flashdrive was lost” are not excuses I will accept for missed assignments).
• A laptop that can run </oXygen> XML Editor (see: https://www.oxygenxml.com/xml_editor/download_oxygenxml_editor.html for requirements). While you can compose XML in any text editor, Oxygen has a range of features (validation, auto-completion, prompts, etc.) that are particularly helpful for using it in this setting.

About AWD (from the Writing Program)
Advanced Writing in the Disciplines (AWD) considers issues in writing appropriate to students who are undertaking intensive study in their major field and who are beginning to contemplate life after college. Therefore, students should have accrued 64 academic credits (including the current semester) before they take AWD and have completed or received credit for College Writing. Further, AWD is best taken after a student’s first co-op experience, thus providing useful reference points for the rhetorical issues addressed in class. Additionally,
student writing is the main object of attention and analysis, with students frequently sharing and discussing written work in class. Finally, AWD takes seriously the proposition that differences among fields have consequences for the kinds of writing pursued by members of those fields. As a result, students work to develop an understanding of the function of writing and research in their disciplines in contrast to abstract or universal ideas about “good” writing and research. It is this focus that makes AWD unique.

About 3302 (from the Writing Program)
Advanced Writing in the Technical Professions provides writing instruction for students in the College of Engineering and the College of Computer and Information Science. Students practice and reflect on writing in professional, public, and academic genres, such as technical reports, progress reports, proposals, instructions, presentations, and technical reviews, relevant to technical professions and individual student goals. In a workshop setting, students evaluate a wide variety of sources and develop expertise in audience analysis, critical research, peer review, and revision. Prereq. (a) ENGW 1111, ENGW 1102, ENGL 1111, or ENGL 1102 and (b) junior or senior standing.

Course Breakdown:

Writing Project 1: Discourse Community Analysis | 20% (5-7 pages)
Final Version Due Week 3
For this project, you will interview a mentor in your field on the topic professionalism and the discourse of your professional community. After interviewing your mentor, you will critically analyze your findings and reflect back on the written and unwritten standards of your field.

Writing Project 2: Group Project: Rhetorical Analysis of a Genre | 20% (10-15 minute presentation + 1-2 page process memo for each group member)
Final Version due Week 4
As a class we will pick a number of genres of writing. Each group will be assigned a genre, and present on the genre itself as well as rhetorically analyze an example of the genre.

Writing Project 3: Research Project Proposal & Annotated Bibliography | 10% (1 page proposal + 1-2 page annotated bibliography)
Final Version Due Week 6
This smaller assignment asks you to propose what your larger project will be in the class. Like Project 2, I ask that all research projects take up some kind of political question or problem.

Writing Project 4: Multimodal Research Project + Presentation | 25% (5-8 minute presentation in addition to a digital copy of your project and a process memo)
Final Version Due Week 8 (finals week)
This larger researched multimodal project, in a genre of your choice, involves research, researched writing, reflective writing, and a presentation of your “work in progress.” The final version of this project will be submitted to me electronically during week eight, or finals week, along with a process memo.
Blackboard Blog Posts, Peer Review Reports, and Process Memos | 20% 500 words approximately (1-1.5 page each)
Throughout the semester, you will be asked to complete smaller writing assignments (a total of 10). These include blog posts, peer review reports, and process memos—each worth 2%. All of these smaller writing assignments will be graded on completion.

Blog Posts (4 total – due Thursdays by class time - see Course Calendar for due dates)
Blackboard Blog Posts ask you to respond to a specific prompt, posted on the Blackboard “discussion board.” I expect blog posts to be thorough, engaging, and to raise questions that you could carry over into class discussion. Very brief or disengaged blog posts will not receive full credit. Posts that are interactive, and which include your opinions, pictures, and hyperlinks as a way to engage your peers, are encouraged. Students who comment on their peers’ post will be held in high esteem. Late blog posts will receive grades of 1/10.

Peer Review Reports (4 total – See Course Calendar for due dates. Guidelines for these reports are on Blackboard under Assignments)
Having someone else read your writing can feel uncomfortable and awkward. My goal as your instructor is to make it collaborative and meaningful, as well as fun. Therefore, for each formal peer review session, you will not only be reading and reviewing other students’ work, you will also be writing a short analysis of their work, analyzing your peers’ writing in the same way we analyze the readings we look at together as a class. I take peer review and instructor review very seriously, and I hope that you will learn to as well, as these sessions are a rare chance for you to receive devoted feedback on your writing. Because of our limited summer schedule, I will be giving you time to write these reports in class. Students who miss a peer review session will be given a zero on the peer review report.

Process Memos: (2 total – See Project Guidelines on Blackboard under Assignments for more information)
You will be asked to complete two process memos: one for Project 2 and for Project 4. Think of these as reflective writing exercises – but also as your chance to explain your writing process to me. For Project 2, which is a group project, the process memo serves as your method of communicating to me what your role was in the project. For Project 4, the process memo provides you with the space to give me the background and context for your multi-modal research project. Guidelines for these process memos are on Project 2 and 4 assignment sheets, and include guiding questions to direct your writing.

Participation | 5%
Come to class prepared, on time, having completed the readings or prepared to peer review, and you get a more or less free 5%. Missing one of the peer reviews without a valid excuse loses you the 5%. Repeatedly texting, sleeping, or Facebooking in class loses you the 5%. Basically, the 5% is what you get for acting as a responsible student—it is a completion grade that you only lose through disrespectful classroom behavior.
Assessment:
A student must receive a grade of C or better in order to pass all required writing courses in the Department of English. (C or better is necessary for graduation.) C- or D grades are not allowed in required writing courses.

An F grade indicates that the student has not fulfilled the requirements of the course as specified in the course syllabus. I make the final decision with respect to the final grade, if a passing grade. However, the decision of a grade lower than a C—versus passing—is shared by an assessment group of three to four instructors at the Writing Programs’ end-of-term portfolio review.

*Please note: Failure to complete working drafts or peer reviews will dramatically lower your grade. Failure to complete revision will lead to a grade of no higher than a C. You must complete all 4 projects to pass this class.*

**Grade Scale:** A: 94-100; A-: 90-93; B+: 87-89; B: 84-86; B-: 80-83; C+: 77-79; C: 73-76

Each project will be graded holistically, meaning that all components are taken together to build one Writing Project grade.

**Learning Goals:**
Our course aligns with the Northeastern Writing Program student learning goals:

1. You will write both to learn and to communicate what you have learned.
2. Students negotiate their own writing goals and audience expectations regarding conventions of genre, medium, and situation
3. You will formulate and articulate a stance through and in your writing.
4. You will revise your writing using responses from others, including peers, consultants, and teachers.
5. You will generate and pursue lines of inquiry and search, collect, and select sources appropriate to your writing projects.
6. You will effectively use and appropriately cite sources in your writing.
7. You will explore and represent your experiences, perspectives, and ideas in conversation with others.
8. You will use multiple forms of evidence to support your claims, ideas, and arguments
10. You will provide revision-based response to your peers.
11. You will reflect on your writing processes and self-assess as a writer.

While we will address all the learning objectives, we will focus on goal 2: students negotiate their own writing goals and audience expectations regarding conventions of genre, medium, and situation. In short, this means that you will learn rhetorical flexibility, the ability to assess and make choices about your writing when faced with any writing task or genre. Keep this learning objective in mind throughout the semester.
Submission and In-class work Guidelines:

On Time—I penalize late work by subtracting a letter grade for each day, including weekends, that the assignment is submitted. Work is due by class time (1:30 PM) on the date stated in the course outline. Extensions are granted only in cases of emergency and only in advance (not the night before the assignment is due).

Paper less—I try to keep a paperless classroom. This means that all of your work will be submitted electronically via email or Blackboard. I cannot emphasize enough how important it is to back-up your work. This also means that I encourage you to bring in readings and drafts on your laptop or tablet. You can expect to bring your laptop to class nearly every day of class.

With an Appropriate File Type and Name—electronic files should be submitted as a .doc or .docx. No other file types will be accepted. Please name your files with your last name and project number. For example, if I submitted Project 1 electronically, I would name the file: Smith_Project1. Please, no spaces. The more uniform your file type, the less likely your file will be lost in my “downloads” folder, which is huge and chaotic.

Meet the Basic Requirements—review the assignment guidelines on Blackboard under Assignments before handing in your work.

Use Appropriate and Professional Citations—in both working and final drafts. This means following the style guide required for your field.

Course Policies:

Attendance
Writing Program policy requires regular attendance at class meetings. Significant and/or frequent tardiness may be counted as unexcused absences at the instructor's discretion. Students also have the right to a limited number of excused absences due to a religious observance, illness, death in the family, required participation in athletic events, or other serious and unavoidable life circumstances. Students are responsible for notifying instructors when they must miss class for any reason. Instructors are responsible for determining whether a student will be excused from the class. Instructors are reminded that University Health and Counseling Services will not issue documentation of students’ illnesses or injuries. Because writing classes are conducted workshop-style and focus on revision, a student who misses too many class meetings or falls too far behind in making up work, even with a legitimate excuse, is not earning credit for the same course as the rest of the class. In that case, the instructor may suggest, but not require, that the student to withdraw from rather than fail the course.

Communication Policy
You can feel free to e-mail me throughout the week if you have questions or concerns about what is expected of you. However, think carefully before sending an email. Check the syllabus, course calendar, and project descriptions to make sure your question is not answered on any of those documents. Please do not expect an instantaneous response to emails. I generally respond to emails between the hours of 9 am and 5 pm. Also, please note that I expect a professional and respectful tone in all email communication—consider all correspondence in this course as practice for the professional world. Emails that do not adhere to professional email etiquette
(“what’s up!” / no salutations) or that have an obvious answer on the syllabus will not receive a response.

**Readings and Discussion**
Please bring the assigned reading into class with you, either printed out or on your laptop or tablet. You will be required to reference these readings during class, engage in group work, and occasionally you may receive a surprise pop reading quiz (if I am feeling like discussion is lacking). Always be respectful of your peers and your instructor and refrain from engaging in snarky behavior during discussion (such as rolling your eyes, interrupting your peer(s), giggling, texting, or chatting).

**Academic Honesty**
Northeastern University is committed to the principles of intellectual honesty and integrity and to respecting intellectual property. All members of the Northeastern community are expected to maintain complete honesty in all academic work, presenting only that which is their own work on tests and assignments. In required writing classes, this definition of plagiarism applies not only to borrowing whole documents (other students’ papers, internet articles, published articles) but also to borrowing parts of another’s work without proper acknowledgment and proper paraphrasing or quotation. In these courses, students will receive instruction on using sources properly as well as feedback from instructors and peers. They will also be directed to important resources on avoiding plagiarism.

However, students bear the responsibility for writing, revising, editing, and proofreading their own work. Writing instructors who determine that plagiarism has been committed are obligated to respond. In cases of student error, instructors may provide additional instruction, require the student to repeat the assignment, and warn the student about the consequences of further infractions. If instructors determine that an incidence of plagiarism is intentional, they consult a Writing Program administrator. Based upon the severity of the infraction, the student may a) fail the assignment, b) fail the course, c) be reported to the Office of Student Conduct and Conflict Resolution, or d) any combination of these. Students may be failed regardless of whether the matter has been sent to OSCCR and regardless of that office’s findings.

**Be Respectful**
Remember that the writing you complete in this class is read and reviewed by your peers and by me, including any writing you complete in your blog posts. In this sense, all of your writing is public writing, and should be conducted with our classroom community in mind. Researched writing may feel messy, chaotic, experimental, and challenging. Peer review in particular may make you feel insecure but it also is an excellent way to share ideas, learn about your own writing, practice constructive criticism, network with potential colleagues, and make friends. Keep in mind that we are all growing as writers, so treat your peers and your instructor the way you would like to be treated as a budding professional and writer.
Also, I highly recommend you check out: [10 Things Every College Professor Hates](http://www.businessinsider.com/10-things-every-college-professor-hates-2014-8)

**Writing Center Support:**
The Northeastern University Writing Center offers free and friendly tutoring for any level writer, including help with conceptualizing writing projects, the writing process (i.e., planning, researching, organizing, drafting and revising), and using sources effectively. The Writing Center has two locations: 412 Holmes Hall (x4549) for advanced appointments and 136 Snell Library (x2086) for last minute appointments. Online appointments are also available. During Summer 2 The Writing Center is open from 10am-5pm Monday-Thursday, July 6th-August 17th. To make an appointment or learn more about the Writing Center visit www.northeastern.edu/writingcenter. For writing tips and updates about the Writing Center, follow us via facebook at NEUWritingCenter and Twitter @NEUWrites. Questions about the Writing Center can be directed to Belinda Walzer, Writing Center Director, at neuwritingcenter@gmail.com.

Other Support
If you have specific physical, psychiatric, or learning disabilities and require accommodations, please let me know immediately so that we can work together to appropriately meet your learning needs. You will need to provide documentation of your disability to the Disability Resource Center, located in 20 Dodge Hall (x2675).
APPENDIX C: FIRST-YEAR WRITING SYLLABUS

First-Year Writing:
Genre in the Markup Classroom
ENGW1111 • Forsyth Building 238 • TF • 9:50 – 11:30pm

Instructor: Kevin G. Smith
Email: k.smith@neu.edu
Office: Holmes Hall 433
Office Hours: TF 11:45-12:45pm; MW 10:00-11:00am

“Writing involves a process of learning to adapt, ideologically and discursively, to various situations via the genres that coordinate them. Writing is not only a skill, but a way of being and acting in the world in a particular time and place in relation to others.”
—Anis Bawarshi, *Genre and the Invention of the Writer*

Recipes are a genre; but genres are not recipes.
—Anne Freadman, “Anyone for Tennis?”

Required Texts and Materials

- Selected Readings (PDFs and links on Bb)
- A back-up method for all course work, such as Dropbox, a flashdrive, cloud, etc. (“my computer is broken” or “my flashdrive was lost” are not excuses I will accept for missed assignments).
- A laptop that can run </oXygen> XML Editor (see: [https://www.oxygenxml.com/xml_editor/download_oxygenxml_editor.html](https://www.oxygenxml.com/xml_editor/download_oxygenxml_editor.html) for requirements). While you can compose XML in any text editor, Oxygen has a range of features (validation, auto-completion, prompts, etc.) that are particularly helpful for using it in this setting.
- Supplementary Gmail account (for Google Community)

Course Description and Objectives

We are surrounded by genres. In fact, as you read this, you are engaging with one of the most ubiquitous genres in academia: the course syllabus. This claim may seem self-evident. Obviously, this is a syllabus, right?

But ask yourself how you recognized this document as a syllabus. Was it a set of conventions that tipped you off: information about the instructor at the top, some (hopefully) thought-provoking quotes, followed by required materials, course description, and policies? Or perhaps it was the familiar scene in which the syllabus was circulated: on the first day of class, by an instructor, and discussed with a tone of formality (and excitement)? Or maybe it was recognizable because of what a syllabus *does*. Is it a syllabus because it attempts to construct, articulate, and enforce a contract between you (the student), us (the class), and me (the instructor)?
ENGW1111: First-Year Writing offers enrolled students “the opportunity to study and practice writing in a workshop setting” (Northeastern University Writing Program). In this specific section of 1111, our entry into the study and practice of writing will be genre. Since the 1980s, scholars of writing have attempted to build on a notion of genre not as a static set of textual conventions, but rather, as Carolyn Miller notes, as “typified rhetorical actions based in recurrent situations” (“Genre as Social Action” 159). That is to say, increasingly scholars and teachers of writing have become more interested in what a genre does as opposed to what it is.

In this course, we will begin by describing, discussing, and debating this turn towards a rhetorical understanding of genre. Once we have developed a vocabulary of genre as our unit of analysis, we will turn our attention to how this unit of analysis can help us produce effective pieces of writing, sensitive to the unique demands of a given situation.

As a class (together and in groups) we will undertake a shared collaborative project that will help us in the tasks of analysis and production: we will develop a system of markup that leverages our growing understanding of genre(s) to analyze, describe, and prompt effective writing. We will do this using XML (eXtensible Markup Language), which will allow us to define a set of tags and rules for using those tags in our writing. Though XML is designed to be intuitive and easily readable by humans, there is no doubt that, for those of you who have no experience with writing XML, there will be a technical learning curve. This effort, though, will be fruitful in that it will allow us to develop an explicit, shared vocabulary for analyzing and producing genres, a vocabulary that will enable us to communicate more effectively in a range of situations and contexts.

This is above all else a writing course, which means that student writing is at the center of our work together. As writers and researchers, our learning goals for this course align with those of the Northeastern University Writing Program:

1. You will write both to learn and to communicate what you have learned.
2. Students negotiate their own writing goals and audience expectations regarding conventions of genre, medium, and situation.
3. You will formulate and articulate a stance through and in your writing.
4. You will revise your writing using responses from others, including peers, consultants, and teachers.
5. You will generate and pursue lines of inquiry and search, collect, and select sources appropriate to your writing projects.
6. You will effectively use and appropriately cite sources in your writing.
7. You will explore and represent your experiences, perspectives, and ideas in conversation with others.
8. You will use multiple forms of evidence to support your claims, ideas, and arguments.
10. You will provide revision-based response to your peers.
11. You will reflect on you writing processes and self-assess as a writer.
A Note on Sharing Work
This class will be an open classroom, meaning that most of the writing that you do will be accessible to everyone else in the class. As you work on each project, you will benefit from seeing how your peers have approached the same work. Indeed, reading other people’s work is an important part of how all writers learn and improve. To organize our shared rhetorical work, we will be using a central course site through Google Communities. You will need a Gmail account to access the Google Community site; your NU email account will not work. If you are uncomfortable with the idea of an open classroom, please inform me as soon as possible.

A Note on Technology
We will use a variety of technological resources in this course. This might be a bit overwhelming at first. Once you get the hang of the workflow, however, it will become much more natural. To assist, I’ve written some extensive course documentation that will guide you through the set up and use of the different components of the course (primarily <oXygen/> and GitHub. Below is a brief outline and descriptions of the three applications we will use in this class.

- **Google Community**: Here you will find links to the syllabus, course calendar, assignment prompts, and readings. You will also use this space to respond to readings, complete informal writing assignments (in and out of class), and collaborate on group writing tasks.
- **GitHub course repository**: This is how you will hand in your major writing assignments for this course. Essentially, it is a shared class folder in the cloud (we will call it a “remote repository”). You will set up a local instance of the folder on your computer (your “local repository”) and sync that folder with the remote repository whenever you make changes to your document(s).
- **<oXygen/> XML Editor**: This is a text editor that will replace your normal Word processor for major writing projects. All your major assignments will be written in XML. While you can write XML in any text editor, Oxygen has a range of tools that will make this process easier: element and attribute prompts, error detection, schema validation, auto-completion, etc.

Projects and Grading Overview
While each writing assignment in this course is important for your overall success, I will weigh some of the assignments differently as I compute final course grades. For each assignment, we will collaborate on developing a rubric that reflects the values and goals of our course. This rubric will be posted on the Google Community site. You must complete all assignments to pass this course. Final course grades will be determined as follows:

- Genre Analysis (20%)
- Modeling and Producing Genres (30%)
- Producing and Revising Genres (25%)
- Reflecting on Genre and the Genre of Reflection (10%)
- Engaged Participation/Peer Review/Google Community Posts (15%)

Descriptions of Writing Projects and Presentations
You will receive more explicit writing prompts for each of these assignments, but here are brief descriptions to give you a sense of the types of writing you will do this semester.

1) Genre Analysis
In the first few weeks of class, we will engage a variety of genres—both as a group and as individuals—as we refine our critical reading practices. We will work together to develop a set of XML elements and attributes (a “schema”) that helps us analyze genres. We will accomplish this by analyzing genres together as a class, and by working in groups to propose additions/revisions to the schema. In this assignment, you will complete a brief analysis paper that builds on the work we do together in class. You will choose a genre, identify patterns in that genre, and use our growing vocabulary to make interpretive claims about that genre in an analytical essay written using the XML schema we design and develop as a class.

2) Modeling and Producing Genres
   (a) Group Genre Analysis / Genre Model + Presentation
   Working as a group, you will select a genre for intensive research and analysis. As you perform this research and analysis, you will develop a set of XML elements, attributes, and attribute values that appropriately model the genre and reflect your analysis. During the composing process, you will continue to meet with your team members to determine if composing in your genre prompts any changes to your schema design. As a team, you will present your model and the compositions created out of it to the class.

   (b) Individual Genre
   You will use the model of your genre to produce an example of your group’s genre that responds to a particular rhetorical situation.

3) Producing and Revising Genres
   (a) Individual Genre + Presentation
   For the third project, you will pivot to compose a genre that another team analyzed and modeled for project 2. You will compose an example of this genre that responds to a particular rhetorical situation. You will present your composition to the class, paying particular attention to the specific decisions you made within (or outside of) the conventions of the genre in response to your rhetorical situation.

   (b) Group Revisions to Genre Model
   Depending on which genres are chosen, we will create ad hoc groups of people composing similar genres to work collectively to make revisions to the set of elements, attributes and attribute values based on your experience of composing. The revisions and justifications for those revisions made by your ad-hoc group will comprise part of your grade for project 3.

4) Final Reflection
In this assignment, you will compose a reflective/reflexive essay. Reflection is an important process in your development as a writer and researcher, so we will use this as a moment to assess your work in this course and look forward to ways you might improve. We will specifically consider the affordances and limitations of using genre as the unit of analysis in a writing course.

5) Google Community Posts
Periodically throughout the semester, I will ask you to post to our Google Community, as well as comment on one of your classmates’ posts. This is a textual space for you to make sense of some of the ideas that we take up in class or in our readings. They also provide a space for you to log any issues you are having, map out ideas for changes to the XML schema, and reflect on the ways that this activity does (or does not) help you better understand your writing process in this course. At times, specific prompts for entries will be posted and there will be opportunities for group entries in class. Your cumulative grade for these entries will be based on your thoughtful completion of the writing and responses. I will not grade individual entries or evaluate the writing for grammar, mechanics, organization, etc. Use this space to try ideas out, take risks, and engage your classmates in meaningful discussions around course topics. I also ask that you make an effort to read recent posts before coming to class; I will use these interventions as starting points for class discussions. Posts are due by 10pm the night before we will discuss them. Any late posts will lower your cumulative grade.

6) Peer Review Reports
Having someone else read your writing can feel uncomfortable and awkward. My goal as your instructor is to make it collaborative and meaningful, as well as fun. Therefore, for each formal peer review session, you will not only be reading and reviewing other students’ work, you will also be writing a short analysis of their work, analyzing your peers’ writing in the same way we analyze the readings we look at together as a class. I take peer review and instructor review very seriously, and I hope that you will learn to as well, as these sessions are a rare chance for you to receive devoted feedback on your writing. Students who miss a peer review session will be given a zero on the peer review report.

Assessment:
A student must receive a grade of C or better in order to pass all required writing courses in the Department of English. (C or better is necessary for graduation.) C- or D grades are not allowed in required writing courses.

An F grade indicates that the student has not fulfilled the requirements of the course as specified in the course syllabus. I make the final decision with respect to the final grade, if a passing grade. However, the decision of a grade lower than a C- (versus passing) is shared by an assessment group of three to four instructors at the Writing Programs’ end-of-term portfolio review.

Please note: Failure to complete working drafts or peer reviews will dramatically lower your grade. Failure to complete revision will lead to a grade of no higher than a C. You must complete all 4 projects to pass this class.
Grade Scale: A: 94-100; A-: 90-93.9; B+: 87-89.9; B: 84-86.9; B-: 80-83.9; C+: 77-79.9; C: 73-76.9

Course Policies

Engaged Participation
This course is a workshop rather than a lecture, meaning that we will engage topics in a collaborative way. I view active participation as an essential trait of a productive learning environment. As such, it is imperative that you participate.

Part of participating in this class is behaving with respect to all classroom participants. Inappropriate language or tone of voice, interruptions, and other behaviors that might impede the creation of a safe and productive learning environment will not be tolerated. This includes the inappropriate use of technology during class time.

Attendance & Lateness
Writing Program policy requires regular attendance at class meetings. Students are allowed two unexcused absences in classes that meet for two days. Significant and/or frequent tardiness may be counted as unexcused absences at the instructor's discretion.

Students also have the right to a limited number of excused absences due to a religious observance, illness, death in the family, required participation in athletic events, or other serious and unavoidable life circumstances. Students are responsible for notifying instructors when they must miss class for any reason. Instructors are responsible for determining whether a student will be excused from the class. Instructors are reminded that University Health and Counseling Services will not issue documentation of students’ illnesses or injuries.

Because writing classes are conducted workshop-style and focus on revision, a student who misses too many class meetings or falls too far behind in making up work, even with a legitimate excuse, is not earning credit for the same course as the rest of the class. In that case, the instructor may suggest, but not require, that the student to withdraw from rather than fail the course.

Late Papers
Things happen, and I understand that. However, deadlines are important in both the professional and academic worlds; thus, keeping up with them is an integral part of this course. If you find yourself having trouble keeping a deadline, act professionally by contacting me 24 hours before that deadline to arrange an extension. Extensions may be granted at my discretion. In the absence of an agreed upon extension, a paper or draft will be considered late and that will lower the grade for the project by a full letter grade per day.

Communication
I rely quite heavily on email as a means to communicate with my students. As such, I expect you to check your AU email addresses frequently and to be in touch with any questions or concerns.
Email is absolutely the best way to reach me, as I check it compulsively. I typically reply to emails within 24 hours, but may take a bit longer over the weekend.

**University and Writing Program Policies and Resources**

**Academic Integrity**
Northeastern University is committed to the principles of intellectual honesty and integrity: the NU Academic Honesty and Integrity Policy is found at http://www.northeastern.edu/osccr/academic-integrity-policy/.

The Office of Student Conduct and Conflict Resolution (OSSCR) website (http://www.northeastern.edu/osccr/) provides extensive information on student conduct, the disciplinary process, and the range of available sanctions. All members of the Northeastern community are expected to maintain complete honesty in all academic work, presenting only that which is their own work in tests and assignments. In English classes, this definition of plagiarism applies not only to borrowing whole documents, but also to borrowing parts of another’s work without proper acknowledgment and proper paraphrasing or quotation. We will discuss effective and responsible use of sources throughout the semester.

**TRACE (Teacher Rating and Course Evaluation) Participation**
At the end of the semester you will be asked to complete an electronic evaluation of the course and your instructor. This electronic evaluation is called TRACE. Please fill out this evaluation at the end of the semester.

**The Writing Center**
The Northeastern University Writing Center offers free and friendly tutoring and for any level of writer, including help with conceptualizing writing projects, the writing process (i.e., planning, researching, organizing, drafting, and revising), and using sources effectively. The Writing Center has two locations: 412 Holmes Hall (call 617-373-4549) for advance appointments and 136 Snell Library (617-373-2086) for last minute appointments. Online appointments are also available. The Writing Center opens on September 15th and closes on December 14th. Hours vary by location. To make an appointment or learn more about the Writing Center visit our website at www.northeastern.edu/writingcenter. For writing tips and updates about the Writing Center, follow us on facebook at NEUWritingCenter and Twitter@NEUWrites. Questions about the Writing Center can be directed to Brigid Flynn, Assistant Director, atneuwritingcenter@gmail.com or Belinda Walzer, Writing Center Director, at b.walzer@northeastern.edu.

**Peer Tutoring**
The Peer Tutoring Program offers a wide range of tutoring services to meet the academic needs of the undergraduate students in many of the introductory level courses, as well as some of the upper-level courses in the NU Core. The goal is to create synergy among students, faculty, and tutors in a collaborative academic environment where the student's personal and academic
growth and development is a priority. If you are in need of academic assistance, contact the Peer Tutoring Program Monday thru Friday from 9:00AM to 5:00PM. Peer Tutoring services are FREE and open to all NU undergraduate students. Peer tutoring begins the second week of classes and ends the last day of classes. The Peer Tutoring Program is located in 1 Meserve Hall. Call 617-373-8931 or email NUpeertutoring@gmail.com for more information.

Disability Resource Center
The university’s Disability Resource Center works with students and faculty to provide students who qualify under the Americans With Disabilities Act with accommodations that allow them to participate fully in the activities at the university. Ordinarily, students receiving such accommodations will deliver teacher notification letters at the beginning of the semester. Students have the right to disclose or not disclose their disabilities to their instructors. For more information about the DRC, go to http://www.northeastern.edu/drc/.

WeCare
WeCare is a program operated through the Office for Student Affairs. The mission is to assist students experiencing unexpected challenges to maintaining their academic progress. WeCare works with the student to coordinate among university offices and to offer appropriate on and off campus referrals to support successfully resolving the issue. WeCare also provide information to faculty and staff to identify Northeastern resources and policies to help students succeed. The WeCare program is located in the Student Affairs Office in 104 Ell Hall. The hours are 8:30am - 7pm Monday through Thursday and 8:30am - 5pm on Fridays (summer hours subject to change). Call 617.373.4384 or email wecare@neu.edu.

Snell Library
In addition to providing research resources typical of a major university library, the Snell Library (http://www.lib.neu.edu/) collaborates with both the First-Year Writing and Advanced Writing in the Disciplines programs to support students’ information literacy. The English Department will coordinate workshops for all sections of our required courses.

Digital Media Commons
Snell Library also houses the Digital Media Commons, which offers a variety of resources for instructors and students regarding multimedia projects: http://library.northeastern.edu/digital-media-commons

NU Writing
NU Writing is an online journal that publishes compositions made in First-Year Writing and Advanced Writing in the Disciplines, courses that are part of Northeastern University’s Writing Program. NU Writing helps students to find a wider audience for their compositions and to experience publishing, both by learning about the submission and review process and by participating on the journal’s board. Compositions published in NU Writing are alphabetic and multimodal—written in verse or prose, or composed in multiple modalities, such as image and sound. NU Writing welcomes traditional essays as well as texts from alternate genres: for example, poems, photo-essays, digital narratives, and films. All currently matriculated students
who have taken, or are taking, courses in the Writing Program are encouraged to participate, by submitting a composition or serving on the journal’s board or both.

Any undergraduate may submit a composition made in First-Year Writing or Advanced Writing in the Disciplines if she or he is enrolled at Northeastern University at the time of submission. For more information visit http://www.northeastern.edu/writing/nu-writing-journal/.
APPENDIX D: CATEGORICAL CODING OF SCHEMA COMPONENTS

A grounded analysis of the ten genre models produced in AWD and FYW reveals patterns in how students defined components in their schemas, which is the focus of this Appendix. These component categories are based on the content of the genre models—that is, the documentation and rules by which the schemas were composed—and represent the kinds of rhetorical strategies employed in the process of inventing schemas as a genre. Students developed schema components that can be grouped into five categories: structural, presentational, rhetorical, semantic, and metatextual. None are mutually exclusive, the majority of components created by students fall into at least two categories. The categories were not presented to students as goals; they emerged as coherent categories as I analyzed the schema files produced in the two classes. I define them as follows.

**Structural components** identify the location and/or form of text elements. They include things like paragraphs, titles, and so on. The documentation for structural components often includes where a given element should appear. For example, the final documentation for the <evidence> tag in the op-ed genre model states: “Container element for evidence that supports any of the types of opinions. *This tag can be used anywhere, within any other tag, even within itself* [requires @type attribute].” The emphasized portion, focusing on location, was deemed a structural concern and so was coded as such.

**Presentational components** identify how the element is to be visually rendered. These components, which include things like style tags, answer the question: How should/will the text look? For example, in the feasibility report model, the <req> documentation reads: “(requirement). This is a requirement. [required @num attribute, optional @title attribute]. *Title will appear at the beginning of this element italicized followed by a colon.*” Again, the italicized
portion is the part of the definition that warranted the presentational code.

**Rhetorical components** identify the meaning, purpose, or use of an element. The documentation for a rhetorical component includes information that may answer the questions like: What does or should this part of the text do? How does this element relate to the rest of the text? How can the author use this component successfully? In the following example we see a rhetorical component definition for the `<explanation>` tag in the blog genre model: “An in-depth reply to the question proposed in the ‘background’ section. Typically, the author will use common vernacular and devices such as analogies and visuals in order to clearly convey concepts to readers.” This definition addresses how this element relates to the rest of the text (related to a question proposed in the background section), how an author might use the component (using common vernacular, analogies, and visuals), as well as what the element should accomplish (clearly convey concepts to readers).

**Semantic components** identify and define the content of an element. “Semantic” is an imperfect descriptor, as one might suggest that almost all components would be semantic. It is mainly used to distinguish components that deal with content but are not concerned with the rhetorical aspects of that content. What I mean here is that it describes the content of a particular element with no reference to, say, the context, purpose, or meaning of that content. This example from the resume model is illuminative, the documentation for the `<qualifications>` element reads: “Container element for all relevant qualifications; should include work experience, may include certifications, associations, education, unpaid/volunteer work, languages spoken, etc.” This documentation defines what can appear in this element both in terms of content and other elements defined in the genre model. This is coded as a semantic, rather than rhetorical, component because it makes no reference to the function or context of the element.
**Metatextual components** encode information about the text that does not appear as part of the text itself. These elements were rare in genre models, as most metatextual information (e.g., date of composition, document author, version number, peer review tags, etc.) was captured in elements that I created prior to the classes beginning.

The table below includes, for each genre model, the total number of components coded with each category as well as the percentage of the total components for that genre model that were coded with each category. Note that many components were coded with more than one category, so that the percentages do not total 100.

<table>
<thead>
<tr>
<th>FYW</th>
<th>Structural</th>
<th>Presentational</th>
<th>Rhetorical</th>
<th>Semantic</th>
<th>Metatextual</th>
<th>Total tags</th>
</tr>
</thead>
<tbody>
<tr>
<td>genre analysis</td>
<td>4, 24%</td>
<td>1, 6%</td>
<td>7, 41%</td>
<td>14, 82%</td>
<td>0, 0%</td>
<td>17</td>
</tr>
<tr>
<td>movie review</td>
<td>8, 47%</td>
<td>1, 6%</td>
<td>6, 35%</td>
<td>15, 88%</td>
<td>2, 12%</td>
<td>17</td>
</tr>
<tr>
<td>satirical article</td>
<td>6, 35%</td>
<td>1, 6%</td>
<td>3, 18%</td>
<td>13, 76%</td>
<td>6, 35%</td>
<td>17</td>
</tr>
<tr>
<td>op-ed</td>
<td>9, 75%</td>
<td>0, 0%</td>
<td>5, 42%</td>
<td>7, 58%</td>
<td>0, 0%</td>
<td>12</td>
</tr>
<tr>
<td>resume</td>
<td>13, 62%</td>
<td>3, 14%</td>
<td>2, 10%</td>
<td>19, 90%</td>
<td>0, 0%</td>
<td>21</td>
</tr>
<tr>
<td>AWD</td>
<td>Structural</td>
<td>Presentational</td>
<td>Rhetorical</td>
<td>Semantic</td>
<td>Metatextual</td>
<td>Total tags</td>
</tr>
<tr>
<td>annotated bibl.</td>
<td>2, 20%</td>
<td>1, 10%</td>
<td>5, 50%</td>
<td>9, 90%</td>
<td>0, 0%</td>
<td>10</td>
</tr>
<tr>
<td>blogs</td>
<td>3, 16%</td>
<td>1, 4%</td>
<td>10, 53%</td>
<td>11, 58%</td>
<td>0, 0%</td>
<td>19</td>
</tr>
<tr>
<td>feas. reports</td>
<td>14, 40%</td>
<td>5, 14%</td>
<td>9, 26%</td>
<td>35, 100%</td>
<td>0, 0%</td>
<td>35</td>
</tr>
<tr>
<td>proposals</td>
<td>3, 11%</td>
<td>0, 0%</td>
<td>5, 19%</td>
<td>23, 85%</td>
<td>1, 4%</td>
<td>27</td>
</tr>
<tr>
<td>cover letters</td>
<td>19, 76%</td>
<td>0, 0%</td>
<td>11, 44%</td>
<td>21, 84%</td>
<td>0, 0%</td>
<td>25</td>
</tr>
</tbody>
</table>

*Table 1: Categorical coding of all genre models*