**Comparing Apples and Oranges:
A Socio-Rhetorical Analysis of Writing in Biology and History**

Christen M. Rachul

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of the requirement of the degree of Master of Arts in Applied Language Studies

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Abstract

The purpose of this study is twofold: to draw connections between the socio-rhetorical contexts for writing in the disciplines of Biology and History and to explore the influence of these contexts on the generic textual features of published articles in these disciplines. Specifically, this study focuses on the use of the passive voice and author pronouns in the two disciplines. Activity Theory (AT), Rhetorical Genre Studies (RGS), and social theories of learning, such as Guided Participation and Legitimate Peripheral Participation, provide a theoretical framework for the study. The study consists of two case studies. Data were collected from four published journal articles in Biology and two in History (six in total) and from one-on-one interviews with the authors of the articles. It was determined that differences in the activity systems of the two disciplines were considerable and that this had a profound effect on the frequency and function of the passive voice and author pronouns in the genres of each discipline. These differences in socio-rhetorical disciplinary contexts have implications for how writing is taught and learned in each discipline.

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Notations

. . . – indicates missing or deleted text

[] – indicates changed text that contained identifying information

() – indicates added or changed text for grammatical or explanatory purposes

day/month/year – indicates date of interview, used with participants' quotes

participant initials_type of document_year, unit # - indicates document code I provided

for article data, below are the types of documents:

- TI – indicates review article (Biology)
- TM – indicates research article (Biology)
- T – refers to journal article (History)

Abbreviations

APA – American Psychological Association

AT – Activity Theory

cit. – omitted citations from samples of participants' texts.

CoP – Community of Practice

GP – Guided Participation

LPP – Legitimate Peripheral Participation

RGS – Rhetorical Genre Studies

ZPD – Zone of Proximal Development

Glossary

Author pronoun – personal or possessive pronouns that refer to the author of a text, including *I*, *we*, *my*, and *our*.

Epistemic grammatical construction– a construction that refers to the methods, conceptual tools, and previous research that a researcher uses to reason about the subjects and things that the researcher studies
e.g. Four litres of water were added to the mixture.

Falsifiability – the ability to prove or disprove results and theories

Hedging – a method of limiting or qualifying statements

Passive Voice – a grammatical construction where the grammatical subject is the recipient of an action. The agent might be retained in a *by*-phrase, or is implicit and reconstructible. The verb in a passive construction is a form of the auxiliary *be* followed by the past participle of the main verb.

e.g. Active voice – I ate the pizza

Passive voice – The pizza was eaten by me

Phenomenal grammatical construction– a construction that refers to the subjects and things that a researcher studies
e.g. The letter was sent yesterday.

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1. Introduction

Overview of Chapter

This chapter provides an explanation of the impetus and background for the study. This is followed by the purpose of study and the research questions it seeks to answer. The final section is an overview of the chapters in the thesis and the overall approach to the study.

Impetus for and Background to Study

After considerable confusion over my word processor's green underline once again indicating a sentence written in the passive voice, after yet another battle with my high school English teacher over my abundant use of the passive voice, and after having encountered a lack of any real explanation for why my use of the passive voice had caused such a flood of green underlines and red pen markings on my homework, I knew that there was a problem with how people conceive of writing and how writing really happens.

A quick browse through any number of writers' handbooks reveals a deep bias towards the use of the passive voice without much explanation or solid evidence to back up claims that the passive voice is best left unused. The passive voice is a grammatical construction where the grammatical subject is the recipient of an action and the doer of the action can be retained in a *by*-phrase or is implicit and reconstructible. The verb in a passive construction is a form of the auxiliary *be* followed by the past participle form of a main verb. Due to the extra words needed to create a passive construction, such as the

auxiliary *be* and the *by*-phrase, and because the doer of an action can be omitted, the passive voice is often criticized. For example, Rice (1993) claims that a proscription of the passive is justified because “it is wordy, indirect, and relatively listless” (p.151). Furthermore, Rice suggests that “it is usually best to avoid the passive, a form whose very indirectness can easily communicate a sense of uncertainty and evasion” (p.152). In a recent edition of the *Broadview Guide to Writing*, a writing manual that claims to be helpful across disciplines, the main complaint is simply that “the vice associated with the passive voice . . . is not the passive per se, but the wordiness it sometimes gives rise to” (Babington & LePan, 2006, p.66).

While many writers’ handbooks tend to be directed at interdisciplinary audiences, even in more discipline-specific manuals the same criticisms occur. In the well-known *Simon & Schuster Handbook for Writers*, which does address disciplinary differences, the authors simply claim that more words are used with passive constructions and that it serves to deemphasize, as though these are inherently “bad” for writing in any discipline (Troyka, Buckley, & Gates, 1996, p.244). In the same vein, in *A Short Guide to Writing about Biology*, Pechenik (2007) states that the passive voice “is often a great enemy of concise writing” (p.104) and advises against using the passive voice in Biology writing.

The criticisms of the passive voice in writers’ handbooks seem ill-informed at best in light of recent research in genre and writing studies that addresses the relationship between context and written text that influences both the macro- and micro-structures in writing (e.g. Bawarshi, 2003; Bazerman, 1988; Freedman, 1994; Miller, 1984; Paré & Smart, 1994). Despite many new developments, grammar remains a contentious point in genre studies. In those rare cases when grammar is addressed in empirical Rhetorical

Genre Studies (RGS)-based research, its exploration usually plays a small role in a larger inquiry or is limited to a single discipline (e.g. Berkenkotter & Huckin, 1995; Geisler, 1994; MacDonald, 1994; Reid, 1987; Swales, 1990), though some authors have recently productively combined rhetorical studies of genre and its grammatical features (Schryer, 2000; Schryer, Gladkova, Spafford, & Lingard, 2007). As Paré (1994) has observed, product pedagogies, which emphasize accuracy of the final text, and process writing pedagogies, which emphasize the composing process of individual writers, often rely on prescriptions for grammar use and tend to describe grammar out of context. Yet, a social perspective on writing highlights the need to account for context to understand what grammar does and how it does it.

Research Questions

To address this issue, I had conducted a pilot study in which I compared the traditional handbook description of “proper” passive voice use with the actual use of the passive voice in scholarly writing in the disciplines of Biology and History. The results indicated that there were considerable differences in the frequency and function of the passive voice between disciplines. The results also indicated that these differences in the use of the passive voice between disciplines were largely due to differences in socio-rhetorical contexts, and, therefore, that further research into the socio-rhetorical contexts of the disciplines was needed. In response to this need I developed my MA thesis research with the purpose to explore (a) the relationship between the socio-rhetorical disciplinary contexts for writing in Biology and History and (b) the influence of this context on the generic textual properties of published articles in these disciplines,

specifically with the use of the passive voice and author pronouns. Based on the results of the pilot study, I developed the following research questions for my thesis:

1. What types of situations and contexts elicit the use of the passive voice in scholarly writing in different disciplines?
2. What are the differences in the contexts of the sciences and humanities that may account for the differences in frequency and function of the passive voice?

In the present research, I examine two case studies of scholars from Biology (as a representative of Sciences) and History (as a representative of Humanities). I used modified, or constructivist, Grounded Theory (Charmaz, 2000, 2006) coding methods to analyze interviews with each of the four participants and articles they have published in scholarly journals. I also used Geisler's (2004) methods for systematically coding language to conduct a textual analysis of the published articles authored by the study participants. My observations drawn from Grounded Theory coding and results of the textual analysis were compared and contrasted with each other and among the four participants. As my study has an emergent design, and as I began collecting and analyzing data, my understanding of the importance of and the great differences in the socio-rhetorical disciplinary contexts for writing in Biology and History developed. To account for this discovery, I adjusted my research questions during the analysis stages to better reflect the data. The final research questions are as follows:

1. What are the socio-rhetorical disciplinary contexts for writing in Biology and History?

2. What are the differences in the socio-rhetorical disciplinary contexts of Biology and History that may account for the differences in textual features, specifically in frequency and function of the passive voice and author pronouns?

Overview of Thesis

The overall structure of my thesis is as follows. Chapter 2 is a summary of the pilot study I conducted that served as an impetus for the present research. Chapter 3 is a literature review in which I present previous research that has been conducted on the use of the passive voice and author pronouns (e.g., Hyland, 2002). I then describe the theoretical framework for the study, which includes Activity Theory (AT), Rhetorical Genre Studies (RGS), Guided Participation (GP), and Legitimate Peripheral Participation (LPP). In chapter 4, I outline the methodology used in the study, including recruitment and description of participants, collection of data, and methods of analysis. The observations and discussion of my analysis are divided into two chapters. First, in chapter 5, I present my interpretations of the socio-rhetorical disciplinary contexts for writing in Biology and History constructed through the lens of AT. Second, in chapter 6, I present the results of a textual and genre analysis and discuss the results and observations using principles from RGS and AT. Chapter 7 addresses the main observations from the study, the limitations of the study, implications for further research, and the implications of the study for writing pedagogy.

2. Pilot Study

Overview of Chapter

In this chapter, I provide a summary of a pilot study I conducted that served as the beginning stages of my thesis. I begin by describing the purpose of the pilot study, followed by the methodology and results. I end with a discussion of how the pilot study laid the foundation for the present research study.

Summary of Pilot Study

In a small-scale pilot study that I conducted in Fall 2006, I examined a variety of writers' handbooks for their description of the passive voice and guidelines for appropriate use of the passive voice in academic writing. I then compared this information with the results of a textual analysis of the frequency and function of the passive voice in scholarly articles from Biology and History journals.

Many of the handbooks and manuals were directed at undergraduate students (e.g., Knisley, 2005; Lannon & Klepp, 2000; Millward, 1983; Perelman, Paradis, & Barrett, 1998; Rice, 1993; Troyka et al., 1996) and contained sections addressing the use of the passive voice. Some handbooks contained descriptions of the passive voice with example sentences taken out of context, and most warned writers about the wordy and evasive nature of the passive voice. Almost all of the books provided a limited set of guidelines for the few occasions when, in their view, it is acceptable to use the passive voice. For example, the passive should be used:

1. If the focus of a sentence is on the receiver or result of an action;
2. If the doer of an action is unknown, unimportant, or obvious;
3. If the subject of a sentence is a long clause;
4. If the first person should be avoided.

In contrast, the results of the textual analysis of six articles that I conducted in the pilot study indicated that the passive voice is used in both Biology and History, but is much more frequent in Biology. Epistemic and phenomenal uses of the passive verb also marked the differences in the function of the passive voice between the two disciplines. According to Macdonald (1994), phenomenal verbs “consist . . . of the material that the researcher studies” (p.157), and epistemic verbs “consist . . . of the methods, conceptual tools, and previous research that the researcher brings to bear on that material” (p.157). Instances of the passive voice in the Biology articles were more frequently epistemic and in History the passive voice was more commonly phenomenal. The results of this small-scale pilot study suggested that the differences in the frequency and the function of the passive voice in these articles are due to the rhetorical and social context of each discipline, including the methods of research in each discipline, the subjects of research, and what information about the research process is included in an article. Comparisons of the use of the passive voice in the six articles with the guidelines presented in the writers’ handbooks indicated that in most instances, the use of the passive voice was consistent with one or more of the guidelines, but in some cases the use of the passive voice improved the fluency of a sentence, thus making a more rhetorically effective sentence. A simple list of prescriptivist guidelines that mainly deal with grammatical issues does not fully explain when and how the passive voice is employed in writing,

especially the differences in its use between disciplines. It became clear to me that more research was needed to determine the relationship between socio-rhetorical disciplinary contexts and textual features such as the use of the passive voice. Thus, the small-scale pilot study served as an impetus for my thesis research.

In the following chapter, I present the previous research that has been conducted on the uses of the passive voice and author pronouns in scholarly writing, and a description of the theoretical framework for my study.

3. Literature Review

Overview of Chapter

This chapter begins with an overview of the previous research that has been conducted on the use of the passive voice and author pronouns in academic writing. Following a discussion of the importance of my study in light of previous research, I present the theoretical framework for my study, which includes an overview of Activity Theory (AT), and Rhetorical Genre Studies (RGS). I also present theories that address the implications of AT and RGS for writing studies. The final section discusses two analytic perspectives on learning, Guided Participation (GP) and Legitimate Peripheral Participation (LPP), and the importance of these social theories to genre acquisition.

Previous Research on the Use of the Passive Voice and

Author Pronouns in Academic Writing

Despite the lingering influences of product and process pedagogies which do not account for the contextually-embedded and social nature of writing (Paré, 1994) and the traditional criticism of the passive voice offered in writers' handbooks, some scholars have attempted to defend the use of the passive voice in scholarly writing. For example, Giltrow (2002) noted that, regardless of a "bad" reputation, the passive voice is commonly used throughout the scholarly genres, while MacDonald (1994) described the use of the passive voice as a key element in the heavy nominal style of academic writing. In a study of different written genres in the Sciences, Social Sciences and Humanities, Hartley, Sotto, and Fox (2004) also demonstrated that the passive voice is present in

different types of academic writing and concluded that the passive voice is used far more frequently in the sciences, yet even within the sciences, the frequency varies. Lachowicz (1981) asserted that the frequent use of the passive voice in scientific writing is primarily for showing objectivity, making assumptions and hedging. Hyland (1998) further demonstrated the efficacy of the passive voice in scientific writing. He also stated that scientists use the passive in order to hedge statements and distance themselves from their claims, yet, contrary to Lachowicz (1981), he argued that this is done to lessen their responsibility and not to achieve objectivity.

Riley (1991) conducted a study of the frequency of passive verbs in each section of 12 experimental reports in Speech Language Pathology that provided additional insights into the use of passives in scientific writing. She claimed that by using the passive voice while conveying results, the researchers depersonalized methods used to obtain results. According to Riley, this depersonalization helped to emphasize the universality of results and make them generalizable. She stated that the “passive voice plays an important part in reinforcing the relationship between authors and their subject matter” (p.253). Ding (2002), on the other hand, claimed that the passive voice simply reflects the social values of the Sciences. He described the first social value as the ability to prove or disprove results and theories, which he referred to as “falsifiability”: because scientists are in a constant process of adding new knowledge and verifying previous results and theories, experiments must be repeatable to be tested and retested. The second social value, according to Ding, is cooperation among scientists. By stating methods and results in the passive voice, a scientist is inviting other scientists to perform

the same task and challenge truth claims and theories, in which they are working together to further science.

Wilkinson (1992), in addressing prescriptive advice on the use of the passive voice, such as that the passive voice is weak and gives “a false aura of objectivity” (p. 321), acknowledged the importance of the rhetorical setting in determining textual features. He claimed that, in the sciences, the rhetorical setting includes a focus on the subjects of study, methods, and results. He further explained that who does the research is not important and that “research is expected to stand by itself, capable of being repeated, developed, expanded, retested, etc., no matter who performed the original experiment” (p.323). In other words, science is object-oriented and thus the passive voice and its ability to shift focus to the object lends itself to scientific writing.

Much of the literature on the passive voice usage in the Sciences did not contain discussion of the many variations of the structure of the passive voice or what meanings are created with the use of the passive voice. This was addressed by Rodman (1981) who looked at the four common occasions for the use of the passive voice in scholarly writing. Her results showed that the full form of the passive with an agent rarely occurs in scientific texts, therefore negating claims that the passive voice causes wordiness. For example, she claimed that most passives in scientific writing occur in the sections that deal with descriptions of procedures, state of knowledge, and natural processes. In the example she cited, -- “One sample was dissolved prior to thermal treatment” (p. 167) -- the agent is truncated, which is common in scientific writing.

A study conducted by Tarone, Dwyer, Gillette, and Icke (1998) drew attention to different types of scientific writing that may not use the passive voice as much as

personal pronouns such as *we*. In their study, the authors examined two theoretical Astrophysics papers for the use of the passive voice and pronouns and also looked at the greater rhetorical structure of the paper to understand when and how either of these textual features is used. They concluded that both the passive voice and personal pronouns are used frequently but indicate different rhetorical moves, for example the passive is used when discussing others' work and *we* is used when discussing the author's own work.

Non-scientific disciplinary writing was also analyzed for the usage of rhetorical and grammar features. For example, a study of sentence-level differences in History texts was conducted by Macdonald (1994). The author did not focus specifically on the use of the passive voice or pronouns, but discussed the differences in knowledge-creation between three different subfields of History. She demonstrated how the rhetorical differences in three sub-fields were also visible in the sentence level textual features, especially in the use of epistemic and phenomenal verbs.

Hyland (2002), in an attempt to address common writers' handbooks' claims that academic writing is impersonal, conducted a corpus study of author pronouns in academic writing in eight disciplines in the Sciences, Social Sciences, and Humanities. He limited the study to only personal pronouns that were referring directly to the author or authors and not the pronouns that referred to other researchers or a community of people. His results indicated that author pronouns, such as *we* and *I*, are more common in the Social Sciences and Humanities; however, his study was somewhat limited as only one discipline from the Humanities, Philosophy, and two from the Social Sciences,

Sociology and Applied Linguistics, were represented. There was also very little discussion about which rhetorical contexts prompted use of author pronouns.

In an article focused on the active voice, Rodman (1994) also addressed the use of pronouns in scientific writing. She demonstrated how discourse functions in a text are connected to the use of the passive or active voice. The frequency of the active voice was lower than the passive voice, but the use of the active voice indicated certain rhetorical moves, signalled by the discourse function of the agent. For example, one category of agent was labelled “human”. This includes personal pronouns, such as *I* or *we*. Rodman argued that active clauses with “human” subjects are often used when citing research or introducing metadiscourse. She provided an example, “In this paper, we argue that” (p. 321). The study also illustrated how a particular grammatical construction can work to create different meanings and play multiple roles in different contexts. The importance of Rodman's study lies in her ability to display the possibilities for grammar to make meaning and not only signal the ideologies of a particular community.

While some of the literature addressed rhetorical differences in the text and disciplinary differences in the use of the passive voice and author pronouns, it does not appear that in the publications about the passive voice or author pronouns the authors looked beyond the textual contexts to the socio-rhetorical disciplinary contexts in which the use of the passive voice or author pronouns are embedded. In addition, the literature and research on the use of the passive voice is often limited to the Sciences and rarely includes research in the Social Sciences and Humanities. To further explore the preliminary findings of my pilot study and to address the gaps in the literature in terms of the influence of socio-rhetorical disciplinary contexts on grammar, I have relied on the

theoretical framework for the study of writing provided by Activity Theory (AT), Rhetorical Genre Studies (RGS), Guided Participation (GP), and Legitimate Peripheral Participation (LPP).

Theoretical Framework

Activity Theory

Developed by Leont'ev in the early to mid-20th century in Russia and further developed by Engeström, Activity Theory is based on Vygotsky's ideas of mediated activity (Engeström & Miettinen, 1999). Vygotsky believed that all human activity is mediated by psychological signs and technical tools including language and other semiotic forms (Wertsch, 1991). AT provides a framework for analyzing collective human activity and uses an activity system as its basic unit of analysis.

Leont'ev represented human activity as a triangle with the subject, object and mediating artefact (Artemeva, 2006). Leont'ev also developed three AT levels of analysis: activity, action, and operations, where activity is object-oriented and motive-driven, and is a collective and socially-embedded way of working, playing or learning; action may be performed by an individual or group, is goal-oriented where the goal is working towards the object of the activity, and requires conscious attention; and operations are determined by the conditions that surround an action and how an action is carried out. Operations are routine and automatic, requiring little thought.

Engeström (1999) further developed Leont'ev's representation of human activity into an activity system triangle that includes a subject, object, mediating artefacts, rules, community, and division of labour as important elements of human activity. With

Engeström's version, AT serves as an instrument for analysis of human activity within its social context, and has expanded to include the study of the interactions between two or more activity systems (Engeström & Miettinen, 1999).

Another aspect of Engeström's (1999) version of AT is that it acts as a framework for understanding contradictions within an activity system that bring about change and transition. He proposed for levels of contradictions as follows:

1. Primary contradictions – the inner conflict that exists in one node of the triangle
2. Secondary contradictions – the contradiction appearing between two nodes of the triangle as the subject experiences a double bind, which Engeström (1999) described as “the individual, involved in an intense relationship, receives two messages or commands which deny each other” (p. 142)
3. Tertiary contradictions – contradictions in the system that result in a new culturally more advanced system developing within the original activity
4. Quaternary contradictions – contradictions that occur between the central activity system and neighbouring activities (Engeström, 1999).

AT provides a framework for understanding human activity as directed towards specific goals, going through changes, and evolving due to contradictions that arise within an activity system and with neighbouring activities. I relied on AT in my study to understand the socio-rhetorical disciplinary contexts of Biology and History as changing systems of human activity that are not isolated, but affect and are affected by other systems of activity. To better understand the role of genres within human activity, I drew on Rhetorical Genre Studies to provide further insight into how textual features, such as

the passive voice and author pronouns, are embedded in complex systems of activity that may determine how and when these features are used.

Rhetorical Genre Studies

As new socio-rhetorical perspectives on writing have developed in recent decades, the view of writing as a social activity has gained importance in writing research and pedagogy. From this perspective, a new understanding of genre has also emerged resulting in the development of RGS (e.g., Artemeva & Freedman, 2006; Bakhtin, 1986; Devitt, 2004; Freedman & Medway, 1994; Miller, 1984; Paré & Smart, 1994). RGS is built on Miller's (1984) notion that genre is social action. She argued that a social exigence, or a community's perceived need, evokes rhetorical actions that become typified in recurring situations. Borrowing terms from both Burke and Bitzer, Miller demonstrated how discourse can be seen as symbolic action whose meaning lies within a context or situation and the exigence from which it arises. Miller redefined exigence as "a form of social knowledge – a mutual construing of objects, events, interests, and purposes that not only links them but also makes them what they are: an objectified social need" (p. 157). Meaning in context lies within both form and substance, in Miller's view, and texts become typified, exhibiting similar features and structures, as they respond to socially constructed situations or needs.

Genre as symbolic action can also be conceived of as a tennis game, with one text being a "shot" in a game and subsequent texts are uptakes (Freadman, 1994). Freadman argued that the rules for playing a game come before the content of a particular game. The playing of a game also involves the ceremony, which includes all of the activity

surrounding the game such as preparation, choice of partners, occasion and venue. The writing game, then, can be seen as the back and forth of texts, where the rules of the game, along with the shot, will determine the content and form of each text. A genre, according to Freedman, would consist minimally of two texts, a shot and uptake, within a game. The ceremony of the writing game also involves the surrounding activity including the audience, occasion for writing, writing process, and location. This is in contrast to previously held notions of genre where the content of a text determines the rules for writing and the surrounding activity plays no factor.

The importance of the “ceremony” to genres is summed up in Bakhtin’s (as cited in Artemeva, 2006) notion of the “chronotope,” which indicates the inter-connectedness of time and space. The term chronotope, or time-space, was applied originally to literary genres, but RGS scholars have incorporated the notion into new conceptualizations of genre. Schryer (2000) explains this as “every genre expresses space/time relations that reflect current social beliefs regarding the placement and actions of human individuals in space and time” (p. 459).

Another important concept is that of the discourse community, as defined by Swales (1990), which is useful in understanding how textual features may differ from one community to another. Swales (1990) explained that a discourse community is defined by its goals and that “the communicative needs of the *group* [emphasis in original] tend to predominate in the development and maintenance of its discursal characteristics” (p. 24). Regularities within these communities, according to Bazerman (1988), also exist in the way texts are produced and read and in the relationships among members of a

community as both writers and readers, which, along with textual regularities, comprise the genres of a community.

In their research into writing based on the socio-rhetorical perspective, Paré and Smart (1994) expanded on Miller's ideas and furthered her definition of genre to be "typified rhetorical actions *and* [emphasis in original] recurrent situations" (p. 153-4). They proposed four dimensions of genre to consider when studying genres in a specific setting, which include regularities in textual features, social roles, composing processes, and reading practices. Each of these dimensions plays an integral role in the development and study of a genre. Of particular interest to my study are regularities in textual features, social roles and composing practices. Textual regularities are not limited to sentence structures and vocabulary, but also include the rhetorical moves in the text. Rhetorical moves can include elements that must be incorporated into a particular type of text, such as descriptions, evaluations and assessments (p. 148). Paré and Smart provided an example of the report genre used by social workers where these rhetorical moves may not follow specific structural guidelines, but a report must describe, evaluate and assess a client. Regularities in social roles in the production of text, including writers and readers, also contribute to the development of a genre. Paré and Smart explained that these social roles can govern who can say what and to whom. Paré and Smart described regularities in composing practices ranging from information gathering to writing and rewriting individually and collaboratively. Regularities in the composing processes could determine which perspective a text is written from and what content is included.

Implications of AT and RGS for Writing Studies

In addition to the immediate context of a certain text, genres also exist within larger systems of activity that are too often ignored in writing research. Prior (1998) contended that this tendency is based on structuralist approaches to language research, such as Saussure's, which highlight decontextualized patterns more than the reality of the sometimes complex networks and histories in which genres are embedded. Structuralist approaches tend to place the researcher outside of and above the context of the object under study and involve decontextualization, abstraction, and subordination of the elements of the phenomenon (Prior, 1998). Prior suggested that a socio-historic approach based on Vygotsky's ideas, which accounts for the multiple activities that occur alongside and within literate activity will provide a more useful framework for writing research. Devitt (2004) also recommended retaining complexity while conducting research as opposed to attempting to simplify genres and social situations and, by doing that, ignoring the multi-faceted and sometimes indistinguishable lines of reality.

Russell (1997) drew on Leont'ev and Bazerman to develop a way of depicting complexity of activity in what Bazerman (1994) refers to as systems of genres, where genres are represented as activity systems that interact with neighbouring systems of genre. Russell described how a complex activity system such as a university, "brings together a wide range of other activity systems with vastly different and often contradictory object/motives" (p. 525). A complex activity system can be comprised of many sub-activity systems, but also be interconnected with other complex systems. Russell provided the example of a university Biology course that is within a complex university activity system and interacts with other sub-activity systems such as a

professor's research activity system, which in turn interacts with the systems outside of the university such as government agencies.

"Chronotopic laminations" provides another perspective on the complexity of genres and writing also acknowledges the multiple roles and activity systems that one writer participates in simultaneously (e.g., Lundell & Beach, 2002; Prior & Shipka, 2002). Prior and Shipka (2002) built on Bakhtin's notion of the chronotope to develop the concept of chronotopic laminations. Chronotopic laminations include the many activities that span different times and spaces that may affect a particular activity, in this case the writing activity. Through this lens it is possible to understand how a text in a particular genre may be affected by the preceding texts of that genre, but may also be greatly influenced by texts of other textual and non-textual genres.

Another theory related to the study of genre and mediated action referred to by Prior (1998) is Gibson's theory of affordances which is helpful in drawing a connection between a rhetorical situation and the grammar that is commonly used in a particular genre. Affordances imply that things, in this case grammar, inspire certain perceptions or actions, but that an action or perception exists in relation to the actor using the thing. For example, an affordance of the passive voice is to place inanimate objects in the role of subject, or to place an animate object that has been acted upon in the role of subject to change the focus from the doer of the action to the receiver of the action. This affordance lends itself to scientists who often study inanimate objects or act upon animate objects, such as biologists. Conversely, this affordance does not easily work in the discipline of History where people are often the subjects of a study. In trying to complicate the genre, and the context of grammar, the entire social situation may demonstrate what affordances

the passive voice has and why it appears to be used more commonly in particular contexts.

Learning and Teaching Genres

Precisely how inexperienced writers learn to navigate genres and the actions these genres perform is not yet completely clear, but theories of situated learning, specifically Guided Participation and Legitimate Peripheral Participation, help explain how genre knowledge is acquired. Theories of situated learning are based on the belief that learning is social and occurs through socially-embedded, authentic activity (Brown, Collins, & Duguid, 1989; Lave & Wenger, 1991; Rogoff, 1990).

Situated Learning

Foundational to theories of situated learning is the idea that learning does not occur in a vacuum, nor is it decontextualized (e.g. Brown, Collins, & Duguid, 1989; Dias, Freedman, Medway, & Paré, 1999; Lave & Wenger, 1991; Rogoff, 1990). Theories of situated learning are based on the ideas of Lev Vygotsky who argued that human activity is both socio-culturally situated and mediated by tools and signs, such as language (Rogoff, 1990; Wertsch, 1991). From this, learning is seen as socially embedded and occurs through authentic situated activity. Lave and Wenger (1991) explained that the emphasis of situated learning is “on comprehensive understanding involving the whole person rather than ‘receiving’ a body of factual knowledge about the world; on activity in and with the world; and on the view that agent, activity, and the world mutually constitute each other” (p. 33). Two analytic perspectives that have developed from

theories of situated learning are GP and LPP, which are explained further in the following sections.

Guided Participation

Guided Participation is based on and extends Vygotsky's concept of the Zone of Proximal Development (ZPD), which is defined as the distance between a child's actual developmental level and his/her potential developmental level as demonstrated by what he/she can perform with the help of a parent or more skilled peer (Rogoff, 1990).

Vygotsky used the notion of the ZPD to describe the developmental process of children. He claimed that human development is first social, or intrapsychological, and occurs between people (Wertsch, 1991). Then development appears within the child, or interpsychologically, as a process referred to as internalization (Wertsch, 1991). Development is necessarily and unavoidably socially situated, and in the ZPD, it is both culture and cognition that develop (Rogoff, 1990).

Building on the concept of the ZPD, according to Rogoff (1990), GP emphasizes shared problem solving "with an active learner participating in culturally organized activity with a more skilled partner" (p. 39). Rogoff also stressed the importance of a shared focus and purpose in an activity between the learner and more skilled partner, which she called intersubjectivity. In GP, learning occurs through mechanisms of shared activity, where the more skilled helper engages the child in repeated cultural tasks. The child is given gradually increasing responsibility until eventually he/she is able to perform these tasks on his/her own (Rogoff, 1990).

Although GP addresses the development primarily of children in middle-class families, the concept has been applied to understanding the learning process as socially situated or as “learning through doing” (Freedman & Adam, 2000). Genre acquisition, through the lens of GP, is social and takes place as the learner engages in authentic writing tasks with the guidance of a teacher. Through repetition and gradually increasing responsibility, the learner eventually acquires genre knowledge and is able to perform on his/her own. GP best describes the process of learning in a classroom setting (Freedman & Adam, 2000).

Legitimate Peripheral Participation

Another way of perceiving the learning process is through Legitimate Peripheral Participation (Lave & Wenger, 1991). LPP describes a process of learning where learners begin at the periphery of a community and eventually, through participation in culturally-situated activity move towards full participation and mastery of the socio-cultural activities. In LPP, learning occurs in what Wenger (1998) referred to as a community of practice (CoP) in which identities are constructed through on-going negotiation with members of a community. CoPs “are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly” (Wenger, 2005, paragraph1). Learning in a CoP takes place as a newcomer participates in authentic activity within a community and moves towards full participation as the ways of thinking and doing are learned tacitly and explicitly through this authentic activity. LPP best describes learning that occurs in the workplace (Freedman & Adam, 2000).

The importance of these theories of situated learning for the study of writing is not only in the ways of conceptualizing how genre knowledge is acquired, but also in explaining how genres and disciplinary cultures are passed on through the intertwined processes of participation and reification. Wenger (1998) described participation as “both action and connection” (p. 55). Reification, in Wenger’s terms, is the process whereby culture, ideas, symbols, and abstractions are made into concrete forms. He provided the example of a medical claim, which reifies the social roles and ways of thinking of a medical CoP (p. 59). For Wenger, meaning is negotiated in CoPs through the complementary relationship between participation and reification. The unity and duality of participation and reification is similar to Miller’s (1984) conceptualization of genre as typified social actions where members of a community, through participation, perceive recurrent situations and begin to respond in typified ways. These typified actions are genres, or reifications of the typified actions. By viewing genre acquisition as a process of moving from peripheral to full participation, we can see how genres are acquired, but also how they develop, are maintained, and evolve in communities. This concept is important to the present research study. The following chapter outlines the methodology of the present research study.

4. Methodology

Overview of Chapter

This chapter discusses the methodology of my research study. I begin with a discussion of the perspectives and approaches that I have chosen for my study. Then I describe my participants and types of data, as well as the methods for recruitment of participants and data collection. Then I outline the steps I took for the analysis of data, including Geisler's (2004) methods for systematic coding of language and constructivist, or modified, Grounded Theory (Charmaz, 2000, 2006) methods for coding text. The last section is a discussion of my method of triangulation through member checks.

Introduction

The study has been developed from the social constructionist perspective and uses Grounded Theory (Glaser & Strauss, 1967; Strauss & Corbin, 1998) as a framework. My particular approach is a modified, or constructivist version of Grounded Theory developed by Charmaz (2000, 2006). The study has an emergent design; that is, in the process of the data analysis, some research questions were modified and adjusted.

While in its early stages, Grounded Theory was a method of qualitative inquiry where new theories were discovered in the data through simultaneous data collection and analysis, as opposed to testing data against existing theories and hypotheses (Glaser & Strauss, 1967; Strauss & Corbin, 1998). Its modified, constructivist, version moves away from the positivistic beginnings and acknowledges the role of the researcher in the interpretation of data and knowledge construction (Charmaz, 2000, 2006). Grounded

Theory lends itself to my study because it allows for the active exploration of the context for writing scholarly articles for the purposes of developing a theoretical framework reflected by the data collected (Charmaz, 2000, 2006).

I designed my research as an exploration of two case studies, where each case focuses on writing practices in a discipline, specifically Biology and History. According to Yin (2003), there are three conditions that favour a case study method. First, the research questions are of the “how” and “why” nature and seek explanations. Second, a case study is appropriate for investigating contemporary events. Third, the researcher is unable to manipulate the phenomenon under study. My research questions and objects of study meet these conditions. The nature of my study is collective (or multicase), in that it includes multiple cases, and instrumental, in that the examination of these cases will provide further insight into a larger issue (Stake, 2000). Specifically, the collective, instrumental nature of my study will help develop knowledge of the socio-rhetorical disciplinary contexts of the academic disciplines of Biology and History with the view that these two case studies will provide better understanding of a larger representation of academic writing. Drawing on Prior (1998) and Devitt (2004), I will use case studies to help avoid creating simple rules and patterns of textual features, such as the passive voice and author pronouns, and also to help retain the complexity of the activity in which textual features are embedded.

Participants and Materials

According to Geisler (1994), expertise develops on a continuum as scholars learn to work within two problem spaces: domain content and rhetorical process. Such a

perspective emphasizes the interconnectedness of form and content, a recurrent theme in new conceptions of genre. In order to better understand the generic and contextual differences in disciplinary writing, I chose to focus on texts produced by scholars that have mastered the genres of their fields, or, in Geisler's terms, experts.

Experts or potential participants were identified as full professors with an extensive publication record and recognized scholars in their fields as apparent through awards and positions as research chairs. Professors that met these qualifications were located by searching a Canadian university's departmental website for faculty listings. Faculty websites are in the public domain and contained information about professors' credentials, research interests, awards, and publications. Faculty websites were scanned for recent publications, specifically for single-authored journal articles to ensure that participants were the primary authors and could speak with authority on the content and composing process of the articles. Potential participants were sent an invitation to participate via email explaining the details of the study and timeline for participation. Of the professors who showed interest in participation, I chose two professors from the department of Biology and two professors from the History department.

One participant from Biology, herein referred to as KS, is a full professor cross-appointed to the Biology and Chemistry departments as well as holding a professor's position in the University's Institute of Biochemistry. He began his career in 1971, and while he thinks of himself foremost as a biochemist, he also considers himself a part of many communities including Zoology, Molecular Biology and Genetics. His success as a scholar is largely dependent, in his opinion, on the interdisciplinary nature of his career. KS is also considered as one of the top 1% highly cited authors (see Measures of Success

below). KS explained to me the difference between two genres in Biology, the research article, which has multiple authors, and the review article, which tends to have one author. Out of KS's extensive publication list, I chose a research article with multiple authors and a review article of which he was the sole author to compare the differences and similarities between the two genres.

The other participant from Biology, herein referred to as LF, is a full professor appointed solely to the Biology department where she also holds a position as the graduate chair. Her research interests lie in landscape ecology and she is one of the directors of the Geomatics and Landscape Ecology Research Laboratory, which is a joint laboratory with the Geography department. Her career began with her undergraduate degree in 1981, and, similarly to KS, she has also held a number of research and professorial positions across North America. LF provided me with two articles: a review article of which she was the sole author and a research article with multiple authors. Along with the research article, she also provided me with copies of previous drafts and notes for the research article.

For the participants from History, one participant, herein referred to as DM, is a full professor appointed to the History department. She has varied research interests that have evolved slowly through her career and is currently focused on the history of children's rights. DM began studying History in 1979 in her undergraduate degree and currently holds a position as graduate supervisor in the department. She also holds various editorial positions at scholarly journals in both French and English. The article she provided me with addresses children's rights in Africa in the 20th century. In addition to the published article, DM also gave me access to drafts of the paper that were rejected

from other journals and email communication from editorial members and colleagues regarding revisions for the article.

The other History participant, PW, is also a full professor in the History department, but also serves as director of the university's Centre for Initiatives in Education. She is a scholar of Victorian England and the article she provided me focuses on adoption in late 19th century England. In addition to the article, during the interview session, I was able to browse through the various primary sources incorporated into the article she provided me with. Her career in History began at the graduate level in 1982.

This study has been reviewed and approved by the Carleton University Ethics Committee (See Appendix A, p. 106). Participants gave their informed consent.

Research Site

The site of this research study was at a Canadian university in the departments of Biology and History. The research site also included published articles from six different academic, peer-reviewed journals.

Data Collection

I gathered multiple types of data and performed two types of analyses of the data. Data included articles published in scholarly, peer-reviewed journals, drafts and notes of these published articles, e-mail communication between participants and peer reviewers, and finally, recorded and transcribed interviews with the participants. These multiple data sets allow me as the researcher to study a subject from a holistic perspective and are

necessary for answering the research questions regarding complex connections between texts and their social contexts. See Appendix B on page 107 for the chart of all primary and secondary sources.

Article Data Collection

Once participants were identified, I obtained electronic copies of journal articles, or links to an electronic journal in which articles were published. Three participants also provided me with drafts, notes and emails from peer reviewers that were created during the composing process of these articles.

Interview Data Collection

Each participant agreed to a semi-structured, discourse-based interview, which elicited information regarding the purposes for writing the article, the intended audience of the article and the composing process. A discourse-based interview is developed for the purposes of revealing writers' tacit knowledge about their writing processes through discussion about specific areas of a text chosen beforehand by the researcher (Odell, Goswami, & Herrington, 1983). Interview questions were based on the results of the textual analyses of the written data (see Appendix C, p. 108). Interviews were recorded and transcribed by myself.

Data Analysis

Geisler's Methodology for Systematic Coding of Text

The study employs multiple methods of analysis and includes large amounts of written and verbal textual data, such as modified Grounded Theory and Geisler's (2004) strategy for analyzing language. Geisler's (2004) strategy complements a Grounded Theory approach and is particularly useful for naturalistic methods of inquiry and may be useful for descriptive analyses, and it also. Geisler's strategy involves a simple method for systematically coding and analyzing language data through the use of the computer program Microsoft Excel. The researcher chooses a unit of analysis that is most suitable to his/her type of data and research questions and then systematically codes these units in Excel during the analysis stage. Data are easily stored and labeled in one workbook with multiple worksheets for each workbook, which enables comparison and contrast between different types of data and between cases. With a variety of tools available in the program, data are easily sorted and filtered, and the frequencies of textual features counted. For this part of my analysis, I used only the strategies that were relevant and useful for my data set and research questions. The following is the method I used for my initial textual analyses.

To begin, I made my unit of analysis the T-unit, as outlined by Hunt (1977), who defines a T-unit as "a single main clause plus whatever subordinate clauses or nonclauses are attached to, or embedded within, that one main clause" (pp. 92-93). Texts were first segmented by T-unit and converted into a table format in Microsoft Word, so that each T-unit occupies one cell. Next, passive constructions were identified in each T-unit, italicized, and then set apart in a column to the right (see Figure 1, p. 34 for an example).

Determining passive constructions can be somewhat problematic, as some adjectives resemble passive verbs. To help distinguish passive verbs from adjectives, I followed Riley's (1991) guidelines for determining passives. To determine passive verbs, a verb had to meet the following criteria:

1. A form of auxiliary *be*, followed by the past participle form of a main verb.
2. Either an explicit agent, retained in a *by*-phrase, or an implicit, reconstructible agent (Riley, 1991, p.243)

My analysis did not include past participle clauses. Past participle clauses that postmodify a noun can also resemble a passive verb; however, the past participles in these cases are not main verbs in a clause. For example, "The scientific quality of the knowledge *gathered by* the SCIU met with important criticism" (DM_T_2004, 97)¹.

The resulting table was then exported into an MS Excel workbook. Each T-unit was given a code to identify the article and author and a number for easy identification at later stages of analysis (see Figure 1, p. 34). Each of the six articles was stored in a separate worksheet within the same workbook.

Once all of the articles were stored in MS Excel, I added additional categories in the columns to the right. First, I identified all instances of personal or possessive pronouns that referred to the author, the research team, or the community of researchers. These I refer to as author pronouns (Hyand, 2002). Author pronouns included in this category are *I*, *we*, *my*, *our*, etc. Pronouns that referred to the work of others, such as

¹ I have not provided the citation for the published article to protect the identity of the participant. I have used the code that I assigned textual segments during coding. This method is used throughout the thesis.

they, were not included since I was interested in authorial stance in the articles (Hyland, 2002).

For a more in-depth look into the purpose of each passive, I determined the class of passive according to function. The first function is phenomenal which, according to MacDonald (1994), “consist(s) . . . of the material that the researcher studies” (p.157). An example, taken from my sample text in History, is “Rosa *was found* by the Salvation Army in Rome” (PW_T_2006, 36). In this sentence, the author was describing the subject, in this case, an event in the life of a person, which happened apart from the author. The other function is epistemic which “consist(s) . . . of the methods, conceptual tools, and previous research that the researcher brings to bear on that material” (MacDonald, 1994, p.157). An example, taken from my sample text in Biology, is “Frozen tissue samples *were ground* into small pieces in a mortar and pestle under liquid N₂” (KS_TM_2006, 51). In this sentence, the researcher is describing the experimental procedures used on the subject, in order to obtain results.

For an overall analysis of the texts, I classified the main verb in each T-unit as follows: passive, transitive active, intransitive and copula. Since passive constructions may only be constructed from transitive verbs, it was important to determine the ratio of passive versus active transitive verbs for a more accurate frequency count of the passive voice, as noted by Rodman (1994) in a study of the use of the active voice in scientific articles. For the History articles, I also added one more category that accounted for passive verbs located inside direct quotes. This was not done with the Biology articles as direct quotes were rarely used, and no instances of the passive voice were located inside direct quotes. This also ensured a more accurate representation of the features of an

author's writing, since direct quotes are not the author's words (see Figure 1 below for an illustration).

#	T-Unit	Passive Verb(s)	Pronouns	Phenomenal/Epistemic	Quote?	Main Verb
DM 155	Finally, the method of 'ethnography-by letter' was not unusual to contemporary ethnographers.					copula
DM 156	The SCIU justified its relative expediency in gathering knowledge by the need to recover the practical role it had lost over the preceding decade.					transitive active
DM 157	For the same reason, presenters to the Conference <i>were invited</i> to be as 'lively' as they were 'scientific' in order that the 'public realize that it [was] urgent to intervene.	were invited		phenomenal	no	passive
DM 158	Answers to the questionnaire <i>were considered</i> not only for the knowledge they provided but for their value as publicity material.'	were considered		phenomenal	yes	passive

Figure 1. Sample of my use of Geisler's method for systematic coding of text

Finally, I followed Geisler's method for frequency counts. MS Excel is able to gather information from multiple worksheets in a workbook to determine frequency and relative frequency of the categories. Using Excel functions, I was able to calculate the ratio of passives and author pronouns per T-unit in each article, as well as the frequency and relative frequency of the additional categories: epistemic vs. phenomenal, main

verbs, and for the History articles, direct quotations. I stored these data in separate worksheets, one for the Biology articles and one for the History articles.

Grounded Theory Analysis

While the systematic coding and frequency counts in the articles yielded valuable data, the purpose of the study and the research questions required additional analysis that would account for the socio-rhetorical context of the texts. In order to gain this perspective, I used constructivist Grounded Theory (Charmaz, 2000, 2006) for both the article and interview data. Methods for Grounded Theory analysis were the same for both the article and interview data, so they will be described together.

The first step for coding the articles and interviews was to use line-by-line coding where each line of the data was coded with a short description (Charmaz, 2006). After the initial coding, I looked for repetitions in coding and grouped together similar codes and revised any codes that did not give an accurate description of the text. These initial segments served as units of analysis and were given descriptive codes. When the initial coding was complete the data were organized in MS Excel in the same workbook with other data, once again following Geisler's strategies. Each segment was given a document code and unit number for future referencing, for example, "LF_TI_2003, 70", where LF are the participant's initials, TI indicates a review article, 2003 is the date of publication, and 70 is the unit number.

Next, I gave each descriptive code a conceptual code as themes and patterns in the data began to emerge. The conceptual codes were revised several times as new themes developed. Finally, I began to connect the conceptual codes together into bigger themes

and began connecting the themes. For example, in one participant's interview, I gave one segment a descriptive code "how students respond to 'bad' writing" and the conceptual code became "teaching." Eventually, this segment became a part of a larger theme of Teaching and Learning (see Figure 2, p. 36).

Once the themes emerged and were saturated in the interviews and articles, as in no more themes could be identified nor combined any into a larger theme, I compared the themes from each participant's interview with the themes from their published articles in order to draw connections between the text and its context. I also compared the themes across cases for similarities and differences between cases and disciplines for both the articles and interviews.

Document Code	Unit #	CR	PW	Descriptive Code	Conceptual Code	Theme
PW_I_24/01/08	143		And particularly when I'm teaching I hate that stuff cause students get lost in it. And they're thinking, you know, "I don't know what you mean."	how students respond to "bad" writing	Teaching	Teaching/ Learning
PW_I_24/01/08	144		And it's difficult, although sometimes that stuff can be hard. So for example, when I went to SP's child studies class, none of the students got the little things.	what students don't understand	Peripheral membership in community	

Figure 2. Sample of coded interview transcript

As part of the Grounded Theory approach to my analysis, I also engaged in memo-writing (Charmaz, 2006), which acts as a method of tracking and implementing simultaneous data collection and analysis. From my initial coding stages of the articles

and interviews, I wrote short memos that reflected insights I found in the data, connections I was finding in the data, possible themes that were emerging, and theories that can be developed from and linked to my data. These memos also helped me to recognize gaps in the data, concepts and themes.

The emergent design of the study yielded a considerable amount of rich data. In order to make use of these valuable data from memo-writing and coding, following the principles of emergent study design, I adjusted my research questions during data collection and concurrent analysis to more accurately reflect the themes that were emerging.

Triangulation

Data and results were triangulated to avoid misrepresentation or distortion of participants' interviews and texts. The chosen method for triangulation was through member checks where participants were provided the opportunity to examine rough drafts of my thesis that involved data from their interviews in order to review my interpretation of the data for accuracy (Stake, 1995). Participants were offered the opportunity to provide a member check, but were not obligated to do so. Of the four participants, two provided me with suggestions for minor changes, but agreed with the overall accuracy.

The suggestions I received from my participants verified my interpretations of interview and textual data and allowed me to make some minor adjustments in order to construct a more accurate description of the socio-rhetorical disciplinary contexts for writing in Biology and History. Requests for revisions were minor; for example, LF

clarified my understanding of the publication process of review articles in Biology. My interpretation of the interviews was that when the participants are invited to write review articles that they would bypass the process of acceptance and rejection that research articles undergo when they are submitted to journals. LF explained “Most journals get external reviews of an invited review article, and most journals reserve the right to reject a review article if the reviewers and/or editor(s) don’t like it. However, this almost never actually happens” (LF, personal communication, March 25, 2008).

In the next chapter, I examine the socio-rhetorical disciplinary contexts for Biology and History as interpreted from the interviews using the methods outlined in this chapter.

5. Socio-Rhetorical Disciplinary Contexts

Overview of Chapter

This chapter includes observations from and discussion of the Grounded Theory analysis of the interviews conducted with the participants from the disciplines of Biology and History through which I seek to answer my first research question; what are the socio-rhetorical disciplinary contexts for writing in Biology and History? In order to answer this question I provide descriptions of the socio-rhetorical disciplinary contexts that emerged through the analysis of the themes that I observed in the interview data. Then, using AT, I discuss the differences and similarities between the contexts for writing in Biology and History.

Biology

That's not writing, that's typing.

– Truman Capote

As follows from the interviews with KS and LF, the socio-rhetorical and disciplinary context of Biology consists of collaboration between the participants, colleagues and students in research and writing. Through Grounded Theory coding, I identified four major themes, which consist of multiple sub-themes, that characterize the socio-rhetorical and disciplinary context of Biology, including *measures of success*; *working, writing, teaching; from lab to journal*; and *audience*. Below is a detailed

description of these themes as constructed from my interpretation of the participants' interviews.

Measures of Success

The scientific disciplines, including the discipline of Biology, have developed a systematic, almost mathematical method for establishing the importance of journals, articles, and scientists. At the Institute for Scientific Information (ISI), a database of journals, articles, and authors from the scientific disciplines contains information regarding the impact factors of journals and articles calculated through mathematical equations that take into account the number of articles published and number of citations for articles and journals. Depending on the discipline and areas of research, these numbers differ considerably, and do not work as a comparison between disciplines. A method for measuring the importance of a specific scientist is called the H-index, which forms the basis for a list of highly cited authors (*Thomson Scientific*, 1994, 2006). In respect to impact factors and the H-index, KS notes that "This is the ultimate in rating systems. It will be the next thing that administrators find to see who's hot and who's not" (KS, 09/01/08).

In addition to the established methods for measuring importance of publications and authors, there are other methods for measuring the importance or success of a particular person. The more obvious factors include positions held at academic and research institutions, as well as awards and honours received. Less obvious measures of importance may be reflected in publication types. For example, both participants mentioned that they were, and usually are, invited to write review articles. KS says that

editorial boards of journals make decisions about inviting scientists to write reviews by saying, “wow, we’ve looked at all these primary papers and if we have to have something on genes and a stupid animal that lives under a rock, you seem to be the guy, why don’t you write it” (KS, 09/01/08). From this, it seems that in order to be invited to write such articles, a scholar must not only be an expert in a domain, but also have some level of importance within the field.

The measures of success in the discipline of Biology appear to reflect values and work of Biology. In Biology, the work of a scientist can involve precise and mathematical examinations of phenomena that may have been manipulated in regulated and calculated processes. Likewise, measuring the success of a journal, article, or scientist is determined in a scientific manner with mathematical calculations of published articles and numbers of citations. This information is available online and accessible to editorial staff, universities, etc., and makes the importance of a person almost a fact rather than an opinion. For example, KS points out that he is one of the top 1% cited authors in the world not as a high opinion of himself but because this information is readily available to all who can access the ISI website information.

Working, Writing, Teaching

Within this major theme of the context for writing in Biology, I included three sub-themes that emerged through Grounded Theory coding of interview data: *Work*, *Collaborative and Individual Writing*, and *Teaching and Learning*. While each of these activities is somewhat distinct, in Biology they seem to be so intertwined that it is difficult to tease apart where one ends and another begins.

Working

Work includes all of the scholarly activities that are undertaken within the discipline. In Biology this includes data collection through carrying out experiments and recording and analyzing the results of these controlled experiments. Biologists may play a direct role in conducting the experiments to test hypotheses or it may be a matter of measuring results of a natural occurrence.

For KS, work involves controlled experiments on animals, where the environment of an animal is manipulated in order to achieve specific results. Analysis involves a number of forms of testing and quantifying results of the experiments. For LF, work is less manipulative and includes measurements and analysis of land features under various natural conditions or relationships between environment and change in animal habitats. Analysis also includes quantifying results of the studies conducted.

This work is highly valued and is given a high level of importance in written reports and published articles. This is evident in the extensive methods and analysis sections often included in research articles throughout scientific disciplines, including Biology. Work can be seen as the activity that leads to writing, and also the content of the biologists' written articles. The purpose for writing in this discipline seems to be, for research articles, to convey the methods, results and conclusions of these experiments to others' in the community, and, for review articles, to survey a large amount of work done by multiple scientists and assess what knowledge the field has and what a field still needs to learn. It is a means to an end, not an end in itself.

Collaborative and Individual Writing

In Biology, there appears to be two main genres of published articles: the research article and the review article. The research article tends to have multiple authors – usually a professor and his or her students – and the review articles tend to be single-authored.

The research articles, also referred to as primary literature by the participants, in Biology, are collaborative projects between students and a professor. KS explains that, depending on the level of experience or abilities of the students, the work and maybe portions of writing are often carried out by students, while the professor is lab leader and also does most of the idea generating and part of the writing. The published research articles often acknowledge joint authorship between a professor and the students who assisted in the work. KS explains that:

Everyone knows the student does the bulk of the actual bench work because I'm really old and drop things. Everyone knows that I pay for everything and what I do. That's the deal that everybody knows. If there's student and student and [K], then the first student did the bulk of the pile, this student did a significant amount of the pile. (KS, 09/01/08)

Review papers are most often written by one person and are an overview of the literature that exists on a certain topic or a review of papers presented at a conference. According to KS, students with exceptional writing skills and developed knowledge of the field might collaborate with him on some review articles.

Teaching and Learning

In the discipline of Biology, teaching or learning writing is almost the same as collaborative writing. KS and LF discussed the roles of their students in both conducting research and writing about their research. Unlike in a traditional classroom where students may write mock research reports as a way to learn how to write for their disciplines or workplaces, both participants' graduate students not only do the real research and not mock-ups, they also help the participants write the articles that are published in prestigious journals along with the participants. KS's style of teaching involves students beginning with small, authentic tasks and as they improve, they are given more responsibility and increasingly important sections to write. As mentioned above, students sometimes develop to a level where KS invites a student to help write review articles with him. He describes his style of teaching as follows:

Science training is much more like a guild. The old-fashioned guild system, right? Where, okay, you want to be a potter. You want to work in silver and make little things. You don't get silver first. You get mud. You work with mud for a bit, and then you work on pewter, and after a year you'll do silver. And you teach them how to make pots. I teach them how to fish, not give them fish. And the proof is in the pudding. Every single student we've ever had has gone out and got a job. We've never had a student that graduated without a job. (KS, 09/01/08)

The difficulty of distinguishing working, writing, and teaching in Biology comes from the fact that students are involved in the every step of the professor's work from experiment to publication. This arrangement in Biology is very similar to the process of

learning described in LPP. The students begin as legitimate peripheral members of the Biology community where, under the guidance of the old-timer's (professors), they conduct authentic tasks or the *work* in Biology. The professor most often writes up the results of the work, in the form of a research article, with students helping at various stages of the composing process, as well as to varying degrees. The students successfully learn how to write articles for publication not by practicing simulated course assignments first, but through what KS refers to as a scaffold process of participating first hand in published work. The learning occurs as students are exposed to the culture and work of the CoP of the discipline of Biology, and as they move towards full participation their involvement increases. This can be seen in the Biology students' taking on larger portions of writing, to co-authoring review articles with the professor, to eventually becoming full participants.

From Lab to Journal

In the discipline of Biology, the publication process is also connected to the purposes for writing. The process of publication from beginning to end is quite different for each genre of article. Both KS and LF indicated that research articles are always submitted to a journal in the hopes that they would be published. The process begins with the work in the laboratory with students, and then the article is written with students assisting in various degrees and sections of the writing. The purpose, therefore, is to share the results of a particular experiment with other researchers in the field. LF describes this purpose as such:

The purpose for writing articles is to communicate the results of the research.

The research is usually or always funded by . . . some kind of government money.

I think it's important for people that are being funded by government money to actually . . . see the results of that money, the research that has been done on that funding. (LF, 09/01/08)

Sometimes the article is accepted by the first journal and sometimes an article has to be submitted to a few journals before it is accepted. Whether it is accepted at the first journal or not, the article will be peer-reviewed and then the peer reviewers will always ask for revisions that may include anything from grammar and wording, to altering tables and figures. LF explained that sometimes this also includes requests for more data or different types of analysis.

For review articles, the participants are almost always invited by a journal or organization to write such an article on a particular subject. This is where the publication process begins. Sometimes the review is a survey of literature on one subject, and sometimes the review article requires that the author attend a conference and write a review of the papers presented at the conference. In these cases, the journal of publication is already known; however, the articles are subject to external review and the journal still reserves the right to reject an invited article that is not satisfactory.

For both genres of article, a large part of the publication process lies in the revision process. For both KS and LF, the bulk of the revisions is made with colleagues before articles are submitted to journals. LF takes advantage of weekly meetings with colleagues in her department at the university to share drafts and to gather suggestions for

revisions. In this way, she has already received a variety of perspectives on her research or reviews in the hope that the major problems in format, grammar, and presentation of ideas will be dealt with before going through the peer review system. As proof of this process, the notes that LF provided for the research article were all produced before submission to any journals.

Before submission to any journals, KS has a colleague assist in the writing and revision of any articles. Even after an article has been peer reviewed, this same colleague will assist with the revisions needed. He describes this colleague's role as follows:

There are people that make bricks for houses. Then, there are people that put bricks together roughly in houses, and get the woodwork done and walk away.

Then there's (sic) people that make houses livable. She makes our house livable.

(KS, 09/01/08)

For KS, one of the more difficult aspects of publishing is choosing which journal and which type of journal to submit an article to. The interdisciplinary nature of KS's work sometimes results in uncertainty of whether or not an article belongs in a biochemistry journal, zoology journal, or a journal about genes. Part of the writing process for KS is also deciding which type of journal he will submit an article to, and then adjusting the writing for that journal's audience (discussed further in the *Audience* section). However, often a journal will reject the article on the grounds that its subject is not the focus of that particular journal. In these instances, the journal will often recommend which type of journal the article would be suited for.

Apart from assistance in journal type decisions, KS views the peer review system as a formality and rarely heeds the advice or revision requests from peer reviewers. KS believes that:

The peer review system is overloaded and hopeless . . . Peer reviews turn down everything, everything I write; they're just incredibly hopeless and stupid. I would say the editors of journals are very high quality, but they need their reviewers. They cannot run that journal without reviewers. (KS, 09/01/08)

In order to bypass this process, he will often make a few conciliatory revisions and appeal to the editor about ignoring the remaining requests. Interestingly, KS keeps no record of drafts, revisions, or interactions between peer reviewers for any of his articles. As a result, KS is unsure how many times the research paper that he gave was revised.

Audience

According to the participants, audience has a great effect on the content and style of an article. The audience can be quite different for each participant, and even for each genre. KS belongs to a number of communities of researchers and his work is interdisciplinary. So, when he writes, either by himself or with his students, his audience plays a key role in the content of his article. For example, if an article is to be published in a zoology type journal, he explained that zoologists do not need lengthy descriptions of an animal, but they do need very detailed explanations of the biochemistry aspects of his research. The same pattern will follow depending on what type of journal he will publish

in and who will read the journal. To account for different audiences, he explains that he tries to tell his audience the aspects of his research they are not familiar with in their field so that everybody will understand his research. KS says, “Everybody has to know the answers. You know a set of things, you don’t know a set of things; therefore, I focus on this (what you don’t know) and tell you more about your life” (KS, 09/01/08).

For LF, her work may not be interdisciplinary like KS, but some of it can be fairly applied and the audience is not necessarily only other Biology researchers in her field. For the research article she provided me with, the results were also applicable to government agencies and transportation agencies that need to account for the problem she addresses in her research. Although the article is originally published in a scholarly Biology journal, it was also subsequently included in reviews for government agencies. As a result, the language that LF uses in her writing must be fairly understandable to not only her immediate colleagues, but to a wide range of audiences that may not share her same biological expertise.

Activity System of Writing in Biology

AT provides a useful framework for understanding the socio-rhetorical disciplinary contexts for writing in Biology. To begin, by drawing on Russell (1997), I will situate the activity of writing in Biology within a larger activity system comprised of all the sub-activity systems that my participants engage in as professors and scientists. Described above are the activities of working, teaching, and writing. While it is difficult to distinguish these as distinct activities, from my participants’ perspectives they are separate activities, even though highly connected and dependent on each other. While I

will be focusing on the activity of writing here, these related activity systems also contribute to achieving the object of the writing activity.

Figure 3 depicts the activity system for writing in Biology and all of the components of the system. The themes I identified through Grounded Theory coding of the interviews characterize the different nodes of the triangle, all of which play important roles in realizing the object, the published article. There are both collective and individual outcomes of the activity of writing. The collective outcome of the activity is a contribution of knowledge to a particular field of study. The individual outcome is increased success, measured through citations, increased impact factors and H-index, as well as invitations to write review articles.

Figure 3. Activity system of writing in Biology

The participants are the subjects of their respective systems, but if I were to look at the activity of writing in a particular genre, namely the research article, the participants' students would also be included as subjects (further discussion below). The rules of the activity include journal guidelines for publication, which in Biology can be seen in the types of revisions that peer reviewers and editorial members request, such as formatting, including figures and tables, and even, as LF discussed, performing certain methods of analysis.

The community for the activity of writing in Biology includes a wide range of communities for each participant. This includes the members of the participants' laboratories including their students, the department of Biology including the colleagues that each participant depends on for help in generating ideas and for revisions before submitting an article to a journal, but also includes each participants' discourse communities that will be reading their published articles. As evidenced from the interviews, the audience for the published articles is varied and plays a key role in the content and format of an article. For KS, this includes the different areas of research in which he participates. For example, the audience for KS's research article was zoologists and, therefore, the focus was not on descriptions of the animals, but on the methods since zoologists know about animals, but not about Biochemistry experimental methods. For LF's research article, her audience was not only other biologists but also government and transportation agencies, so she tried to make her articles understandable for an audience that is not familiar with the specialized terminology of her field.

The division of labour in Biology has an interesting intersection with the neighbouring activity of teaching and learning. As discussed above, working, writing

and teaching in Biology are so interconnected that it is difficult to distinguish one from the other (see Figure 4). The division of labour includes the roles of a researcher and a teacher in the neighbouring system of teaching. The students are also included in the division of labour and are the ones who do most of the “bench work” for the research and also contribute to article writing in varying degrees collaborating with the participants. For the review articles, the students are not always included in the work or the writing, but can sometimes assist the study participants in writing review articles after having moved sufficiently away from peripheral participation and towards full participation.

Figure 4. Activity systems in Biology

Figure 4 illustrates my interpretation of the activity systems of writing, working, and teaching in Biology. I have represented the separate activity systems as overlapping with each other to demonstrate how the participants perceive the activities as distinct, yet they are intertwined with each other so as to be difficult to separate the lines of where one begins and the other ends.

While the activity system of teaching is a neighbouring system, the nodes on the triangle are very similar, except for the motive or outcome of the activity. Since the writing tasks for the students represent an authentic activity, the students will also be subject to the same rules and share the same community as the participants. The immense overlap between the two systems can be described as a “chronotopic lamination” (Prior & Shipka, 2002) of activity, where both activities may inhabit a different time and space, but they come together at a specific time and place during the composing process of a specific article. Both activities are extremely important in understanding the relationship between context and text in Biology.

The mediating artefacts in Biology include tools such as computers and word processors, but also include the materials and methods of experiments and analysis. The mediating artefact that I further focus on is the generic properties of the written texts in Biology that enable and constrain the activity of writing and affect the textual features of the object in each discipline, specifically the use of passive voice and author pronouns. The details of this genre and its role in realizing the object of the activity system of writing are discussed in length in the following chapter.

Next, I outline the socio-rhetorical contexts for writing in History by the themes I identified in the interviews with the History participants. I organized the themes in a

much different way from the themes in Biology in order to highlight the differences and similarities between the activity of writing in the two disciplines. A discussion of the activity system of writing in History provides an illustration of how the contexts for writing are governed by different subjects, rules and communities, but share the same object and outcomes as in Biology.

History

History is a capricious character. It depends on who writes it.

- Mikhail Gorbachev

In stark contrast to Biology, writing in History, as demonstrated through the analysis of interviews with the participants, plays a main role in the activity of individual scholars who do not often collaborate, but form a community that shapes and sharpens each other's writing and understanding of history. Through Grounded Theory coding, I identified four major themes of the socio-rhetorical disciplinary contexts for writing in History as *measures of success*, *working through writing*, *audience*, and *teaching and learning*. Below is a description of these aspects as constructed from my Grounded Theory analysis of the interviews with DM and PW.

Measures of Success

Measures of success in History are not as mathematical and regulated as in the sciences, yet ways of measuring and talking about the success of a scholar are still in place. Both participants discussed the importance of publishing books to the success of an historian and PW noted that an historian who only published articles and never turned them into a book would be considered a failure. Both participants commented that historians do not publish as often as scholars of other disciplines. DM publishes articles about once every year or two, and these articles are almost always intended to be chapters in books later. PW has published two books, several articles and a number of book reviews in about 25 years.

Another way to measure the success of an historian is not the frequency of publication, but by the number of reviews of a book published by him/her. PW explains that in applying for an academic position or for a research grant, along with publications, an historian would also mention how many reviews a particular publication has received. In addition to the number of reviews, the place of publication is also important. Publishers have their own levels of importance within the field of History and a book may be considered more important by simply being published by a certain publisher or because it was reviewed by a certain publisher. This information would also be included with publications and numbers of reviews in job and grant applications.

Historians often measure the success of a book by the number of reviews that are written on the book, which, in a sense, is like measuring the success of written work by how much subsequent written work it produced. Where biologists' scientific or mathematical measures of success reflect the values and work in Biology, historians' measures of success also reflect the importance of writing to the work of an historian. While the number of reviews may measure the success of a particular book, the number of reviews an historian has written helps define his/her success as a scholar as well.

Working through Writing

From the Grounded theory coding, a number of themes relating to *writing* emerged, with all these themes interconnected with the theme of *work*. Both working and writing in History are somewhat solitary processes, and both participants claim that historians rarely co-publish. PW maintains that historians, "virtually never co-publish. You see in the social sciences . . . a list of 8 names, you would never see historians do

that! We are solitary people” (PW, 24/01/08). However, neither denies the role of colleagues in shaping their topics, perspectives on topics, and sharpening their writing skills.

If we define academic work as all of the scholarly activities that are undertaken within the discipline, then in History, work includes locating and examining primary sources. Going through archives and newspapers and other historical documents makes up the research process in History. Often the goal of this part of a historian’s work is finding the most obscure and interesting primary sources.

In contrast to biologists who seem to view writing as a task to complete *after* their work is finished, the writing process in History appears to be seen as a large part of the work itself. Historians seem to be very involved in crafting what they call their “stories” and using their words to convey the exceptional work they have done in piecing together information from primary sources. An historian does not describe a trip to the archives in an article or book, but is very intentional in displaying the primary sources used in an article. Primary sources are displayed through frequent direct quotations in the story; as well, descriptions of the primary sources are used. For example, PW does not say where she found her source, but simply describes the source: “Maynard's attempt at motherhood was exceptionally well recorded in the many hundreds of pages of her diary and her correspondence” (PW_T_2006, 11). PW also explained that notes on where and how primary sources are located are often included in footnotes, not in the main text of an article. The purpose for writing, then, seems to be to tell the story constructed from these sources and to extrapolate the meaning of the story. The point is not how and where the data were found, but the story constructed from the data.

One theme that appeared in the interviews with the History participants, which did not appear in the interviews with the Biology participants, was “perceptions of writing.” Both participants often discussed their individual writing habits and how they perceive themselves as writers, but also commented more generally on how historians write. DM explains that in her own writing, “I think I’m self-conscious with images, I can see metaphors, images. On that I’m quite self-conscious. When it comes to the structure of the narrative, then I’m less self-conscious” (DM, 17/01/08). PW explains how historians write in comparison to other disciplines, “And historians, in some ways, we’re all about specificity, right? One of the big differences between us and social sciences is historians are drawn to the particular” (PW, 24/01/08). These comments indicate the importance of the writing process to the work of an historian. Such importance seems to be placed on how well a story has been told and how well the importance of a story is to understanding a particular point in history, suggesting that historians need to reflect on their own writing skills in a way that scholars in Biology do not.

One thing that both participants discussed was the evolution of their research interests and their writing. Articles do not begin with the intention of being an article, nor do they often end at simply being published as an article in a journal. Many papers have evolved out of previous work and research. They begin as presentations at conferences and after a long process of perhaps several years may end up as chapters in books. The significance of this process to the work of an historian is that the writing process in History is in a constant state of change and often directs the other research that is being done. For example, DM’s article began as a presentation at a conference and

evolved into an article through a long process working with other scholars in different areas and eventually was developed into an article. The intention, however, was always to write a chapter for a book on a much broader topic. Out of this article, many other smaller research projects have emerged and the writing process for this particular piece of research is not necessarily complete. The continued development of a certain area of research from presentations into articles into books is part of the work of an historian.

Audience

While the participants in History are keenly aware of their own writing skills and abilities, they are also aware of their audience and how their words will be perceived by those who will read their work. They also find writing a negotiation between writing for scholars of their level of expertise and writing so that historians from other research areas or even their students will be able to follow the story and its subtleties of meaning. Both participants identified their graduate students and even upper level undergraduate students as one of the audiences for their articles, not only because students will read their work, but also because when they are writing they think about whether or not their students will understand the subtle aspects of the narrative. In reference to how much explanation of certain concepts should be included in an article, PW says,

There's always that knowledge stuff of how much do I put in? And I try to get people from across the whole profession to read it, so somebody from American history can read this . . . But it's a decision, because your book could end up, "Once there was this guy named Adam . . ." And, you know, how far back do you go? (PW, 24/01/08)

For DM, one of her research interests, and the subject of the article she provided me with, is the history of children's rights. For the article, the audience was quite varied due to the subject and where it was published. First, the article was published in *The International Journal of Children's Rights*, which is an interdisciplinary, not History journal. DM explains that, "there's a whole community of people who work with the notion and work in scholarly ways with the notion that read that stuff. But the historians of human rights read it as well" (DM, 17/01/08). This was not the first journal that the article was submitted to, and so considerable changes were made from previous drafts to accommodate the journal's focus on children's rights and the interdisciplinary community that reads the journal. In addition to the scholars of children's rights, the article focused on missionaries as well, and DM actively sought out communities of historians of Christian missions to share her work with, in order to obtain feedback from experts in the specific area.

For PW, the audience for the article on adoption in Victorian England was primarily other historians of Victorian England, but in writing, she hopes to reach historians from different areas as well. She finds the negotiation between writing for her peers and writing for her students a difficult balancing act:

But then there's a problem because if I make a point, my peers, then they're all like, "Yeah, I got it!" But another student in the child studies program, it went right past them. It's a decision. (PW, 24/01/08)

Peer reviewers are also considered another audience for scholars. The influence of this audience on content or form can be considerable in History (see sub-section *Teaching and Learning* below for a more in-depth description). For example, in PW's

article, one peer reviewer did not agree with an assumption that PW had made about a certain interaction between two people. While PW disagreed with this comment, she still added a qualifying statement about the situation in the article. She says, “This other reader said, you have no idea what happened there . . . So, I changed it to a slightly sardonic comment in response to that” (PW, 24/01/08).

Teaching and Learning

While teaching and learning to write in Biology are closely related to the work and writing process, in History, the place of teaching and learning is very different. There also appears to be a very different approach to learning writing while a student of History and throughout one’s career as an historian.

First, from my interview data, writing instruction at both the undergraduate and graduate levels in History appears to take place mostly in the classroom with assignments designed specifically for classroom use. DM teaches a graduate course on theory and methods, some of which touches on writing for History, and she uses a textbook on writing in History. Apart from the textbook, DM also discussed how the types of comments she makes on student writing and is not effective in terms of helping students learn that narrative is important to writing in History. When describing her development as a teacher of writing in History, DM says,

I get more self- conscious of how I teach and how I don’t, besides saying to my students, that’s a good story, . . . you write well. I don’t say, that’s a funny plot or, I don’t comment on that level. (DM, 17/01/08)

It appears that a large part of students' exposure to the genres of History is through reading the genres. However, interestingly, PW seems to shield even graduate students from reading very difficult writing by some scholars, even when it is extremely important to the field. DM discusses her own experience of learning to write in History: her writing development has been through suggestions and feedback from supervisors and peers throughout her career.

In comparison with Biology where students work and write alongside their professors and learn the Biology genres hands-on, both participants claim that historians rarely co-publish, which means a forum for learning to write in this manner may not exist in History. From the interview data, it seems that teaching writing to students in History can be described by the GP model. Students are guided along by their professors through classroom instruction and feedback on written work, which is done repeatedly throughout a student's education. This appears to extend from undergraduate studies through doctoral studies. DM referred to her doctoral advisor who would point out the weaknesses in her writing, particularly her need to develop story-telling skills. Despite a lack of structure for learning to write by co-authoring in tandem with professors, as it occurs in Biology, both participants have nevertheless learned to write for their discipline successfully.

It also seems that, in terms of the participants learning and developing their own writing skills, the revision process in History plays a far more important role than in Biology. For example, DM discussed how important peer review comments were for her writing, and how seriously she took the suggestions for improvement. Her dependence on such feedback was both for developing her knowledge of different research areas and

also for honing her writing skills in English since she is not a native English speaker. When the paper on children's rights was first rejected, she sought out colleagues to read the article and provide suggestions for improvement. She also gathered all of the comments from editors and peer reviewers in order to understand what changes were needed to improve the quality of content and form in her article. PW also made mention of seeking feedback from peers before submitting a paper to a journal. This is markedly different from the Biology participants' perspectives on the role and usefulness of the peer review system.

In addition to seeking feedback from peers and taking editor and peer review comments seriously, DM also actively pursues feedback from a number of communities. For example, during the process of developing the article on children's rights in Africa, DM presented the paper at conferences for different fields such as the history of missions and the African seminar at the School of Oriental and African Studies with the purpose of learning more about those fields and enriching the article. While speaking of further research she would like to pursue that has developed from the article on children's rights, DM speaks of the various schools that she would like to visit and conferences she would like to present at in order to improve her writing and knowledge.

For PW, the role of the peer review system was not as important as it is to DM, but she discussed a few examples of how peer feedback helped her improve her writing and even change certain aspects of her writing. For example, specifically with the article she provided me with, peer review feedback was helpful in suggesting sources that she needed to include in her work and minor revisions in language and format.

Activity System of Writing in History

As can be seen from my observations from Grounded Theory coding of the interviews, the activity of writing in History differs in significant ways from Biology. Before delving into the specifics of the activity system of writing in History, it is important to draw a distinction between the make-up of the sub-activity systems in History and Biology. As previously discussed, the large activity system of a professor in Biology includes separate sub-activity systems for writing and for working. In History, writing and working are so intertwined that they can be considered the same activity system. This difference in sub-activity systems is one of the defining factors in the differences in socio-rhetorical disciplinary contexts that influence the textual features of written genres in each discipline.

Figure 5 illustrates my interpretation of the activity systems for writing and working, teaching and learning in History. I combined working and writing as a single activity to emphasize the writing as the same activity as working, in contrast with Biology. The activity systems of writing and working and learning are overlapped to show how these two systems are intertwined and occur alongside each other. The activity system of teaching is completely separate from the other two systems to demonstrate how they appear to be separate activities in History.

Figure 5. Activity systems in History

Another important distinction to make is between the goals of writing in each discipline. Since my study is limited to journal articles, I have labeled the object of each discipline's writing activity as a published article. However, the ultimate object of an Historian's writing activity appears to be a published book, and the articles are often written with the intent of becoming chapters in a book. In this way, an article can be seen as one of a series of actions in the activity of book writing. As in Biology, the ultimate

collective outcome is contributing to the knowledge in a field of study and the individual outcome of gaining further success. Figure 6 shows the activity system of writing in History.

Figure 6. Activity system of writing in History

The subject of the activity system for writing is an individual author, in this case, each of the participants. As both participants pointed out, historians tend to write alone, and, therefore, writing in History is not a collective activity. This presents interesting implications for teaching and learning genres in the discipline as well that are discussed in chapter 7, p. 97.

The rules for writing in History, as in Biology, also include journal guidelines for publishing. Guidelines include format and structure, but also style formats for footnoting and citations. A specific example of the role of rules from my interviews is PW's frustration with the specific rules for citation styles in the journal that her article is published in.

In general, History articles abide by a Humanities format of footnoting, where historians include much of their information regarding research methods. PW's article was published in a journal that follows APA format and does not allow footnoting. This primary contradiction at the rules node of the activity system (Engeström, 1999) provoked a secondary contradiction between the rules node and the mediating artefacts node. The mediating artefacts in the History activity system include generic properties, such as placing important research notes in footnotes. PW had a double bind where she needed to conform to journal guidelines in order to be published, but she wanted to follow generic methods of footnoting. This in turn resulted in a tertiary contradiction where PW had to adjust her composing process in order to convey data that normally belong in footnoting, but without breaking the flow of the story.

The community of the historians includes the department of History and the participants' colleagues who provide feedback and suggestions for revisions in drafts of their articles. The community also includes the discourse communities that each participant is a member of. DM is a member of many communities with very different focuses, but also part of a greater community of people interested in children's rights, not all of whom were historians. The article she provided me with was written for the community interested in children's rights, but also for a smaller community interested in

the history of Christian missions. PW's discourse community consists only of historians, but includes a large community interested in Victorian England and a smaller community interested in family history. The multiple communities of each participant functioned as their audiences as well. The audience played a large part in shaping the content of their articles. Students were also considered an audience for their published articles and can be included in the community node for the activity of writing in History. In contrast with Biology, the students in History are not directly involved in the activity of writing and there is only a tenuous connection of audience between the activity of writing and the neighbouring activity of teaching. Whereas the activities of teaching and writing are laminated in Biology (Prior & Shipka, 2002), the activity of teaching in History remains a neighbouring activity system.

The division of labour in History differs considerably from that of Biology. The labour of research and writing is completed almost solely by the participants, but in some ways, the peer review system and discourse communities can also be included in the division of labour. Especially for DM, while she writes alone, she relies heavily on and even seeks out help with the composing process from her communities, editorial members and peer reviewers. The composing process is shaped and influenced by the feedback she receives from these groups of people and even carried into future writing projects.

The students in Biology seem to begin learning genres while engaging in laminated (Prior & Shipka, 2002) and authentic activity, but learning genres in History appears to begin mostly as simulated classroom tasks, and then through authentic activity when an historian approaches full participation. It is through this division of labour

between the historian, his/her discourse communities and peer reviewers that an historian begins and continues to learn to write the genres of History. Thus, there is a chronotopic lamination (Prior & Shipka, 2002) of the activities of writing and the participants' learning in History, as opposed to a lamination between writing and teaching in Biology.

The last node in the activity system to be discussed is mediating artefacts. The mediating artefacts in History include tools such as computers and word processors, but also include the data such as primary sources. The mediating artefact that I focus on is the generic properties that enable and constrain the activity of writing and affect the textual features of the object in each discipline, specifically the use of passive voice and author pronouns. The details of this genre and its role in realizing the object of the activity system of writing are discussed at length in the following chapter.

6. Text in Context: A Textual Analysis of the Use of the Passive Voice and Author Pronouns as Generic Properties of Academic Articles

Overview of Chapter

This chapter includes the results and discussion of the application of Geisler's (2004) methods for systematic coding of streams of language and Grounded Theory coding to the analysis of interviews and articles. By connecting the text to the socio-rhetorical disciplinary contexts in Biology and History, I seek to answer my second research question: What are the differences in socio-rhetorical disciplinary contexts in History and Biology that may account for the differences in textual features, specifically in frequency and function of the passive voice and author pronouns? In this chapter I will elaborate on how textual generic properties of scholarly articles serve as mediating artefacts in the activity of writing in Biology and History. Through the lens of AT and RGS, I will demonstrate how grammar features, specifically the passive voice and author pronouns, do not "merely exist," but act.

Results of the Application of Geisler's Method for

Systematic Coding of Language

The results of the textual analysis conducted following Geisler's methods for systematic coding of language (Geisler, 2004) are shown in Tables 1 and 2. Table 1 indicates the average number of passive constructions and author pronouns that occur in each T-unit. The frequencies for the History articles have been adjusted to exclude

passive constructions inside direct quotations to account for only the passives that the authors wrote themselves.

Table 1

Passives and Author Pronouns per T-unit in Articles

Article	T-units	Passives	Pronouns	Passive/ T-unit	Pronouns/ T-Unit
<i>BIOLOGY</i>					
KS – Review Article	129	41	6	0.317	0.046
KS – Research Article	185	126	13	0.681	0.070
LF – Review Article	283	69	21	0.243	0.074
LF – Research Article	99	29	12	0.292	0.121
<i>HISTORY</i>					
DM	383	44	3	0.115	0.008
PW	541	100	0	0.185	0

Table 1 indicates that the frequency of the passive voice and author pronouns, i.e., the average number of passives and author pronouns per T-unit as reflected in the respective columns of the table, is higher overall in the Biology articles (0.243-0.681 compared to 0.107-0.183 in History articles). The frequency of author pronouns is also higher in Biology (6-21 occurrences compared to 0-3 in History articles). There is considerable variation between the Biology articles, with the research articles having a higher frequency of passives and author pronouns, and with KS using passives more

frequently and LF using author pronouns more frequently. There is little variation between the History articles, where only DM used author pronouns.

Table 2

Passives Classified as Epistemic or Phenomenal

Article	Epistemic	Phenomenal
<i>BIOLOGY</i>		
KS – Review Article	15 (36.6%)	26 (63.4%)
KS – Research Article	105 (83.3%)	21 (16.7%)
LF – Review Article	61 (88.4%)	8 (11.6%)
LF – Research Article	22 (75.9%)	7 (24.1%)
<i>HISTORY</i>		
DM	3 (6.8%)	41 (93.2%)
PW	5 (5.0%)	95 (95.0%)

Table 2 indicates the classification of each passive as either epistemic or phenomenal; the number without brackets indicates the actual number of each class of passive and the number inside brackets indicates the percentage of each. With the exception of KS's review article, the Biology articles had a much higher frequency of epistemic passives (36.6% - 88.4% as compared to 11.6% - 63.4% for phenomenal passives). The History articles have a much higher frequency of phenomenal passives (93.2% - 95.0% as compared to 5.0% - 6.8% for epistemic passives).

The frequencies of the passive voice and author pronouns and the function of the passive voice in the scholarly articles provide insight into how the genres differ quantitatively. An examination of the use of the passive voice and author pronouns within the context of the rhetorical structure of the article enriches and complements the

data provided by the textual analysis conducted with Geisler's (2004) methods. The following section includes observations from Grounded Theory coding of the articles.

Observations based on Grounded Theory Coding

The conceptual codes and themes that I identified in the published articles differed from the coding in the participants' interviews. The themes I identified in the interviews helped me to construct the socio-rhetorical disciplinary contexts for Biology and History, but as I began to identify themes in the published articles, I discovered that the themes resembled what Paré and Smart (1994) referred to as rhetorical moves, a term which I will use instead of themes in the discussion of the articles.

Biology Articles

For Biology, I had the advantage of analyzing two genres, which both participants referred to with the same terminology. The two genres are primary literature, or the research article, and secondary literature, or the review article. Interestingly, the participants described the genres as almost formulaic. KS explains that the differences in language between the two genres are that, "The review articles have to be inclusive, these (research articles) have to be more declarative and fact-based" (KS, 09/01/08). KS likens scientific writing to Pre-Renaissance paintings:

Scientific paper writing is like painting in the 1300's. Pre-Renaissance paintings, right? Paintings of that time were all flat, no perspective whatsoever, they all had to have Jesus in the middle, and very often they had a big gold halo around their heads. So the old 1300's paintings had elements that are required, elements that

are forbidden, and it has to, by and large, tell the story of Jesus. This is exactly the same; this is not flowery writing where they can write anything they want. Sentences have to be of a certain form and format. Short, declarative sentences . . . All materials and methods have to be here. Our result and discussion, figures and tables have to be over here, just like the Pieta. And then it has to basically have a discussion at the end and an intro. (KS, 09/01/08)

The preceding description suggests that scientific writing is formulaic and that in order to know how to write a scientific article, one must only know the sections that must be included in an article, in what order they must be written, and that creativity or variation is unnecessary, perhaps even unwelcome. However, my observations from modified Grounded Theory coding (Charmaz, 2000, 2006) revealed that writing in Biology is far more complex.

Research Articles

There is considerable literature about scientific writing that acknowledges the so-called IMRaD formula – Introduction, Methods, Results and Discussion – it employs (Swales, 1990, 2004; Hyland 1998; Bazerman, 1988). Both participants noted the importance of following the typified format for published research articles. For example, LF discussed the importance of the sequence of each of these elements of a research article to the internal logic of the article.

Yet, despite this common belief that scientific writing is formulaic, the results of Grounded Theory coding of the articles that the biologists had provided me with yielded

much different results. The research articles did include the typical pattern of methods, results, and discussion; however, the papers differed in very interesting ways. The rhetorical moves in each article were quite different, yet the purpose of each genre was quite similar. For example, both authors included important elements discussed by Swales (1990, 2004) such as *known information*, *research gap*, and *results*, but also included *procedure* and *possible explanations for the phenomenon* observed in the results of the participants' research.

The differences in rhetorical moves between the research articles were significant. For example, KS included lengthy phenomenal descriptions of the subject being studied, as well as explicit explanations of the importance of his study and its results. In contrast, LF did not include descriptions of the subject being studied, but did include explicit explanations of the purpose of the study and how it fits into current research trends. Since the purpose of LF's study was to discover a possible factor in an ecological problem, the research article also included recommended solutions for the problem.

The reason for the differences between the two research articles appears to be a reflection of the different audiences. As explained in chapter 5 (p. 49), LF was writing for her colleagues and fellow biologists, but also for government and transportation agencies that may benefit from her research. LF's awareness of this audience helps to explain the more explicit explanations for the purpose of the article and the inclusion of solutions to the problem with examples of successful solutions in other countries.

After I had coded the articles, I examined the patterns of passive voice and author pronoun use in light of the rhetorical moves. For KS's research article, the use of the passive voice and author pronouns followed a distinct pattern. When providing

phenomenal descriptions of the subject being studied, phenomenal passives were used. For example, “By hibernating, animals can save up to 90% of the energy that would otherwise *be consumed* to remain euthermic over the winter [cit.]” (KS_TM_2006, 3). When KS was describing known and new information from his lab, author pronouns were often used. For example, “*We* further chose to link mitochondrial expression with fat metabolism during hibernation by investigating other areas of mitochondrial function” (KS_TM_2006, 113). When KS was describing others’ research and known information, as well as describing procedures, epistemic passives were used. For example, “Brown fat *was first described* over four centuries ago as a gland in hibernating mammals [cit.], but the realization that it is found in all mammals and its importance in heat production is a relatively new finding [cit.]” (KS_TM_2006, 92). Finally, when discussing possible explanations for results and the importance of KS’s research, author pronouns were used. For example, “but *we* speculate that the amino acid substitutions in other regions of the N-terminal region of *M. lucifugus* CPT-1b may act to alter protein conformation and thereby influence the binding of LCFAs at the low body temperatures during torpor” (KS_TM_2006, 133).

LF’s research article also contained passive verbs and author pronouns, but these were used differently from KS in different sections. First, in sections describing procedures, both the passive voice and author pronouns were used frequently and with no apparent pattern. For example, “Every 2 or 4 km, depending on the number of vehicles involved in the sampling, *we* stopped to listen to frog and toad choruses. *We* waited for substantial gaps in the traffic” (LF_TM_1995, 19) and “Choruses *were identified* to species and each species’ chorus *was given* an intensity rating of 1, 2, or 3 as a rough

indication of the number of individuals calling” (LF_TM_1995, 22). However, when discussing others’ research and known information, LF often used the passive voice, and new information from LF’s research team was often described using author pronouns. For example, “Roads *have been shown* to affect movement of a variety of species [cit.]” (LF_TM_1995, 42) and “*Our* results provide evidence that traffic exerts a negative effect on anuran populations” (LF_TM_1995, 41).

Review Articles

The review articles provided by each participant are quite different in style and format from each other, but according to the interviews, they appear to accomplish the same goal: surveying the literature and state of knowledge in the field. Both authors also used the review article as an avenue for displaying their own work or opinions. KS’s review article deals largely with describing a specific phenomenon, what is already known in the field about that phenomenon, what still needs to be discovered. He also included new knowledge developed in his own lab that has not been published in a research article.

LF’s review article addressed a problem in the field of landscape ecology, most specifically in different uses of terminology and methodologies. Although the article is a review of literature in the field, LF sets a portion of the article up as an empirical research study of the literature where she included a small section on the method of study and the results of the study. The majority of the article was set up in a series of definitions of a problem, examples of the problem from the literature, and then suggested solutions to the problem.

The review article seems to be a genre in which authors are invited to write, perhaps as an acknowledgment of their expertise in the field, as noted in the previous chapter. Both participants said that review articles are almost always by invitation. LF receives about one or two of these requests per year from different journals, but she does not always accept the invitation. In regards to the review article she provided me with, she says, “I was really interested in doing this, partly because I had a few points that I really wanted to make. And this was a good opportunity because I knew this would be really widely read with this particular journal” (LF, 09/01/08).

Observations of the patterns of passive voice and author pronoun use in the rhetorical moves in the review articles were similar to the research articles, but with a few differences. KS’s review article had very few author pronouns, and these were always in reference to new information from his research that he added to the review of other literature. For example, “Recent work in *my* laboratory has explored anoxia-induced gene expression in the red-eared slider turtle, *Trachemys scripta elegans*” (KS_TI_2004, 49). The epistemic passive voice was used throughout, but most commonly when describing others’ research and known information. For example, “New work *has shown* that PEDF also inhibits vascular growth and tissue mass in prostate and pancreas” (KS_TI_2004, 95).

In LF’s review article, the main themes or patterns that emerged from Grounded Theory coding were *definitions of a problem, known information about others’ research, and possible solutions for the problems*. Interestingly, the passive voice was found most frequently when LF was describing others’ research and known information in the field. For example, “Habitat loss *has been shown* to reduce trophic chain length [cit.], to alter

species interactions [cit.], and to reduce the number of specialist, large-bodied species [cit.]” (LF_TI_2003, 82). The few author pronouns that were used were found in sections where LF was questioning actions in the field and searching for solutions. For example, “*I* suggest that the term ‘fragmentation’ should be limited to the breaking apart of habitat. Habitat loss should be called habitat loss” (LF_TI_2003, 183). In a sense, this usage indicates that she wanted to separate herself from the actual problem, but align herself with the identification of the problem and the solution to the problem. Another feature of LF’s review article was frequent descriptions of what will come next in the article, what is traditionally referred to as the article’s roadmap. For example, LF wrote, “In this section, *I* review quantitative conceptualizations of habitat fragmentation” (LF_TI_2003, 41). LF frequently used the author pronoun, *I*, when she provided roadmaps for the article.

In Biology, there seems to be a contradiction between how scientific writing is perceived by the biologists and the features of the writing itself. Where the biologists discuss scientific writing as though it is quite typified within genres, the results of the analysis of the patterns of passive voice and author pronoun use, as well as the Grounded Theory conceptual codes, reveal a significant diversity in the genres and between the two participants. This raises interesting questions as to what can be considered the same genre. Yet, in new conceptions of genre as social action (Miller, 1984) the fact that the participants recognize the texts as the same two genres demonstrates a socially recognized and typified response to a socially perceived exigence within the Biology community.

History Articles

For History, each participant provided me with one article that appears to be of the same genre. Although I analyzed only one genre, in their interviews, the participants referred to other genres in the field of History, such as books and reviews. The socio-rhetorical contexts for each article were fairly different and the purpose for writing somewhat different as well. Yet, the rhetorical moves that emerged from Grounded Theory coding of the articles were almost identical. While the majority of each article was dedicated to the story, which I coded as *phenomenal description*, they both included rhetorical moves such as *historical context for the story*, *relevance of the story*, *description of primary source*, *knowledge gap*, and *known information from other scholars*.

In their interviews, DM and PW discussed the importance of telling a story in History. This seems to be one of the most important aspects of writing in History. DM explained the importance of evocation for writing in History and that in discussions with colleagues the use of literary devices is a common theme. She notes that:

The choice of your plot, your metaphors, the way you close your story, using the choice of genre, is it a drama, is it a comedy, . . . is it a tragedy -- might be important in explaining how you account the facts. (DM, 17/01/08)

Research for historians involves wading through archives and texts and a number of primary sources. This process is never mentioned in published articles, but is implied in the “story” and in more subtle ways that only historians may understand. As discussed

in the previous chapter, PW found the disruption in her use of this generic property a frustration when writing her article.

The use of the passive voice and author pronoun in the History articles followed a fairly uniform pattern when examined in the context of rhetorical moves. Considering the importance of the story in History writing, and the fact that the bulk of a History article is devoted to telling the story, it is not surprising that almost all of the uses of the passive voice are phenomenal and that the majority of the phenomenal passives were used in the process of telling the story. This was the case for both articles; however, the patterns differed slightly. In DM's article, there was a small part of the "story" in which research was being conducted and, although it is being reported second-hand, or phenomenally, and the author was not involved, the passive voice was used frequently. For example, "In Geneva and in London, numerous interviews *were conducted* with missionary societies" (DM_T_2004, 42). For PW's article, the phenomenal passive voice was most often used when relating parts of the story that involved more than just the immediate people that PW had researched, in other words, when there was an unknown agent, the phenomenal passive was used.

The few epistemic passive verbs in the articles were always used when either displaying known information in the field or when stating why or how a certain detail in the story is relevant, in other words, when the author was interjecting to point out important information to the readers. The omitted agents in these epistemic passive verbs were the author, the community of historians, or a more general knowledge that exists today. For example, "Race in Victorian England *is* most often *understood* to operate on a

metropole–empire axis when English Protestants categorized racialized foreigners” (PW_T_2006, 136).

DM used the pronoun *we* in a few places in her article. For example, “*We* only know that the IMC refused to help the SCIU to approach the American missionary societies, at a time when ‘British missionaries regarded Geneva with suspicion’” (DM_T_2004, 47). Connecting this use of an author pronoun to her socio-rhetorical context, she is very active in seeking out communities to share her work with both for feedback and for learning more about a subject. She speaks a fair amount about her colleagues and the importance of these relationships to her success as a scholar. Perhaps the use of author pronouns in her writing is a reflection of her active engagement with her community. This is in contrast to PW who speaks very much as a solitary scholar. When speaking of her community, she makes a more general reference to historians or, at most, other historians interested in Victorian England.

In History, the journal article genre exhibits considerable consistency in the patterns for passive voice use and also with the Grounded Theory conceptual codes. The only notable difference between the articles was the use of author pronouns, with one participant including author pronouns in her article. With the differing socio-rhetorical disciplinary contexts of each participant’s article, the uniformities and consistencies in texts provide an interesting justification for studying text in context.

Discussion

By viewing generic properties, such as grammar features, as a mediating artefact of the activity of writing, and by using RGS as a framework for understanding the

relationship between context and text, we can see how the use of the passive voice and author pronouns in the participants' articles is a reflection of the activity of writing and other neighbouring activity systems in the two disciplines. While these grammatical features reflect the activity in which they are embedded, they also constitute ways of acting in subsequent textual and non-textual genres. The uptake (Freadman, 1994) from my participants' articles may in part be reflected in the use of the passive voice and author pronouns in these articles.

As RGS scholars have pointed out, a genre is not defined just by its textual features, but rather by the socially recognized actions it performs (Miller, 1984; Russell, 1997; Devitt, 2004). The articles from the Biology participants serve as an excellent example. The two participants provided me with two genres each that they identified as the same two genres, but a closer look at each article indicates that even though the genre of research article is perceived as formulaic in Biology (by KS), a genre in Biology has a generous degree of variation in structure, rhetorical moves and grammar usage. In contrast, the rhetorical moves and grammar usage in the two History articles were very similar, indicating less variation in that genre.

Grammar usage, specifically in the use of the passive voice or author pronouns, is not just one of the properties of some genres, but is also a mediating artefact of the activity of writing in Biology and History. The role of the passive voice and author pronouns in each of the participants' articles uniquely reflects the activity system of writing for each participant, but also the systems of activity that are interconnected with the activity of writing for each discipline.

First, the participants in Biology used both the passive voice and author pronouns more frequently than the participants in History (see Table 1). While the choice of using the passive voice over an author pronoun may appear to be a choice of opposites, it seems that both assume the role of people in the research and writing process. Often the omitted agent of an epistemic passive construction is the author or another person or group of people. In Biology writing, the extensive collaboration between the participants and their students and the importance of collaboration with the scientific community (Ding, 2002) is reflected in implicit and explicit references to these groups of people.

In order to unpack the connections between context and text, I begin by revisiting the socio-rhetorical disciplinary contexts of each discipline. In Biology the activity of *writing* is closely related to, yet distinct from, the activity of *work*. The object of the activity of work is data from and results of experiments, which in turn become mediating artefacts of the writing activity. The object and mediating artefacts (e.g. procedures and materials) of the work activity mediate the writing activity in terms of the content. The audience for a published article then is the multiple discourse communities that will benefit from the results of the participants' work. The role of the passive voice and author pronouns are at this point apparent by viewing a genre as both a shot and uptake in an on-going game (Freadman, 1994).

The uptake (Freadman, 1994) of a research article can be non-textual, as in members of the scientific community repeating experimental methods or conducting further research based on the results presented in a research article. The uptake can also be textual, as in producing additional research articles or even a review article that places the research article into a greater context of work on a specific topic or, sometimes, a

response to the research article published by the same journal. Uptake may sometimes be subtler through references to the article that support another scientist's findings.

The choice of passive voice or author pronouns demonstrates how an article is both an uptake and a shot. In both of KS's articles, the epistemic passive voice is used when discussing known information, research conducted by other scientists, or when indicating a research gap. In this way, the epistemic passive voice is signaling the uptake of previous shots from the scientific community. For example, "Roads *have been shown* to affect movement of a variety of species" (LF_TM_1995, 42). In this example, LF is stating previous research that has been done, but is also setting up the necessity of her study in relation to this. The following sentence states the research gap: "However, very few studies have shown an effect of roads on population density" (LF_TM_1995, 43). Author pronouns are almost always used when introducing new results or ideas in both the research and the review article. For example, "*We* propose that an anticipatory mechanism occurs that enhances and coordinates . . ." (KS_TM_2006, 138). In a sense, this indicates the participants' shot back to the scientific community.

However, the use of the epistemic passive voice works much differently in the context of a methodology section, where it appears to confirm what Ding (2002) asserts as one of the values of science, the replicability of experiments. The lack of an explicit agent invites other scientists to repeat an experiment and is also an indication of the level of abstraction in Biology (Macdonald, 1994). Scientific writing is capable of isolating subject matter from the context and is generalizable to larger populations and situations.

Now using this same logic, we can see how the use of the passive voice is less frequent and follows a different pattern in LF's research article. KS's discourse

communities consist of multiple scientific communities who are interested in his research and who may replicate his methodology for their own experiments. LF's discourse communities include a scientific community as well, but as indicated in her interview, her audience tends to be funding agencies, and specifically for the research article she provided me with, government and transportation agencies that were more interested in the results of her research and possible solutions to the problem she addressed in her study. From this, it appears that the research article is not necessarily the uptake from previous research, but the uptake of a problem. The article then is not just a shot back to its scientific community, but to the agencies that benefit from and fund her research. The relatively low frequency of the passive voice and high number of author pronouns in the research article can be explained in two ways. First, other scientists are not the main audience for the research article; it is government and funding agencies that will not be interested in repeating the experiment. Second, the research study conducted by LF addressed a specific problem in a specific geographical region. The research results are more dependent on the local context than KS's, and, therefore, not easily generalized about. Both the audience and the dependence on the context result in more frequent use of the active voice, including the use of author pronouns (see Appendix D, p. 110, for a break down of the types of main verbs in each article).

In contrast, the activity of writing and, consequently, the use of the passive voice and author pronouns in History is much different. The infrequent use of the passive voice and almost complete lack of author pronouns indicate a different configuration of work and community in History from that of Biology. While writing in Biology is, as presented by the participants, a record of the work that is accomplished, writing in

History *is* the work. This work involves crafting a story as constructed from the primary sources the historians have collected. Interactions with other activity systems do not occur through shared methods of experimental procedure, but through sharing with discourse communities “stories” and the principles that can be abstracted from these stories. The discourse communities of an historian help shape what stories will be told and from what perspectives they will be told. The activity of writing a published article in History is also embedded within a larger activity system of book writing. The story within an article will contribute to a greater story told in a book.

In terms of shot and uptake (Freadman, 1994), the genre of the published article is the uptake of previously told stories by either the participants or by their discourse communities. The uptake of these published articles occurs both within an historians own main activity system by becoming a chapter within a book or serving as a reading within the activity system of teaching. The uptake can also be by members of the discourse community through book reviews that praise or criticize the article, but also through references to the article that support another person’s version or addition to the story. For example, both of the participants’ articles included references to secondary sources of others’ work to support abstractions they have made from their own story.

These shots and uptakes of telling a story explain the infrequent use of epistemic passive constructions and author pronouns in the genre of the published article in History. Since an historian is telling a story of historical events and people, he/she is not involved in manipulating the events, nor does an historian explicitly reason about the subject, which explains that when the passive voice is used, it is most commonly phenomenal. PW explained that historians are more “drawn to the particular” (PW, 24/01/08) and that

a particular story cannot be used to make generalizations about one broad topic, in PW's case, adoption, because it is about one case in a specific time and place. This demonstrates how the level of abstraction (Macdonald, 1994) in History is reflected in infrequent use of the passive voice. The historian's topic is not easily generalized about, and agents are the focus of a story, thus the active voice is preferred.

The interaction between socio-rhetorical disciplinary contexts and the mediating role of grammar demonstrates the affordances (Prior, 1998) of the different functions of the passive voice in Biology and History. The epistemic passive voice affords contexts of acting on and reasoning about subjects. For example, "Choruses *were identified* to species and each species' chorus *was given* an intensity rating of 1, 2, or 3 . . ." (LF_TM_1995, 22). The phenomenal passive voice affords contexts of description. For example, "Effie *was immediately taken* away to impress the severity of her transgressions on the others" (PW_T_2006, 77). These affordances of the different functions of the passive voice explain the high frequency of epistemic passives in Biology articles and also why the passive voice is less frequent in History, but when used, is most commonly phenomenal.

In sum, the activity of writing in Biology is closely connected to and reflects the activity of working. The interactions between sub-activity systems in the participants' larger activity systems, as well as interactions with neighbouring activity systems, are mediated in part through the use of the passive voice and author pronouns. The various activity systems are concerned with the scientific and experimental work of Biology and are oriented toward the outcome of creating new knowledge, which is done through

testing and retesting with shared methodologies. This context or system of activities is afforded by the epistemic passive voice.

In History, the individual activity of writing interacts with the myriad of activity systems of discourse communities in order to create new and better understandings of history and the larger principles that can be drawn from these events. The understanding of history is developed through telling stories constructed from primary sources and from different perspectives. The activity of writing, of story telling, *is* the work of an historian. Thus, the phenomenal passive voice and the active voice afford the context of story-telling in History. The following chapter summarizes the main observations addressed in the preceding two chapters.

7. Conclusion

Overview of Chapter

This chapter includes a summary of the main conclusions drawn from the Grounded Theory analysis (Charmaz, 2000, 2006) of interviews and articles and the results of the textual analysis of articles using Geisler's (2004) methods for systematic coding of language, as represented within the framework of AT, RGS, GP, and LPP. I then address the limitations of the study, implications for further research, and the implications of the study for writing pedagogy.

Summary of Research

The intention of this study was to discover how the use of the passive voice and author pronouns, as mediating artefacts embedded in activity, differ between Biology and History. In order to do so, I started my study by exploring the differences and similarities in the socio-rhetorical disciplinary contexts for writing in the two disciplines. I situated my study within the framework of Activity Theory and Rhetorical Genre Studies, which views text and textual features as embedded in action, and which allowed me to actively study the contexts in which the passive voice and author pronouns are used. As themes and patterns in my data emerged through the Grounded Theory analysis, I also drew on theories of situated learning, specifically, Guided Participation and Legitimate Peripheral Participation.

I conducted the study using a case study methodology. I used two case studies that involved two participants from Biology and two participants from History. I

collected both textual and interview data that yielded information useful for interpreting the socio-rhetorical disciplinary contexts for writing in each discipline, and, as a consequence, the differences in textual features of published articles, such as the frequency of the passive voice and author pronouns and function of the passive voice. For my interview data, I conducted a constructivist Grounded Theory (Charmaz, 2000, 2006) analysis by coding the interview data in several steps until I determined the overarching themes across the interviews with all participants. As well, I conducted two types of analyses of the textual data, including Grounded Theory coding and Geisler's (2004) methods for analyzing language. With these two types of analyses, I was able to determine rhetorical moves within each article and to compare the frequency and function of the passive voice and author pronouns within these rhetorical moves.

A Comparison of Biology and History

From the interview data, I discovered that the socio-rhetorical disciplinary contexts for writing in Biology and History differ considerably. From Grounded Theory coding of interviews with participants I was able to discern similar themes in the contexts of each discipline, but the way in which the themes related to the other themes and blended or diverged to create the context of both disciplines was much like “*comparing apples and oranges*.” While Biology and History may both be academic disciplines concerned with knowledge creation, the contexts of these disciplines are so dissimilar as to make comparisons very difficult. The disciplines differ in the how the members of the disciplines work, how they write, and how they learn and teach how to write for the discipline.

Working

The “work” of biologists and historians can be described as research including data collection, but the similarities end there. Biologists view their work as the experiments and activities they undertake in their laboratories and various research sites. This work is accomplished in collaboration with students, with students appearing to do the majority of the “bench work” for the experiments. In essence, the work of the biologist, in the participants’ view, can be seen as the knowledge making in their field.

The historians seem to view work as partially a matter of collecting data in archives and from various primary sources, but the bulk of the work and the standard by which historians’ success is measured are the written documents that historians produce. Incorporated into these documents, be they books, articles, or reviews, is the information or “stories” gathered from the primary sources and discussions of what can be learned from the information.

Writing

The writing process for a biologist, from the participants’ perspectives, follows from the work conducted in the laboratory or research site. According to the Biology participants, writing is a matter of reporting the research that has been conducted, the results that were generated, and the meaning or usefulness of these results to the field. Just like the work is done collaboratively, so too is the writing process, although in varying degrees. It appears as though for research articles, a biologist views writing as a process of creating a detailed description of the “real” work in Biology. The review articles can be seen as less formulaic and requiring more “skill” in addressing issues and

concerns in the field, but still appear to be a matter of talking and reasoning about the “real” work that biologists do. The success of a scientist can be measured by how many publications in either of these genres one produces, but also by how often publications are cited by others in the field. It appears that success is measured quantitatively and that quality is implied in citations.

For historians, *writing* is the *work* of the discipline, and is almost always done alone. While there is some “bench work” to be done before writing, the really successful historian is the one who is proficient in exposing a story derived from the primary sources available and in convincing his/her audience of the meanings or lessons resulting, in the historians view, from a particular historical event or person. Writing is not merely seen as a matter of reporting the information an historian has gathered, but is a matter of constructing an evocative and convincing piece. For this reason, the History participants were very aware of their writing abilities and proactive in finding ways to improve their writing, either in narrative abilities or in constructing arguments. As reflected in the historians’ writing activity, the success of historians is measured based not on the quantity of their writing, but on its quality as evidenced through article and book reviews from prestigious journals or publishers or citations by other scholars.

Teaching and Learning

Just as it is difficult to compare working and writing between Biology and History, it is also difficult to compare teaching and learning in the two disciplines. In Biology, since working and writing are done in collaboration, teaching and learning subsequently occur alongside the activities of working and writing. Students learn both

how to conduct research and how to write for their discipline by engaging in authentic tasks as authentic members of the Biology community, as described in the analytical perspective of LPP.

In contrast, in History, the activity of teaching students appears to be a different activity from the activity of participants learning how to write throughout their careers. While students receive instruction in writing for the discipline, and even engage in classroom tasks that reflect authentic writing, students do not appear to engage in collaborative writing with professors (the old-timers) and thus, they are taught not through doing, but through guidance from a more skilled member of the field of History, as described by GP. The activity of learning for the participants seems to have begun after graduation from university, once they became members of their discipline and a CoP. This learning is a continuous process where guidance from colleagues, editors, and peer reviewers acts as a way of teaching how to write, as the participants engage in the authentic activity of writing for publication.

Genre and Generic Properties

Considering the vast differences in the socio-rhetorical disciplinary contexts for writing in Biology and History, it is not surprising that the genres and the properties of these genres in each discipline are also difficult to compare, specifically in the use of the passive voice and author pronouns. The passive voice and author pronouns were fairly common in the Biology articles, but were used quite differently by each participant and for each genre. The passive voice was also most commonly epistemic. In History, the

passive voice was rare, and when it was used, it was almost always phenomenal. Author pronouns were only used minimally by one participant from History.

The connection between the socio-rhetorical disciplinary contexts and the use of the passive voice and author pronouns in Biology and History was unmistakable. The importance of collaboration in Biology, both in working and in writing, is evident in the textual features of the published articles in the two genres of the discipline. For both the research and review articles, the use of author pronouns indicated new knowledge or work done by a participant and his/her students. The epistemic passive voice in the Biology articles was often omitting agents that were referring to other researchers or members of the participants' discourse communities. It appears that published articles in Biology are acting as ways of defining social roles and the shots and uptakes (Freadman, 1994) between members in the scientific community. This is evidenced by the use of epistemic passive verbs being used when "taking up" or referring to others' research or results and by using author pronouns when providing a "shot" back to the scientific community by way of adding new research or ideas to the collective pool of knowledge. Also, I observed that the epistemic passive voice is often used in Methods section, which confirms previous research on the passive voice that claimed that its use reflects the value of replicability of methods in the sciences (Ding, 2002).

Conversely, historians rarely co-publish, and the emphasis of writing is on storytelling and deriving the meaning from these stories. The work of an historian is mainly writing and, thus, explicit references to members of the participants' discourse communities through author pronouns or implicit references through the use of the epistemic passive voice were rare. The phenomenal passive voice was more common

than the epistemic because the majority of the History articles were phenomenal descriptions or “stories.” By studying the nature of *work* in each discipline and the relationships between the participants and their discourse communities, we can see how and why the textual features, such as the passive voice and author pronouns differ greatly between Biology and History.

Limitations of Study

There were a number of limitations of my study. First, while I had the benefit of analyzing two genres in Biology, I only analyzed one genre in History. Originally, I had only requested one single-authored published journal article from prospective participants. However, the participants from Biology each offered two genres since the research article genre, which is the most commonly published, almost always has multiple authors and they were unsure if I preferred a research article or a single-authored review article which is a less common genre. To make my argument stronger, and to provide a more complete picture of the writing activity in History, an analysis of a second genre, such as a book review, would have assisted in developing an understanding of the ways in which the activity system of writing in History and its interactions with other activity systems are demonstrated in textual features.

Two of my participants provided me with notes, drafts, and emails between themselves and editors, which were useful for seeing what types of revisions were made between drafts and final publication of an article. A limitation exists with the data from the other two participants who did not provide me with any additional information other than the published articles and interviews.

Finally, the strength of my study is also its weakness. I chose a case study method in order to delve into the complex socio-rhetorical disciplinary contexts of each discipline, but this also makes it difficult to generalize about my findings. However, the multi-case method is also a strength of the study as it allowed me to retain the complexity of every unique situation and activity and to demonstrate how every unique context has implications for the activity of writing.

Implications for Further Research

By taking into account the limitations of the study, it is possible to see further research that is required to expand on my observations from this study and to understand more fully the relationships between text and context. Further research can include case studies from additional disciplines, including disciplines from the Social Sciences, but also case studies that examine multiple genres as I have done with Biology. To better understand how texts are shots and uptakes (Freadman, 1994), further research can include a series of genres that were written sequentially or in response to each other, such as research articles that build on the research from the preceding articles.

Implications for Writing Pedagogy

From my observations of the socio-rhetorical disciplinary contexts of Biology and History, the configuration of activity systems within each discipline is extremely different and has implications for the textual features of genres that are produced in each discipline. The configuration of activity systems within each discipline includes the

activity of teaching, yet teaching is approached very differently, with Biology reflecting LPP and History reflecting GP styles of teaching.

For Biology, the students, at least at the graduate level, are exposed to and learn how to write for the discipline through authentic writing activity alongside professors. Students are real members of the Biology community and as they move from legitimate peripheral participation to full participation, the level of involvement in the writing activity also increases, but is also always includes authentic tasks. In his interview, KS made reference to the success rate of his students and that they all know how to write for Biology when they graduate into their various careers. This method of teaching not only writing, but also working, lends itself to Biology because of the disciplinary context. The context of Biology has developed to include students as workers in the lab, and thus as co-authors of research articles. Part of the genre, as Paré and Smart (1994) note, includes regularities in the composing process and social roles. Since students as legitimate peripheral members of the community are part of the regularities of the Biology genres, the students naturally learn the ways of thinking and doing, and even develop their identities (Wenger, 1998), while being active and authentic participants. In Biology, students are prepared to be masters of a genre from the beginning, gaining valuable understanding of how the social action of a genre is just as valuable as the textual forms of the genre.

In contrast, History students appear to learn writing through textbooks and classroom tasks that mimic the work of scholars. Professors guide their students through feedback on writing, and through having students read the genres of the discipline. Guided participation in History writing also seems to focus on the forms of writing, such

as story-telling. Much of the authentic participation in the writing activity does not appear to begin until students are finished with their education and have become full members of a community. However, looking at the regularities in composing processes and social roles in History (Paré & Smart, 1994), historians tend to research and write alone, and so there does not appear to be a forum for collaborative working and writing in the discipline. While a lot of classroom time may be spent addressing *forms* of writing, this is not necessarily a disadvantage in History. Since part of the “work” of an historian is writing and crafting a story, it only seems practical that far more time is devoted to how this is developed through words. The social action (Miller, 1984) in History is, in some ways, the forms and structures of the genre.

The debates over how to best to teach genres to students at all levels often seems to focus on how best to teach students to either acquire the textual features of stable genres (e.g. Reid, 1987), or on teaching students genre awareness, in order that students may learn to write the genres of the many communities of which they will be members either academically or professionally (e.g. Devitt, 2004; Freedman, 1994; Russell, 1997). My observations of the activities of teaching and writing in Biology and History confirms that learning genres must not only be situated within the authentic communities, but must also include the ways of doing and thinking within a particular community (cf. Dias, et al., 1999). In contrast with the assumption of a universal use of textual features underlying the prescriptive advice of writers' handbooks that do not account for socio-rhetorical disciplinary contexts, grammar and other generic textual features are not reducible to a list of guidelines that can be applied in any discipline, but must be learned as students participate within their disciplines. As Paré and Smart (1994) observed,

genres include not only the regularities in textual features, but also regularities in the social roles, composing practices and reading practices of a discourse community. These components of genre must be accounted for when studying genres, but also in teaching genres. For this reason, the ways of teaching and learning writing in the disciplines of Biology and History are necessarily different. Now, if only my high school English teacher had understood that an apple is not an orange, or that there is a relationship between socio-rhetorical contexts and textual features, I would perhaps have been saved from years of confusion and she could have used much less red ink.

References

- Artemeva, N. (2006). Approaches to learning genres: A bibliographical essay. In N. Artemeva & A. Freedman (Eds.). *Rhetorical genre studies and beyond*. (pp. 9-99). Winnipeg, MB: Inkshed Publications
- Artemeva, N., & Freedman, A. (Eds.). (2006). *Rhetorical genre studies and beyond*. Winnipeg, MB: Inkshed Publications.
- Babington, D., & LePan, D. (2006). *The Broadview guide to writing*. Peterborough, ON: Broadview Press.
- Bakhtin, M.M. (1986). The problem of speech genres. In C. Emerson & M. Holquist, (Eds.). *Speech genres and other late essays*. (Vern W. McGee, Trans.)(pp. 60-102). Austin, TX: University of Texas Press.
- Barnett, S., Stubbs, M., Bellanca, P., & Stimpson, P.G. (2003). *The practical guide to writing: With readings and handbook*. Toronto: Longman.
- Bawarshi, A.S. (2003). *Genre and the invention of the writer: Reconsidering the place of invention in composition*. Logan, UT: Utah State University Press.
- Bazerman, C. (1988). *Shaping written knowledge: The genre and activity of the experimental article in science*. Madison, WI: University of Wisconsin Press.
- Bazerman, C. (1994). Systems of genres and the enactment of social intentions. In A. Freedman & P. Medway (Eds.). *Genre and the new rhetoric* (pp. 79-101). London, UK: Taylor and Francis.
- Berkenkotter, C., & Huckin, T.N. (1995). *Genre knowledge in disciplinary communication: Cognition/culture/power*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Brown, J.S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32-42.
- Charmaz, K. (2000). Grounded theory: Objectivist and constructivist methods. In N.K. Denzin and Y.S. Lincoln (Eds.). *Handbook of qualitative research* (pp. 509-535). Thousand Oaks, CA: Sage Publications.
- Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. London: Sage Publications.
- Devitt, A.J. (2004). *Writing genres*. Carbondale: Southern Illinois Press.

- Dias, P., Freedman, A., Medway, P., & Paré, A. (1999). *Worlds apart: Acting and writing in academic and workplace contexts*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Ding, D. (2002). The passive voice and social values in science. *Journal of Technical Writing and Communication*, 32(2), 137-154.
- Engeström, Y. (1999). *Learning by expanding*. Retrieved November 14, 2006 from <http://communication.ucsd.edu/MCA/Paper/Engestrom/expanding/toc.htm>
- Engeström, Y., & Miettinen, R. (1999). Introduction. In Y. Engeström, R. Miettinen, & R-L. Punamäki (Eds.). *Perspectives on activity theory*. (pp.1-16). Cambridge, UK: Cambridge University Press.
- Freadman, A. (1994). Anyone for tennis? In A. Freedman & P. Medway (Eds.). *Genre and the new rhetoric*. (pp. 43-66). London: Taylor & Francis.
- Freedman, A., & Adam, C. (2000). Bridging the gap: University-based writing that is more than simulation. In P. Dias & A. Paré (Eds.). *Transitions: Writing in academic and workplace settings*. (pp. 129-144). Cresskill, NJ: Hampton Press.
- Freedman, A., & Medway, P. (1994). Locating genre studies: Antecedents and prospects. In A. Freedman & P. Medway (Eds.). *Genre and the new rhetoric*. (pp. 1-20). London: Taylor & Francis.
- Geisler, C. (1994). *Academic literacy and the nature of expertise: reading, writing, and knowing in academic philosophy*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Geisler, C. (2004). *Analyzing streams of language: Twelve steps to the systematic coding of text, talk, and other verbal data*. New York: Pearson Longman.
- Giltrow, J. (2002). *Academic writing: Writing and reading across the disciplines*. (3rd ed.) Peterborough, ON: Broadview Press.
- Glaser, B.G., & Strauss, A.L. (1967). *The discovery of grounded theory; strategies for qualitative research*. Chicago, IL: Aldine Publishing Company.
- Hartley, J., Sotto, E., & Fox, C. (2004). Clarity across the disciplines: an analysis of texts in the sciences, social sciences and arts and humanities. *Science Communication*, 26(2), 188-210.
- Hunt, K.W. (1977). Early blooming and late blooming syntactic structures. In C.R. Cooper & L. Odell (Eds.). *Evaluating writing: Describing, measuring, judging..* Urbana, IL: National Council of Teachers of English.
- Hyland, K. (1998). *Hedging in scientific research articles*. Philadelphia: John Benjamins Publishing Company.

- Hyland, K. (2002). Options of identity in academic writing. *ELT Journal*, 54(4), 351-358.
- Knisley, K. (2005). *A student handbook for writing in biology*. Sunderland, MA: Sinauer Associates.
- Lachowicz, D. (1981). On the use of the passive voice for objectivity, author responsibility and hedging in EST. *Science of Science*, 2(6), 105-115.
- Lannon, J.M., & Klepp, D. (2000). *Technical communication*. Toronto, ON: Addison Wesley Longman.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- Lundell, D.B., & Beach, R. (2003). Dissertation writers' negotiations with competing activity systems. In C. Bazerman & D. Russell. *Writing selves/writing societies: Research from activity perspectives. Perspectives on writing*. Fort Collins, Colorado: The WAC Clearinghouse and Mind, Culture, and Activity. Retrieved May 17, 2007 from http://wac.colostate.edu/books/selves_societies/lundell_beach/lundell_beach.pdf
- MacDonald, S.P. (1994). *Professional academic writing in the humanities and social sciences*. Carbondale and Edwardsville, IL: Southern Illinois University Press.
- Miller, C. (1984). Genre as social action. *Quarterly Journal of Speech*, 70, 151-167.
- Millward, C.M. (1983). *Handbook for writers*. New York: Holt, Rinehart and Winston.
- Odell, L., Goswami, D., & Herrington, A. (1983). The discourse-based interview: A procedure for exploring the tacit knowledge of writers in nonacademic settings. In P. Mosenthal, L. Tamor, & S.A. Walmsley (Eds.). *Research on writing: Principles and methods*. New York: Longman.
- Paré, A. (1994). Toward a post-process pedagogy; or, what's theory got to do with it? *English Quarterly*, 26(2), 4-9.
- Paré, A. & Smart, G. (1994). Observing genres in action: Towards a research methodology. In A. Freedman & P. Medway (Eds.). *Genre and the new rhetoric* (pp. 146-154). London, UK: Taylor and Francis.
- Pechenik, J. (2007). *A short guide to writing about biology*. New York; Toronto: Pearson/Longman.
- Perelman, L.C., Paradis, J., & Barrett, E. (1998). *The Mayfield handbook of technical & scientific writing*. Mountain View, CA: Mayfield Publishing Company.

- Prior, P.A. (1998). *Writing/disciplinarity: A sociohistoric account of literate activity in the academy*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Prior, P., & Shipka, J. (2003). Chronotopic lamination: Tracing the contours of literate activity. In C. Bazerman & D. Russell. *Writing selves/writing societies: Research from activity perspectives. Perspectives on writing*. Fort Collins, Colorado: The WAC Clearinghouse and Mind, Culture, and Activity. Retrieved May 17, 2007 from http://wac.colostate.edu/books/selves_societies/prior/prior.pdf
- Reid, I. (Ed.). (1987). *The place of genre in learning; Current debates*. Victoria, Australia: Deakin University.
- Rice, S. (1993). *Right words, right places*. Belmont, CA: Wadsworth Publishing Company.
- Riley, K. (1991). Passive voice and rhetorical role in scientific writing. *Journal of Technical Writing and Communication*, 21(3), 239-257.
- Rodman, L. (1981). The passive in technical and scientific writing. *Journal of Advanced Composition*, 2, 165-172. Retrieved on May 24th, 2007 from <http://64.233.167.104/search?q=cache:sc8y22PWqMgJ:www.camlang.com/tsp001.cfm+%22>.
- Rodman, L. (1994). The active voice in scientific articles: Frequency and discourse functions. *Journal of Technical Writing and Communication*, 24(3), 309-331.
- Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context*. New York: Oxford University Press.
- Russell, D (1997). Rethinking genre in school and society: An activity theory analysis. *Written Communication*, 14, 504-554.
- Schryer, C. (2000). Walking a fine line: Writing negative letters in an insurance company. *Journal of Business and Technical Communication*, 14(4), 445-497.
- Schryer, C.F., Gladkova, O., Spafford, M.M., & Lingard, L. (2007). Co-management in healthcare: negotiating professional boundaries. *Discourse & Communication*, 1(4), 452-479.
- Stake, R.E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage Publications.
- Stake, R.E. (2000). Case studies. In N.K. Denzin & Y.S. Lincoln (Eds.). *Handbook of qualitative research*. Thousand Oaks, CA: Sage Publications.
- Strauss, A., & Corbin, J. (Eds.). (1998). *Grounded theory in practice*. Thousand Oaks, CA: Sage Publications.

- Swales, J.M. (1990). *Genre analysis: English in academic and research settings*. Cambridge: Cambridge University Press
- Swales, J.M. (2004). *Research genres: Exploration and applications*. Cambridge: Cambridge University Press.
- Tarone, E., Dwyer, S., Gillette, S., & Icke, V. (1998). On the use of the passive and active voice in astrophysics journal papers: with extensions to other languages and other fields. *English for Specific Purposes*, 17(1), 113-132.
- Thomson Scientific. (1994). The Thomson Scientific impact factor. Retrieved March 28, 2008, from <http://scientific.thomson.com/free/essays/journalcitationreports/impactfactor/>
- Thomson Scientific. (2006). Citation report. Retrieved March 28, from <http://scientific.thomson.com/support/faq/wok3new/citationreport/>
- Troyka, L.Q., Buckley, J., & Gates, D. (1996). *Simon & Schuster handbook for writers*. Scarborough, ON: Prentice Hall.
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge: Cambridge University Press.
- Wenger, E. (2005). *Communities of practice: A brief introduction*. Retrieved March 20, 2008, from <http://www.ewenger.com/theory/index.htm>
- Wertsch, J.V. (1991). *Voices of the mind: A sociocultural approach to mediated action*. Cambridge, Mass.: Harvard University Press.
- Wilkinson, A.M. (1992). Jargon and the passive voice: Prescriptions and proscriptions for scientific writing. *Journal of Technical Writing and Communication*, 22(3), 319-325.
- Yin, R.K. (2003). *Case study research: Design and methods*. Thousand Oaks, CA: Sage Publications.

Appendices

Appendix A: Ethics Approval Certificate

Carleton University Research Office
5th Floor Tory Building
1125 Colonel By Drive
Ottawa, ON K1S 5B6 Canada
Tel: (613) 520-2516
Fax: (613) 520-2521
www.carleton.ca/cu/research/curo/

Ethics Approval Form

This is to certify that the Carleton University Research Ethics Committee has examined the application for ethical approval. The committee found the research project to meet appropriate ethical standards as outlined in the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* and, the *Carleton University Policies and Procedures for the Ethical Conduct of Research*.

X New approval

☐ **Renewal of original approval**

Original date of approval:

Date of approval: **30 October 2007**
Researcher: **Christen Rachul**
Status: **M.A. candidate**
Department: **School of Linguistics and Applied Language Studies**
Supervisor: **Prof. Natasha Artemeva**
Title of project: **Passive activity: A socio-rhetorical analysis of the passive voice in academic writing**

Ethics approval expires on: **30 October 2008**

All researchers are governed by the following conditions:

Annual Status Report: Ethics clearance is valid for one year from date of approval. You are required to submit an Annual Status Report to either renewal approval or close the file. Failure to submit the Annual Status Report will result in the immediate suspension of the project. Funded projects will have accounts suspended until the report is submitted and approved.

Changes to the project: Any changes to the project must be submitted to the Carleton University Research Ethics Committee for approval. All changes must be approved prior to the continuance of the research.

Adverse events: Should any participant suffer adversely from their participation in the project you are required to report the matter to the Carleton University Research Ethics Committee. You must submit a written record of the event and indicate what steps you have taken to resolve the situation.

Suspension or termination of approval: Failure to conduct the research in accordance with the principles of the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* and the *Carleton University Policies and Procedures for the Ethical Conduct of Research* may result in the suspension or termination of the research project.

Leslie J. MacDonald-Hicks
Research Ethics Committee Coordinator
For the Chair of the Carleton University Research Ethics Committee
Prof. Antonio Gualtieri

*Appendix B: Table of Primary and Secondary Sources from
Participants*

Participant	Primary sources	Secondary Sources
KS	Research article	-
	Review Article	-
	Interview	n/a
LF	Research Article	2 x notes/outline of article 2 x drafts of article
	Review Article	-
	Interview	n/a
DM	Journal Article	Journal style guide 4 x email communication from editorial staff and peer reviewers 2 x drafts of article submitted to different journals
	Interview	n/a
PW	Journal Article	Primary sources (viewed during interview)
	Interview	n/a

Appendix C: Interview Questions

General (for everyone)

1. How long have you been in this field of study?
2. How many articles have you published, or how often do you publish articles?
3. How would you rate the journals that published your articles in terms of their importance in the field?
4. Did you submit the article(s) to more than one journal before it was accepted?
5. What is (are) the purpose(s) for writing the article(s)?
6. Who do you identify as the audience for your published article?
7. Was anyone else involved in writing any part of the article(s)? If so, what was your role in the writing of the article?
8. When you write an article, to what extent do you customize the style or content for the audience or journal? What adjustments do you make if any?
9. What are the traits of a publishable article? What phrases, qualities, or organization of an article really please you or irk you?

Individual Questions

KS

1. For each article, approximately how many rounds of revisions were required before submitting it to a journal, and then how many with the editorial staff for the journal?
2. In both articles, in the acknowledgements, a J.M.S. was thanked for editorial and writing assistance. Other than the members listed as authors, is this the only person who helped with editing of the articles? Is this person a part of the biochemistry community as well, or from a different field?
3. What types of revisions does J. S. focus on, and what types of revisions do journal editorial assistants focus on?
4. Who does “we” refer to in the review article when you are the sole author?

LF

1. In the notes for the research article, what do the names written beside each section in the outline refer to? What was your role in the writing of the article?
2. Who was the editor in each draft of the article? Were there further revisions after the article was submitted to the journal?
3. For the review article, in the acknowledgements you list a number of people who made comments on the manuscript. What kinds of comments were these?

DM

1. Can you briefly describe to me again the timeline of when the article was first developed for a conference to when it was published?
2. For the version that was published, were any revisions made at the request of the journal's editorial staff?

PW

1. How many rounds of revisions were required before submitting this article to the journal? How many after submitting it to the journal?
2. The article follows a social sciences format for citation instead of a humanities format. Can you say a little bit about how the, even just the citation differences between science format and humanities format, changed the way you wrote?
3. The article is mostly from the perspective of Constance Maynard. Is there any reason why it is from her perspective?

Appendix D: Main Verbs in Articles

Article	Transitive Active	Passive	Intransitive	Copula
<i>BIOLOGY</i>				
KS – Review Article	0.395	0.209	0.124	0.271
KS – Research Article	0.313	0.486	0.043	0.156
LF – Review Article	0.519	0.151	0.106	0.222
LF – Research Article	0.363	0.191	0.121	0.323
<i>HISTORY</i>				
DM	0.540	0.089	0.193	0.178
PW	0.500	0.123	0.183	0.192

In order to have a more accurate understanding of the frequency of the passive verb as a main verb in relation to other verbs, I identified each main verb as transitive active, passive, intransitive, or copula. The results shown in Table 2 indicate that, with the exception of KS's research article, the relative frequencies of the passive voice in as a main verb are lower than the use of the active voice in the articles for Biology and History (0.089-0.486). In Biology, only intransitive verbs are less frequent and in History the passive voice is the least frequent type of main verb used in both articles.