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OPTING-IN ONLINE: PARTICIPANTS' PERCEPTIONS OF KNOWLEDGE CONSTRUCTION IN PUBLIC FORUM COMMUNITIES

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OPTING-IN ONLINE:

PARTICIPANTS' PERCEPTIONS OF KNOWLEDGE CONSTRUCTION IN

PUBLIC FORUM COMMUNITIES

BY

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OF

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DISSERTATION ABSTRACT

This project examines knowledge making and sharing amid special interest forums, specifically, online forums for herp (reptile and amphibian) hobbyists. In doing so, it addresses a gap in rhetoricians' understanding of publicness: its effect on writing and people's perceptions thereof. Few studies measure public writing unless its *telos* is change or activism. Additionally, despite increased rhetorical scholarship focusing on new media, much current research on forums situates them in classroom-based learning and collaboration, neglecting online forums that are open to public access. This project is a naturalistic inquiry using qualitative methods to explore collaborative public writing that occurs in discourse communities outside of the classroom in order to better understand knowledge making and sharing. Ultimately, this project's findings are that online forums for herp hobbyists create "specialized nonacademic discourse communities" in which members learn autonomously and through acculturation to the communities' writing environments. This writing is described as specialized nonacademic writing because of the space that it occupies between the professional/academic domain of scientific fields and the less trained public. Through this specialized nonacademic writing, herp hobbyists create and share new knowledge through interactive, asynchronous communication, building a field around their special interest where none has yet been formally established. By challenging the oppositional binaries of popular vs. professional and academic vs. nonacademic, this data shows that some motivated individuals have a profound ability to self-instruct and create knowledge without the structures of classrooms and certification tracts.

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The Study of Knowledge Formation in Online Herp Forums

"Socialization is never total and never finished."
-Peter L. Berger and Thomas Luckmann *The Social Construction of Reality,* 137

Introduction

A friend of mine was recently diagnosed with Hashimoto's thyroiditis, which reduces her thyroid's functioning. An intelligent woman with no formal training in medicine, she has spent the past few months relying on doctors, friends and family, and internet[1] research for information about her condition and its treatment. According to the Pew Research Center, 85% of adults in the United States use the internet, and of those, 91% use search engines to locate information (Pew Research Center for the People and the Press, "What Users Do Online" n. pag.). In so doing, they sift through a high volume of information, which Cheryl Geisler et al. believe to be "[o]ne of the most pressing problems regarding ITexts [Internet Texts]" (285). Amid this flurry of internet use sits the online forum, a medium that has survived since the 1990s, partly because it is a valuable arena for both explicit knowledge, "knowledge that can be spelled out or formalized" and tacit knowledge, "associated with skills or 'know-how'" (Cook and Brown 381).

While my knowledge of Hashimoto's equaled my friend's at this time last year, she has since gained a far more developed and advanced level of understanding than I. Such scenarios are widespread, and most people can recount at least one anecdote in

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[1] In their introduction to *Internet Inquiry: Conversations about Methodology,* Nancy K. Baym and Anette N. Markham choose not to capitalize "internet," which presents it as a proper noun, giving it (rather than the people who design and use the internet) agency (vii). I am excited that Baym and Markham have finally raised this long-overdue conversation, and I follow their language decision throughout this project, except in the event of a quoted capitalization. Another exception is the term IText (internet Text), which is a specifically coined term that has historically been capitalized. I feel that this project, which has many goals already, is not the place to wage such terminological disputes.

which they waded through the plethora of online information in order to understand something of relevance to their lives. Within the past year, I myself have undergone online research to gather information on health topics, the states and countries to which I traveled for academic conferences, and varied perspectives on the academic job market into which I had thrown myself. In some situations, expertise is easily delineated by credentials. While my friend would certainly listen to a homeopath, it was an M. D. to whom she turned for diagnosis and prescription options. Yet not all knowledge domains are as traditionally bounded and labeled as medicine. What happens to subject areas that lack established paths toward obtaining and announcing expertise?

An example of such a space is found through the special interest arena of the herp[2] hobby. As members of a community that features no exact, credentialed educational path to certification, herp hobbyists inhabit a domain that balances precariously between these modes of formal and informal knowledge. As multimodal texts that enable collaboration and dialogic communication, generative arenas for scholarship to enter, online forums represent many things for the fields of composition and rhetoric. The exploration of online forums for herp hobbyists presents an opportunity to understand, not only knowledge making and its rhetorical impact and influence, but the expertise that lies between the bounds of the professional and the novice, the expert and the layperson. What happens when layperson and expert overlap?

This project explores knowledge making in online forums for herp hobbyists. In so doing, it explores writing and knowledge production that lives in the borderlands between expert and novice, professional and popular, and formal and informal learning,

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[2] Herpetology is the study of reptiles and amphibians, and many people who keep reptiles and/or amphibians refer to their animals as herps. This term and its use in the project are discussed at length later in this chapter.

thereby complicating the definitions and boundaries of each. While complicating

boundaries between academic and nonacademic writing, this project not only contributes

to the field of rhetoric, but also to composition by examining learning practices. While

much of this project examines forum writing as a rhetorical product, there is no denying

the process of composing that human agents undergo in order to create such products,

and so this project also draws from composition theory.

Rhetorical theory has an extensive history of taking as its subject any of a number

of content areas, and internet studies, in particular, are prone to interdisciplinary

exploration – a point that Nancy K. Baym and Annette Markham made in "Making Smart

Choices on Shifting Ground" (ix). In order to conduct a thorough study of knowledge

making in online forums, this project draws variously on research from the fields of

rhetoric, composition, communication, education, sociology, and the sciences. In this

project, I assert that, amid ever-evolving conventions, site members learn the rules for

sharing knowledge in each online community. The conventions and the community of

online forums facilitate independent learning, which helps site members perform

specialized nonacademic writing while growing intellectually and generating knowledge.

In this chapter, I begin with the relevant literature upon which this argument for

knowledge generation in online forums is built. Next, I review core terminology on

which I lean throughout. I then summarize each chapter, explaining its relevance to the

larger project, before concluding with a general statement that broadly characterizes the

significance of independent knowledge making in the twentieth century.

Gap in Scholarly Knowledge and Research Questions

Early research on online forums often focused on the technology and its instruction among users that could not be assumed to know how to use the technology. Since then, much has changed, including the breadth and scope of scholarship about the internet. This broad swell of research into online environments[3] makes an interdisciplinary approach crucial to a thorough understanding of online environments. While composition's conversations on collaborative writing and e-learning sometimes touch on User Generated Content's (UGC's) ability to foster knowledge production, much current research on forums situates them in *classroom*-based learning and collaboration, neglecting *open* online forums. There is more to learn from the public online forums' ability to initiate learning when not a required course component: both in order to understand nonacademic knowledge generation and to learn what more instructors can do in their classrooms to teach effectively and develop best practices.

Gerardine Desanctis et al. distinguish "open" forums as "public – anyone can join the venue" (566). While Desanctis and her co-authors herald from the Business Department at Duke and a large amount of research on online communication is conducted within Communication Departments, a good amount of rhetorical scholarship exists regarding open, online spheres, and much of that falls under the specialized field of public writing. While public writing research evaluates the potential for deliberation and activism in the public sphere, few studies measure the causes and effects of writing that is public unless its *telos* is awareness, change, or reform. There is a gap in rhetoricians' understanding of publicness: its effect on writing and peoples' perceptions thereof. Since

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[3] Like Kate Eichorn, I prefer the term "online" as an alternative to "virtual" because of the history that the concept of "virtuality" has, as not or less-than the real (566). Martin Lister et al. present this terminological dispute as a dichotomy between "virtual" and "real" (209).

publicly voicing thoughts can be a first step toward public calls for change, public writing studies must explore non-activist public discourse.

Therefore, this project explores collaborative, public writing in discourse communities outside of the classroom to understand the differences that exist between voluntary and mandatory forum participation. It examines knowledge making in conjunction with participants' perceptions of online forums' rhetorical features, as well as their roles within a larger, public discourse community in order to explore the following: (1) *How do participants use public writing to generate and share new knowledge through the community of the open, online forum?* (2) *In what ways does the medium of the online forum, including its public sphere and/or community dynamic, support or hinder the knowledge making process?* These two questions are placed in conversation with each other, focusing on the intersection between public knowledge making and sharing *and* the medium of the online forum.

Review of Literature

A helpful entry point with which to begin is a review of the online forum: an asynchronous mode of computer mediated communication (CMC) that has existed since the 1990s. While not a contested concept, it is important to explain the online forum: an openly-accessible[4] form of asynchronous Computer Mediated Communication (CMC).[5] As with all new media, it is "digital, interactive, hypertexual, virtual, networked, and simulated" (emphasis removed, Lister et al. 13). Each forum focuses on a particular

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[4] Gerardine Desanctis, Anne-Laure Fayard, Michael Roach, and Lu Jiang define "open" forums as "public – anyone can join the venue" (566).
[5] Martin Lister defines CMC as "**email**, chat rooms, **avatar**-based communication forums, voice image transmissions, the World Wide Web, blogs etc., social networking sites, and mobile telephony" (emphasis in the original, Lister et al. 13).

subject matter, and a quick internet search demonstrates their ubiquity. There are knitting

forums, rhetoric forums, tattoo forums, literature forums, Batman forums, etc. Online

forums have topic areas, called "forums," which are further divided into categorical

subheadings called "subforums." Often, within each subforum, site administrators have

marked the most important or relevant posts as "stickies": permanent features that appear

at the top of the chronological listing regardless of their original post date. Stickies

cannot be altered or replied to, except by administrators. Forums require membership,

which is usually free, and this allows each member to converse using a self-created

profile. Forum users begin a conversation by starting a new conversation, known as a

thread, to which other members reply at their own pace. Most forums allow visual

elements and hypertext, and many have customizable profiles and space for other

personalization, such as photograph albums. Through these components, members hold

ongoing conversations about a shared interest area.

Early research on online environments, such as Boyd H. Davis and Jeutonne P.

Brewer's *Electronic Discourse: Linguistic Individuals in Virtual Space* often devoted

considerable time to the discussion of learning technology use because scholarship could

not assume that average people would be able to decipher the technology. While 1990s-

era work like that of Terry Anderson and Heather Kanuka devoted discussion to

technology instruction, research in the late 2000s, like that of Namkee Park, Kwan Min

Lee, and Cheong Pauline Hope, shifted toward complex issues of navigability's effect on

course software adoption.

A great deal of the literature on online forums focuses on their application as

learning tools in classroom environments. Davis and Brewer have established that e-

conferencing helps supplement in-class learning: a finding that matched Quing Li's work on online forums. Trena M. Paulus examined different modes of CMC, determining that online forums are more productive learning tools than other modes of CMC, such as e-mail. James Purdy established the value of wikis as asynchronous communication that helps student learn. In their study of e-conferences as classroom tools, Davis and Brewer found that requiring frequently graded posts sustained a regular rhythm that enabled learning. While studying the use of video conferencing as a class tool, Desanctis et al. found that electronic media that featured a high volume of information sharing was the most effective means of knowledge production in a "community of practice" (Etienne Wegner qtd. in 573-4). They found that a cohesive, dynamic, and steady stream of comments was essential to learning in the case of professional work training. This corroborates Ruti Gafni and Nitza Geri's findings that a mandatory, graded online forum requiring regular posts facilitated face to face learning in the classroom (339-341). Timothy J. Ellis and William Hafner suggested that for effective practice, teachers should build an autocratic structure that included peer feedback, self-reflexivity, precise learning goals, and frequent posting. Many studies have examined the use of online classroom communities to ensure learning.

Much of the research on forums as learning tools assumed an inherent value from the collaborative interactions the forums enabled. The aforementioned study by Anderson and Kanuka focused on forums as professional education tools, and in so doing, this study was among the few to make explicit the connection to collaborative learning. While Anderson and Kanuka and the previously mentioned Ellis and Hafner study drew explicit connections to collaborative learning, many discussions of UGC's value to learning

environments are based on an oft-under-explored premise that through asynchronous communication and dialogue, people help each other learn. In "Collaborative Learning and the Conversation of Mankind," Kenneth Bruffee explains that collaborative learning has a "social context for conversation" in which conventions facilitate learning within a communal conversation (642). This is exactly what most UGC environments exhibit, and so this project devotes time to communal learning as a first step to knowledge generation: a point to which this literature review returns.

Because elements of the social context affect interaction and discussion on the online forum, which in turn affects knowledge production, the technology became a focal point to this project, particularly as it related to my second research question regarding the ways in which the online forum medium supported or hindered the knowledge making process. In addition to understanding the technological conventions of my field site, it became necessary to examine the genric conventions of the online forum as well. Much work has been done on genre studies, the most famous of which is Carolyn Miller's rhetorical understanding of genre as a social action in her article of that same title. Miller later reinforced these findings through "Rhetorical Community: The Basis of Genre," in which she emphasized the importance of "understanding the nature of collectivity" to recognizing a community's genres and their development (72). Recently, Doug Brent echoed Miller's conception of genre, explaining that it is highly situated within context and exigence (565).

In *Nostalgic Angels: Rearticulating Hypertext Writing,* Johndan Johnson-Eilola explained that modes of analysis for print media did not always suit multimodal texts, a concept that Jannis Androutsopoulos also shared when he advocated Bakhtinian

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heteroglossic approaches in lieu of traditional analytical measures like demographics or language variation analysis. Genres help individuals perform identities, as Jeffrey Grabill and Stacey Pigg have found. This reinforced the process of socialization that sociologists such as Peter Berger and Thomas Luckmann outlined: that people learn identity and performance through engagement with their communities. This aligned with Johndan Johnson-Eilola and Stuart Selber's findings that people were likely to self-police in order to suit online forum conventions, which include, of course, the forum's genric expectations. Research on genre conventions includes Guo-Ying Wang and Shen Ming Qu's finding that people were more likely to post arbitrarily when their posts were not suitably rewarded by the forum community and its built-in structures.

While many online forum studies focused on structured learning environments, a majority of the remainder examined the forums' function as tools for deliberative and democratic exchange. Johnson-Eilola and Selber indicated that people limit their debates to on-topic conversations that seem acceptable to the community. Such findings have raised questions about the extent to which seemingly deliberative discourse in electronic environments is *actually* deliberative. Jay G. Blumler and Michael Gurevitch have argued that the democratization of online environments is problematic, because they are not deliberative. Similarly, Graham Smith et al. found that only a minority population engaged in online deliberation, and Liza Tsaliki found that online forums do not have enough diverse perspectives for a genuinely deliberative, public debate. In his examination of E-Democracy, Lincoln Dahlberg stated that the conversations he studied failed to meet the Habermasian ideal. However, other studies depict a more favorable portrait of online deliberation and social change. In her study of womanslink, Susan

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O'Donnell attested to the site's ability to foster deliberation in a public sphere. Leysia Paylen, Starr Roxanne Hiltz, and Sophia B. Liu asserted that online venues can be used as grassroots activism for crisis resolution in the event of natural disasters. Elaine W. J. Ng and Benjamin H. Detenber found that people were not persuaded or derailed by trolls who entered asynchronous communication environments in order to behave in rude, inflammatory ways.

The seeming contradiction in these findings points to a larger problem of representation in online environments. Other scholarly conversations have similar bodies of opposing research,[6] and I believe this is caused by attempts to represent too large a group from too small an instantiation. No matter how well designed the study, one forum cannot represent the whole of asynchronous communication any more than one classroom can explain the entirety of pedagogical experience in all fields and at all levels from K-12 to college or to vocational or graduate degrees. Additionally, these conversations focus on deliberation, sometimes bypassing the study of foundational elements that help or hinder such communication in a given online environment. Therefore, this project focuses closely on one online arena that is not meant to represent the whole, and through its course, it explores elements of the forum medium closely in order to understand their relevance to the people inhabiting these specific online forum spaces.

Much of public writing research has also focused on deliberation and activism. Elizabeth Ervin defined public literacy in her book of that same name as literacy that

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[6] A similar disparity in literature exists regarding the role of anonymity and gendered language patterns in online communication. Sanja Kapadizic and Susan C. Herring reviewed the existence of studies that prove or disprove gendered language online. Susan C. Herring later argued alongside John C. Paolillo that genres, rather than people, dictate the extent to which the use of language displays socially female or male language characteristics ("Gender and Genre Variation in Weblogs").

"designates written language, including written language that is read aloud, that appears in a public sphere and deals with issues of concern to a group of people" (1). While this definition blurs distinctions between literacy and writing, its strength lies in its inclusivity. Closely aligned with Ervin's was Linda Shamoon's definition of public writing, which details specific elements to include the ability to respond to exigencies as well as an inherently communal nature. Most significantly, Shamoon clarified that public writing "aims to stimulate social or political interaction" (6). While such definitions may appear to include more than deliberative discourse and activism, their close relationship to a notion of public spheres (whether Habermasian or Fraserian) indicates the scholarly gravitation toward public writing as deliberative exchange or activism on social issues. While some conversations on herp forums broach politicized topics,[7] the overwhelming majority of conversation remains focused on the care and maintenance of herps: hardly what most people would categorize as social issues.

Online forums can feature writing that is public but not activist, and there are more applications of and implications to such writing than activism alone. In "Made not only in Words: Composition in a New Key," Kathleen Blake Yancey wrote, "[i]n helping create writing publics, we also foster the development of citizens who vote, citizens whose civic literacy is global in its sensibilities and its communicative potential, and whose commitment to humanity is characterized by consistency and generosity as well as the ability to write for purposes that are unconstrained and audiences that are nearly unlimited" (321). Yancey indicated a broader function in public and of writing skills acquisition: that written interaction in a public arena is often a first-step toward

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[7] Examples of socio-political herp topics would include debates over laws that regulate herp ownership or the transit, sale, or breeding of herps.

developing the skills, confidence, awareness, and agency that enables public writing as it has come to be known in the fields of rhetoric and composition.

Furthermore, public interaction is dynamic, and it inspires other outcomes as well as deliberation and persuasion. Gafni and Geri learned that the public performance that classroom forum participation required led most students toward increased efforts to write well, since their work was visible to peers (339-341). This finding is reinforced by the body of scholarship surrounding learner autonomy, which Henri Holec first defined quite simply as the "ability to take charge of one's own learning" (emphasis removed, 3). Jinghui Wang et al., Rita Kop and Hélène Fournier, François Blin, Navaporn Snodin, and Jerome Eneau and Christine Develotte discuss publicness as one of many criteria for facilitating learner autonomy. The inherent publicness of forum writing helps people perform writing and content retention well, not only because they desire to succeed among peers, but also because the constant display of others' models, accompanied by praise or reprimand, continually guides observers through a learning process, as this project argues in chapter six.

Learner autonomy has gone by many names over the past five decades, including autonomous learning, incidental learning,[8] informal learning,[9] learner-in-control, self-directed learning, self-instruction, self-pacing, and self-regulation.[10] This project's task of understanding knowledge making in online forums required that I ascertain if and how well forum members learn from each other and from the site: a task that became the focus of chapter five, for which the research on learner autonomy helped tremendously. Very

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[8] Incidental learning implies learning by accident or through exposure more than through direct effort.
[9] Informal earning suggests a setting other than a classroom or structured learning environment.
[10] These last five terms all emphasize the role of learners in shaping and/or controlling their own learning experience.

little of this research lives within the disciplinary boundaries of rhetoric or composition. For a brief time in the late 1960s through 1970s, *College Composition and Communication* published a smattering of articles, reviews, and letters to the editor that took self-instruction as their focus. Falk S. Johnson argued that self-instruction could help students remove "undesirable" linguistic "reflexes" and build more "desirable reflexes" (36). For Johnson, the greatest benefit that self-instruction provided was to give the teacher (not the student) more power in the classroom. During this era, Don M. Ricks very briefly detailed his system for using self-instruction to help students find their own answers to technical writing questions, and Mary Willingham, Muriel Harris, and Donald Rhyan speculated that self-directed learning could benefit tutees in their writing centers.

R. Craig Hogan, who first wrote of self-instruction in *College Composition and Communication* by discussing resources that he made available so his weaker students could catch-up, returned to *College Composition and Communication* with an article that challenged the then-dominant view that self-instruction was behaviorism rather than humanistic education ("Self-Instructional Units Based on the Christensen Method"; "Humanistic Self-Instruction"). Educational psychology had advanced many behavioristic views of learner autonomy that fueled composition scholars' concerns that such learning would not fit within humanistic pedagogies. More recently, Michael Palmquist characterized the early humanistic phases of computer-assisted grammar instruction as featuring "a Skinnerian, drill-and-practice approach to the teaching of spelling and mechanics" whose relationship to composing was questionable (396). However, amid then-ubiquitous doubt, Hogan challenged the pervading thought that self-instruction programs dumped knowledge into the passive, empty vessel of the student.

Much as Androutsopoulos and Johnson-Eilola argued that new media could not be understood though old, print media frameworks, Hogan argued that former frameworks of evaluative criteria could not determine the success of new technologies like self-instruction tools. As time passed, these tools became more generative.

The technology itself sits at the center of these debates over the value of learner autonomy: its presence, its absence, its novelty (at the time), and its functionality. Johnson and Ricks focused, not on the technological supplements to the classroom, but on resources the instructor provided. Programs like Speak and Spell and *Where in the World Is Carmen Sandiego* replaced early technologies like Autotutor, which Donald Rhyan described as an expensive self-teaching multiple choice quiz with lessons and activities to help students learn from wrong answers without assistance (2). As Palmquist described, writing centers provided a first wave of technology adoption, and a subsequent wave of scholarship emerged to discuss Online Writing Labs (OWLs) (Palmquist 396; 403).

While some of the hesitancy with which faculty approached early self-instructional programs stemmed from their newness and cost, additional reluctance originated in the programs' rigidity. By comparison to today's collaborative online environments, these early technologies certainly inhabited rigid boundaries of right or wrong answers, with very little connection making, resource sharing, or indication of larger contextual awareness. In these early stages of self-instruction through technology, scholarship like that by Lynn J. Breininger and Stephen Portch focused on teaching students to use computers, rather than teaching them how to learn effectively. By contrast, today's instructors often assume that students have basic computer skills,

sometimes supplementing this assumption with FAQs or reviews of given courseware. This assumption reflects the increasing skill sets and proficiencies of most of today's students, and yet it mutes discussions of how people develop autonomy in learning, particularly when they learn through electronic environments. Mark Prensky's conception of digital natives underlies much of the discussion of millennials' online learning, despite the various criticisms that geography, exposure to technology and socioeconomic status affect digital literacy more than any generational marker.[11]

Despite the scarcity of composition scholarship on self-directed learning, self-instruction, incidental learning, informal learning, self-regulation, self-pacing, or any of the previously used keywords for learner autonomy, a quick glance at today's field of composition makes one thing clear; technology in writing abounds, as the emergence of publications such as *Kairos* (established in 1996) and *Computers and Composition Digital Press* (established in 2007) reveals. This suggests that composition scholars and instructors have increasingly assumed the presence of technology in the classroom, often coinciding with some degree of assumed autonomy to navigate said technologies. While the benefit of this assumption has been that it reflects the increasing skill sets and proficiencies of most of today's students, the assumption is troubling because it silences discussions of the how and when and why people are able to develop autonomy in learning, particularly when learning through electronic environments.

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[11] Findings from the Organization for Economic Co-Operation and Development (OECD) synthesized the variables contributing to digital literacy as "Access," "Previous Experience," "Frequency of Use," and "Confidence Level" (OECD). Additionally, Sue Bennett, Karl Maton, and Lisa Kevin attributed the widespread faith in the digital native to widespread "moral panic" among academics more than to systematically proven research (783). Furthermore, Erika Polson characterized digitally skilled people as an emergent, global middle class because of the population that appears to dominate many online arenas (145-9). However, college composition communities are not confined to this digital middle class and so participation must be explored in more depth.

Furthermore, scholars like Janice W. Fernheimer observed the importance of interaction and collaboration in learning, and learner autonomy researchers Rita Kop, François Blin, Navaporn Snodin, and Jerome Eneau and Christine Develotte have placed collaboration amid the crucial elements of learner autonomy: a finding reinforced and expounded upon in chapter five. This implies clear ties to Bruffee's and John Trimbur's collaborative learning theories. While this project's focus on knowledge making in online forums limits its ability to explore these connections between learner autonomy and collaborative learning, chapter five's discussion of the crucial role that community and collaboration play in forum members' abilities to learn autonomously provides a solid foundation upon which future theories of autonomous and collaborative learning can build.

These existing bodies of research on asynchronous communication and learner autonomy provide a rich framework with which to explore knowledge making, but of themselves, they do little to clarify what knowledge is and how it has come to be conceived as a thing to be made rather than discovered. The answer to the latter portion of this question resides in the rhetoric of science, which was largely influenced by Thomas Kuhn's *The Structure of Scientific Revolutions.* Kuhn presented science as a culturally situated practice that strove for meaning amid the cultures and technologies of its discoveries. He developed the idea of shifting paradigms that occurred throughout the history of scientific development and discovery. In "Being There with Thomas Kuhn: A Parable for Postmodern Times," Steve Fuller reviewed the reception that Kuhn received, noting that scholars like philosopher Dudley Shapere were quick to depict Kuhn as an anti-positivist: as assumption that seems greatly improbable. Kuhn shared the positivists'

concern with rationality in what Fuller describes as "*rule-following*" rather than "*rule-making* or *rule-breaking*" (emphasis in the original, 249). To Kuhn, science was a culturally situated practice through which humans strove to reach the most accurate understandings of the world around them that they could with the tools available to them, which included the worldviews that shape human understanding. He later emphasized the importance of learning the extant paradigm, which he termed normal science, in order to function as a productive scientist (Kuhn, "The Essential Tension: Tradition and Innovation in Scientific Research").

Kuhn's discussion of paradigm shifts in *The Structure of Scientific Revolutions* inspired many new approaches to the study of sciences, particular within the fields of philosophy, sociology, and rhetoric. For example, in *Laboratory Life: The Construction of Scientific Facts,* sociologists Bruno Latour and Steven Woolgar approached the laboratory as a cultural site for anthropological study. In doing so, they established that technology affects the developments in knowledge production, and that the written document of the scholarly research paper influences scientific research. Such works enabled twentieth-century studies that focused predominately on rhetorical components of science, such as those of Charles Bazerman, Jeanne Fahnestock, Alan Gross, and Greg Myers, all of whom drew from the cultural and sociological frameworks amid rhetorical investigation. Bazerman explored the rhetoric of science in S*haping Written Knowledge* by challenging dominant perceptions that, as an objective arena, science merely reports and is therefore not rhetorically shaped. Through his work, he maintained that every scientific article forms an argument. Even if one assumes that science itself portrays empiric fact, the process by which one vies for publication, conforms to genre, and makes

stylistic and structural choices that garner the respect of an audience is culturally and

rhetorically situated. In "What Written Knowledge Does," Bazerman traced this process

through the experience of James Watson and Francis Crick's paper "A Structure for

Deoxyribose Nucleic Acid," revealing, for example, that these authors diminished their

presence with the passive voice to give the appearance that the information stood alone,

integrating itself into extant knowledge on the subject. However, Watson and Crick

assumed a shared canon on DNA among their readership, and so their background review

was sparse by comparison to those of other fields. Additionally, Watson and Crick

(deliberately, according to Bazerman) incorporated active voice at times, choosing to

insert and assert their presence through the first person plural pronoun "we."

Bazerman also traced conventions in "Reporting the Experiment," a chapter in

which he positioned scientific reports as culturally situated documents that changed over

time to include discussions of procedure and methods for reproducibility of experiments.

This happened as journals moved away from spaces for interested naturalists, hobbyists

and gentlemen of leisure into a domain exclusively inhabited by professional scientists,

and the journal moved away from the practice of publishing conversations through the

form of letters to become a realm of scholarship alone (Bazerman, *Shaping Written

Knowledge,* 59-79).

Further situating scientific discourse within the arena of rhetorical communication

and cultural context, in *The Languages of Edison's Light,* Bazerman parsed Thomas

Edison's use of language through patent applications and promotions in order to develop

grid works of widespread (and eventually profitable) electricity across the country.

Bazerman established that science occurs through rhetoric, and that since most people

accepted a social constructionist perspective, one that acknowledged the social and

cultural and historical variables that shape realms of discourse, it made little sense to

deny these factors' ability to shape scientific developments, discoveries, and their written

dissemination through publications.

Situated amid the debate between Thomas Kuhn and Karl Popper, Gross

explained that ideological revolutions change perceptions and processes, thereby

changing perceptions. Popper believed in science as progress; for him, differences in

perspectives were accurately translatable. While Kuhn agreed that some translations

across some perspectives were accurate some of the time, he elaborated on the translation

metaphor to explain that, in science as in language, some phrases and concepts simply

could not translate across different cultures with different vocabularies and differing

ideological frames. Siding with Kuhn, Gross framed the scientific method in rhetorical

terms of invention, *stasis*, *logos*, *pathos, ethos*,[12] arrangement, and style, in order to

position both the scientific process and its dissemination as rhetorical functions. He

verified that figurative language assists the communication of scientific information,

particularly when new ideas are most effectively conveyed through comparative

language.[13] Like Bazerman, Gross situated science within social and rhetorical contexts,

but he incorporated analyses of the peer review process: its function as a persuasive act

that inherently added credibility in the eyes of an audience, as well as its effects on the

written dissemination of scientific ideas. After arguing that scientific discovery and

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[12] *Ethos* is a strong example of the challenge that conceptual translations face across time and space, as its meaning and original intended meaning are still debated today. For examples, see variations between Theodore Buckley's and George A. Kennedy's translations of Aristotle's *On Rhetoric,* as well as discussions of *ethos* by Thomas E. Corts, Susan Jarratt and Nedra Reynolds, William Sattler, and George Yoos.

[13] Jeanne Fahnestock discusses this and other tropes and figurative language in scientific discourse in *Rhetorical Figures in Science.*

communication are culturally situated processes that make the most effective meanings

amid extent knowledge frames and social ideologies, Gross argued that, because public

opinion shapes state and federal policy, the relationship of science to public spheres is

crucial.

In "The Social Construct of Two Biologists' Proposals," Greg Myers' work was

similar to Gross', but instead focused on the rhetoric of scientific proposals, combining

sociology and the rhetoric of science. The proposals he examined illustrated that

scientific discourse is neither neutral nor the objective dissemination of fact, but it is

instead situated among rhetorical and cultural variables. While scholars have placed

different emphases on the scope and reach of rhetoric amid scientific developments and

their dissemination among publics, there is widespread consensus today that science is

rhetorically situated. Rhetoricians can expand the frameworks for understanding the

spread, reproduction, and communication of scientific information: a process that is

frequently depicted as an oppositional binary between scientific journals and popular

science, insufficiently representing the complexity of communicating scientific ideas in

this information age.

Within the domain of science, knowledge is socially and rhetorically constructed.

Scientific discourse communities[14] are particularly relevant to this project, since the herp

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[14] While James Kinneavy defines discourse broadly to "mean any utterance larger than the sentence" (4), in *Audience and Rhetoric,* James Porter complicates the notion of a discourse community writing that "A **discourse community** is a local and temporary constraining system defined by a body of texts (or more generally, practices) that are unified by a common focus" (emphasis in the original, 106). He proposes, as an alternative conceptual frame, the word "forum," explaining that "A **forum** is a concrete, local manifestation of the operation of the discourse community. It is a physical location for discursive activity […]. Forums provide well-defined speaking and writing roles for its members, who are, in turn, defined by those roles. A forum shares assumptions about what objects are appropriate for examination and discussion, what operation functions are performed on those objects, what constitutes 'evidence' and 'validity,' and what formal conventions are followed, a forum may have a well-established *ethos,* or it may have competing factions and indefinite boundaries […] The forum is a *trace* of the discourse community, a

hobby relies heavily on established information and knowledge from many scientific domains, ranging from genetics to biology and chemistry: a relevance that is explored fully in chapter four. However, the question remains: what is knowledge and how does it differ from information? Because this project explores knowledge making and participation, and because it does so within communities for herp hobbyists, it uses this grid work of the rhetoric of science to trace what knowledge generation is and how it works. However, the rhetoric of science is only one manifestation of a larger perspective debate, and the difference between knowledge and information is best illuminated by lampposts that mark paths through epistemological territories.

Underneath this study of the rhetoric of science and its core components an epistemology perches, centered, between the extremes of positivism and perspectivism. Rather than choose between an objectively knowable world or a world in which, because *all* things are historically, culturally, and rhetorically situated, *nothing* can be known, I find myself along an intermediary point that aligns with Kuhn. Despite variance in initial interpretations that sometimes placed *The Structure of Scientific Revolution* at one extreme or another, Kuhn's original argument was far more subtle and complex than either extreme. As Gross explained, "[t]he rhetorical view of science does not deny 'the brute facts of nature'; it merely affirms that these 'facts,' whatever they are, are not science itself, knowledge itself" (4). For Kuhn and those who follow him, science is the pursuit of the most accurate understandings that can be developed within inescapably cultural, rhetorical, technological, and paradigmatic frameworks.

defined place of assembly or means of publication for discourse communities" (emphasis in the original, 107-8). While I wholeheartedly endorse this distinction, this project's focus on asynchronous online forums would make the application of Porter's proposed terminology impossibly confusing. Surprisingly, as chapter 6 proves, porter's definition of a forum s an arena for conversation would also serve as a very apt definition of an online forum.

In other words, to know that trees produce oxygen negates neither the rhetorical forces at play in producing and disseminating this information, nor the very likely possibility that within a few generations of technological and philosophical development, the scientific understandings of oxygen, photosynthesis, and respiration may change as tools become more precise. So too may the physical environments and atmospheric conditions in which plants grow, and other unpredictable variables. Conversely, the opposite may happen; understandings of oxygen production in trees may remain static for the next 2,000 years of human history. Humans cannot know that change will come in advance of its arrival. Gross explained that "[t]o say that a rhetoric of science views its texts as rhetorical objects, designed to persuade, is not to deny that there is an aesthetic dimension to science. From a rhetorical point of view, however, this dimension can never be an end in itself; it is always a means of persuasion, a way of convincing scientists that some particular science is correct" (5). Bazerman, Fahnestock, Myers, and all of the aforementioned science rhetoricians have similar statements that situate science – not as right or wrong or true or false – but as the most accurate understanding of the world and its process as situated amid numerous variables, not the least of which is the human capacity to understand.

Philosopher Richard Rorty fueled the spread of such ideas to rhetoric and composition, among other disciplines, when he reframed Kuhn's conception of normal and abnormal science as normal and abnormal discourse. He maintained the original pairing of normal as that which adhered to the established paradigms and rules, and abnormal as that which defied established paradigms and rules (320). Bruffee reported Rorty as influential to social constructionism in "Social Construction, Language, and the

Authority of Knowledge: A Bibliographical Essay." He surveyed the influences of Kuhn not only through Rorty in philosophy (774-775), but through others, such as Clifford Geertz in anthropology (775) and Kenneth J. Gergen in Psychology (779), in order to argue that "it seems to me of the greatest importance that schools and teachers in English and in the humanities in general make an effort to suspend judgment and give some consideration to social constructionist thought as a potentially fertile conceptual resource" (776). The implications of a social construct as a prerequisite for knowledge are tremendous to the field of rhetoric, as James Berlin, Anne Berthoff, and Richard Ohmann, among others, have established. Discourse affects social context and community are affected by discourse, which Bazerman describes as "accountability": "The process of holding the text accountable to these facts serves to shape the discourse. The mechanisms of accountability permeate the creation, reception, and textual form of statements in the collectives holding themselves accountable in this way" (*Shaping Written Knowledge* 61).

For the purpose of study, this project builds on a simple and functional definition of knowledge, provided by James Purdy. Purdy defined knowledge making within online composition as follows: "public knowledge making means the growth, development, and evolution of ideas through dialogic interchange in publicly accessible forums" (352). Purdy's definition, developed for a study of *Wikipedia*, applies well to any collaborative knowledge making arenas of UGC that house specific knowledge domains. As such, it is well suited to the situation of the open, online forum. Forums for caudate[15] hobbyists adds an element of practical application that makes some knowledge more quantifiable than in theoretical disciplines. There is an immediacy to the information that herp

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[15] Caudate, n. The taxonomic order to which newts and salamanders belong. See glossary.

hobbyists seek on forums. That information is often applied directly to an animal's care or maintenance, and users frequently report back to explain what applied knowledge worked, or to ask subsequent questions to continue problem-solving. But how does that information differ from knowledge?

Purdy's definition, with its "evolution of ideas through dialogu[e]" sounds much like a connectivist's conceptualization of knowledge (352). On January 17, 2011, Stephen Downes and George Siemens began offering a course called Connectivism and Connected Knowledge (or CCK11 for short), as a MOOC (Downes, "'Connectivism' and Connected Knowledge"). In this class, they focused on the meaning and function of connectivism while teaching through connectivist pedagogy. Ultimately, Downes and Siemens have described connectivism as a theory that depicts knowledge as a series of connections and networks (Downes "What Connectivism Is" n. pag.). Siemens further postulated that such networks, called nodes, could be internal (as is the case with neural network) or externally present in the world ("Connectivism: Learning Theory or Pastime for the Self-Amused?" n. pag).

This theory shares the constructionist belief that knowledge is a construct that is not merely absorbed from an external reality. Unlike social constructionist theories, rather than being built on foundations of language and human comprehension, connectivism locates knowledge amid the abstract connections between information and people: "Knowledge is, on this theory [of connectivism], *literally* the set of connections formed by actions and experience. It may consist in part of linguistic structures, but it is not essentially based in linguistic structures, and the properties and constraints of linguistic structures are not the properties and constraints of connectivism" (Downes

"What Connectivism Is" n. pag.). As well as being socially constructed by human agents, Downes has asserted that meaning is naturally formed through connections between people, and so it grows, independent of human endeavor ("What Connectivism Is" n. pag.). However, both Downes and Siemens have repeatedly written that connectivism is compatible with other theories, such as constructionism (*Connectivism and Connective Knowledge: Essays* 111). Downes' and Siemens' tendencies to write at length about the specific differences that distinguish connectivism from constructionism is itself an indication of the close similarities between both theories.

In *Connectivism and Connective Knowledge: Essays*, Downes described the characteristics of connectivism as based on four principles: "autonomy," "diversity," "openness,"[16] and "interactivity" (71). Purdy's definition of knowledge accommodated all of these quite directly. As Siemens has explained, the importance of connectivist theories of knowledge resides in their ability to recognize the communal nature of learning in an online environment: "Connectivism provides insight into learning skills and tasks needed for learners to flourish in a digital era" (Siemens "Connectivism: A Learning Theory for the Digital Age" n. pag.).

However, as a theory of knowledge, connectivism has faced a great deal of criticism. One wonders how much of this is caused by statements like "[w]e learn, in connectivism, not by acquiring knowledge as though it were so many bricks or puzzle pieces, but *by becoming the sort of person we want to be*" (emphasis added, Downes *Connectivism and Connective Knowledge: Essays* 29). Such declarations border the terrain of a philosophical espousal that, at times, reads more like theological dogma than

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[16] Elsewhere in the book, Downes specifies that "openness" includes "open content," "open instruction," and "open assessment" (38).

a critical theory. Most prevalent among connectivism's ongoing critiques is that it has remained largely untested: a grievance followed closely by the complaint that many of connectivism's criteria are not specific to connectivism.

For example, Rita Kop and Adrian Hill examined the skepticism with which connectivism was received, noting that, while education continually faces paradigmatic changes, connectivism is not the solution: "it does not seem that connectivism's contributions to the new paradigm warrant it being treated as a separate learning theory in and of its own right. Connectivism, however, continues to play an important role in the development and emergence of new pedagogies, where control is shifting from the tutor to an increasingly more autonomous learner" ("Connectivism: Learning Theory of the Future or Vestige of the Past?" n. pag). However, connectivists Siemens and Downes have repeatedly explained that they envision their theory as working concurrently with other extant theories of knowledge making. This is one reason that so many critics have risen to challenge the theory; after all, how can two different theories of knowledge both be accurate?

This project grapples to understand knowledge making in online environments of UGC. Forum members make knowledge at both individual and communal levels, and so, while knowledge is a social construct, it is also simultaneously connected through and to the community, suiting many of Downes and Siemens' digitally inspired conceptions of knowledge as a network. The reference frame that Purdy's definition lacked and that I add is a distinction between facts and information on the one hand, and knowledge on the other. Social constructionist perspectives provide clarity on such guiding frameworks. Humans cannot perceive the significance of an external world without being altered by

interpretive perspectives. From a connectivist approach, Brown and Duguid have elaborated on this understanding by explaining that constructed meanings create a distinction between information and knowledge. They itemized a series of defining characteristics that included the need for "a knower," and the need for interpretive construction and assimilation; knowledge requires a human perspective in order to exist, as it cannot simply exist without assimilation into a perspective framework (119-120). Simply put, knowledge is what happens to information as humans internalize it and give it meaning.

Despite Brown and Duguid's connectivist leanings, this is a very socially constructed understanding of knowledge: a point that Downes himself touched on. He differentiated constructionism from connectivism through the latter's focus on connections: "knowledge has many authors, knowledge has many facets, it looks different to each different person, and it changes moment to moment. A piece of knowledge isn't a *description* of something, it is a way of *relating* to something" (emphasis in the original, *Connectivism and Connective Knowledge: Essays* 41). In other words, connectivism emphasizes relationships in socially constructed knowledge. Again, connectivist understandings of knowledge work within constructionist theories of knowledge as a social construct, and they add criteria that apply particularly well to the movement, formation, and interrelation of knowledge within digital environments.

While quite similar to social constructivism, connectivism adds to the conversation on knowledge generation in online forum environments, because it is highly situated in networked environments such as those of *Caudata* and *FrogForum*. Downes has focused on autonomy as a criterion for connectivist knowledge, illuminating people's

abilities to enter a connected knowledge system and learn for themselves. A fundamental element for learner autonomy (which this project asserts can facilitate knowledge generation) is "interaction" within a community. Downes has further demonstrated the importance of a community to independent learning in a knowledge network by drawing from a personal example of being unable to locate information on a specialized topic for which there was no traditionally established knowledge framework (yet) (*Connectivism and Connective Knowledge: Essays* 47; 48). Opting into such a community makes knowledge relevant to the individual (*Connectivism and Connective Knowledge: Essays* 50), which facilitates learner autonomy among a connectivist knowledge frame, and this is exactly what the project at hand demonstrates.

The independent individual forming a community that Downes has described is remarkably like the knowledge building and learning environments on forums that amphibian hobbyists find in the medium of the online forum. The importance of communal interaction recurs throughout other connectivist theorists' work. Brown and Duguid have also stressed that communities are important for the construction of knowledge frameworks (128), which anchors knowledge within a sociological framework of how learning occurs. Berger and Luckmann explained that humans are surrounded by a social world that predates us, and that learning about this world must be a conscious act. The social world only exists and is objectified by or for or through us: never separately. Instead, there is a constant exchange in a recursive relationship between humans "and the social world" (61).

Connectivism suits this project's challenge to traditional modes of expertise and the new media environment where information is gathered and stored (Downes

Connectivism and Connective Knowledge: Essays 101). However, ultimately, the human act of giving information meaning (thereby making knowledge) is socially constructed. Therefore, this project approaches knowledge making through both constructionism and connectivism. Connectivism adds to social constructionism, providing specific details of community elements in online environments. One distinction is that, as Downes describes it, connectivism differs from the social constructionist perspective that humans have knowledge, by claiming, instead, that knowledge lives outside of people, residing in the networks into which humans plunge (*Connectivism and Connective Knowledge: Essays* 85). While an argument could be made for this – for the online forum as a network of knowledge, separate and distinguishable from the people who inhabit it – that would stray too far from the research questions' intended goal of studying human beings: their interactions, their knowledge, and their perceptions. This is where the reliance on connectivist theory ends, and social constructionism resumes.

Timely Implications and Contributions

In "What Constitutes Quality in Qualitative Internet Research," Baym reviewed Clifford G. Christians and James W. Carey's work in order to assert that "the best internet research attends to earlier scholarship about the internet, about other media, about earlier incarnations of similar social practices, and about methodology" (180). That is what this project strives to do: to understand knowledge production in an online environment by analyzing, not only the online landscape, but cultural, social, philosophical, educational, and rhetorical environments as well. Given the ever-increasing use of internet technologies and the subsequent blurring between boundaries

of personal and professional, agent and object, public and private, it is no surprise that distinctions between self-training and certification have become increasingly blurred: a complication that may be driven, in part, by the increasing reliance on credentials for professions that were previously entered into through experience and apprenticeship. This project examines one such environment in which neither extreme of any of the above binaries accurately represents the rhetorical situation as it is present, thus developing more complex understandings of forum writing, expertise, and at least one sector of the writing public.

This project concludes that online forums facilitate knowledge generation among skilled autonomous learners who appropriate genric and stylistic characteristics from the larger scientific discourse communities on whose borders they sit. This work challenges delineations between non-/academic writing as well as between popular and scientific fields by developing a complex and nuanced understanding of specialized nonacademic writing that challenges pervading assumptions about the dissemination of scientific information on the internet. Amid ever-evolving conventions, site members learn the rules for sharing knowledge in their online communities.

Terminological Decisions

The examination of knowledge-making among herp hobbyists necessitates a few useful terminological frameworks before moving toward core content. Throughout this project, as every scholar does, I struggled with the weight of what had come before. Over the better part of a century, scholars across disciplines have discussed the social construction of reality. Many who would defend an objectivist framework have been

quick to criticize conceptions of "relativism," often building up a straw man of its most

extreme implications only to set it alight and announce its blaze as demonstration of

failure. Even as early into the conversation as 1966, Berger and Luckmann addressed the

prevalent bias against relativism, reviewing that "Mannheim… coined the term

'relationism' (in contradistinction to 'relativism') to denote the epistemological

perspective of his sociology of knowledge – not a capitulation of thought before the

sociohistoric relativities, but a sober recognition that knowledge must always be

knowledge from a certain position" (10). Like Burger and Luckmann and Mannheim

before me, I chose to avoid the word "relativism" and the faulty assumptions that

sometimes accompany it. While social constructionism implies the absence of a

measurable reality, it more broadly suggests the absence of a means of knowing with

certainty how effectively one has measured reality and communicated the result. This

distinction, closely aligned with Kuhn and Rorty's epistemologies, is the one that many

opponents of relativism miss, and so I use the word perspectivism in lieu of relativism.

A similar complication arose when discussing knowledge: a concept quite easily

and often paired with ideology. Ideology carries with it the complication that, due to its

widespread use, its precise meaning is often vague. Additionally, due to its pervasive

presence in communist philosophies, the word ideology is commonly affiliated with

Marxism. James Berlin alludes to this before providing his own definition of ideology as

"the pluralistic conceptions of social and political arrangements that are present in a

society at any given time" (*Rhetoric and Reality* 4). Berger and Luckmann provide a

similar definition, but their footnote further emphasizes the problematic nature of the

term: "The term 'ideology' has been used in so many different senses that one might

despair of using it in any precise manner at all. We have decided to retain it, in a narrowly defined sense, because it is useful in the latter and preferable to a neologism" (204). As others had before me, I struggled with this word, and ultimately, I chose to shift the focus to a less politically imbued word choice: subjectivities. In this way, perspectives are indicated in an individual and community level without insinuating any particular politicized theoretical view of the world and its social or economic systems.

Throughout the course of this document, I have unwaveringly avoided using the word "truth." Of the concept of truth, Robert L. Scott writes, "[b]y 'truth' one may mean some set of generally accepted social norms, experience, or even matters of faith as reference points in working out the contingencies in which men [*sic*] find themselves. In such cases the word might better be avoided, for in it the breath of the fanatic hangs threatening to transmute the term to one of crushing certainty" (12). As with "ideology" and "relativism," "truth" is a troubling concept that, even with the best of intentions and explanations, is likely to lead individual readers to fairly inevitable interpretive biases, and so I have circumvented it steadfastly. I do, however, use the word "fact," which I would like to clarify. My usage of this word includes the social context in which information is established. Facts differ from truth in that there is less implicit connection to transhistoric, immutable absolutes. This matches Kuhn's discussion in *The Structure of Scientific Revolutions* of the progression of paradigm shifts that change the corpus of fact over time. This is the "fact" to which I refer. Facts are the best information available to us about the world within the paradigmatic context in which we humans, the interpreters of facts, are entrenched.

I faced another terminological quandary when deciding how to discuss my participants and the topics of their forums. The forums on which I focus for this project focus on amphibians, and over time, I decided to discuss my participants as *herp hobbyists*. Herpetology is the study of reptiles and amphibians, and so many people who keep reptiles and/or amphibians will refer to their animals as herps. Because many of the members of forums like *Caudata* and *FrogForum* have not only reptiles or amphibians, but both (and sometimes more), I used the term *herp* throughout this project except in situations where conversation becomes more focused specifically on amphibians only. Within herp-keeping communities, there is dissensus over preferred descriptor terms.

Pet and *owner* and *keeper* all emphasize an emotive connection that is not universal to the online forum. Some members are professionals, merchants, breeders, veterinarians, laboratory workers, zoo keepers, etc., and therefore, not all people treat reptiles and amphibians as "pets" or exhibit emotive connections to the animals in their care. The term *exotics* offends some because it lumps together any of a number of non-cat-or-dog pets, ranging from chinchillas and rabbits to tarantulas and scorpions. It is far broader than the online forums of study herein, and it others and further marginalizes those who have nontraditional pets. The phrase *reptile and/or amphibian* is appropriate but burdensomely clunky, and so I chose, instead, to use the word *herp*.

The site creators prefer the term *enthusiast* to hobbyist, and within *Caudata*, there is a subsection called *Caudata Culture*, the subtitle of which is "The Information Resource for Newt and Salamander *Enthusiasts*" (emphasis added, *Caudata Culture* n. pag). While this project almost deferred to this terminology, I decided that "hobbyist"

more accurately reflected the time, effort, and devotion that herp-keepers bring to their special interest.

To Edit or Not to Edit: A Brief Note on Stylistic Choices

Throughout this document, I have made stylistic and formatting choices. I have cited isolated quotations from threads by crediting the thread itself using MLA formats (e.g. "Name n. pag"). Exceptions arose when I examined multiple separate discussants on one thread, which warranted the inclusion of specific post numbers, such as is the case in chapter four, for example, which provides close examination of one page-long post within a 106 post-long thread.

When quoting from the forum, I did not edit the language used in openly-accessible, closed threads. In the event of a grammatical or typographical error within such a thread, I chose not to mark the error with "*sic*." While many forum writers use Standard English (SE) correctly, those who do not often have posts that are continuously littered with errors and the repeated use of the conventional *sic* marker would be burdensome and interruptive. Since at times, the language use and the presence or absence of errors became analytical foci, I felt that leaving the experience true to its appearance on the forum would be best. However, I edited basic typographical errors that occurred within confidential interviews and usage diaries. I did this, in part, because the forum threads are public, whereas participants' volunteered data is private. The other reason for this decision was that two particular participants expressed embarrassment and self-consciousness about their writing, and so I felt that basic editing would comfort

them, freeing them to write more in response to question prompts. Since they expressed gratitude at my offer, I am confident that this was an appropriate decision.

Some users create usernames that are all lower-case, as does danah boyd, a social media scholar. In such situations, despite the temptation to standardize names that could easily be viewed as incorrect or as typographical errors, and despite the best efforts of Microsoft Word's autocorrect features, I ensured that the individuals' choice remained intact. If site members or scholars represent themselves without capitalization, then their names remain in lower case lettering throughout this document.

Chapter Summaries

A preliminary step toward understanding how the medium of the online forum supports or hinders the knowledge making process was to understand what the elements of the online forum are. The third chapter, "A Taxonomy of Online Forums: The Development of Forum Genres and Sub-Genres," examines the genre of the online forum, in order to situate forum writing amid a set of conventions and participants' relationship thereto. Genre studies of new media environments provide an entry-point into an underexplored facet of writing in electronic environments, and so this chapter examines genre conventions among online forums as well as facets of the rhetorical situation that shape forum communities. Amid prevalent and expanding internet use genre examinations of ITexts must continue, since online resources are an increasing staple for Americans' knowledge making and sharing. This chapter illuminates the generic structures of online forums that normativize behavior and practice, thereby allowing members to acculturate into the social process of knowledge making. While

discerning these internet spaces' support of or impediment to individual agency and community building, this foundational piece argues that the forum genre engages in a continually changing, recursive cycle. Amid ever-evolving conventions, members learn the explicit and implicit rules and norms for sharing and generating knowledge.

That discussion is followed by an exploration of *what* meanings are made by discovering the forum's rhetorical influences. Chapter four, "A Rhetoric of Science among Experientially Self-Trained Hobbyists" challenges pervasive assumptions about the dissemination of scientific information on the internet by analyzing the SE conventions on amphibian forums, members' initiation into a writing culture of SE, and the influence of professional, scientific domains on effective care and maintenance of amphibians. This chapter explores knowledge making in non-professional, scientifically influenced domains. By examining public online forums' ability to facilitate accurate information exchange and rational debate within what many refer to as a popular realm, this chapter reconceptualizes the spread of scientific information, expanding beyond the traditional binaries of credible verses popular and formally educated versus formally uneducated. Terming this specialized nonacademic writing, this chapter asserts that accurate information can be found in places where science and UGC converge that are not traditionally considered credible spaces for information exchange, thereby establishing that people understand and reproduce *information* well: a preliminary step in the progression toward framing *information* into *knowledge*.

In order to understand how people come to comprehend and retain the information that is framed into knowledge, chapter five, "Opting-in Online: The Success of Learner Autonomy in Voluntary Forums," moves toward forum users' capacity for

independent learning. Amid continual, asynchronous exchange, people self-instruct, learning and creating knowledge in this process. This chapter traces the features of learner autonomy that online forum members exhibit, discovering that those who opt-into this environment often have moderate-to-high degrees of autonomy, which facilitates their knowledge acquisition, as well as their ability to generate and disseminate knowledge. Through the study of learner autonomy, this chapter uncovers that successful, independent learning pervades forums. Members develop both literacy and amphibian husbandry skills through the act of reading and writing online.

Through both the skilled assimilation of knowledge domains and the self-instruction of specialized information, forum users can make knowledge. Chapter six, "In the Gaps: Knowledge Formation and Transmission in Specialized Nonacademic Discourse Communities," reviews a number of knowledge-constructing scenarios. This chapter establishes the subjective nature of knowledge, showing that it is shaped by community value systems, affecting forum members' interpretations and application of information as they suit it to their individual and communal value systems and existing bodies of knowledge. That accomplished, the chapter moves toward in-depth analysis of closed threads, supplemented by participant data, that illustrates the formation and dispersal of knowledge constructs through cooperatively and condemningly enforced community norms. These examples are understood as instances of Rorty's normal and abnormal discourse, and each serves as a model-by-public-example to teach viewers and discussants the communally accepted linguistic parameters and knowledge frames. Taken together, these chapters assert that online forums facilitate knowledge making and sharing among skilled autonomous learners who assimilate characteristics of the larger,

scientific communities with which they engage, and they do so through adeptly navigating genre. These and the preceding chapters' findings are synthesized in the seventh chapter, "Conclusions: Implications of Opting-in," which discusses the limitations and implications of this project, as well as directions for future research.

Conclusion

Knowledge is never confined to the walls of a classroom, and throughout my life, I have met people with astonishing degrees of self-taught expertise in various knowledge domains. I have known people without literary training who are highly informed on the life and work of H. P. Lovecraft. I have met people who have taught themselves the history, theory, practice, influences, and philosophies of Jazz. I know astonishing cooks and knitters and chess players who have never sought formal training in their specialization, and of course, like my participants, I myself am a herp hobbyist.

The expansion of educational disciplines in what many would call the knowledge economy of the United States has brought an increase of credentialed paths in specialties that were previously self-taught or learned through apprenticeship. A mile and a half from my home in Providence, for example, there is a bartending school that teaches skills, information, and knowledge that people previously learned through watching, doing, and talking to one another. Police officers previously learned their trade through police academies and in-house training, but like many other professions that have faced an influx of highly qualified applicants, college degrees and credentials in fields like criminology are becoming so abundant that some cities and townships have begun to require them.

At the same time, some individuals achieve a balance of self-taught proficiency and public notoriety that earns them honorary degrees, bypassing the in-class learning. Nate Silver, a baseball statistician with a degree in economics who predicted the 2008 election results with astonishing accuracy has received an honorary doctorate in December of 2013 from Katholieke Universitteit Leuven's Statistics and Research Centre in Belgium ("Honorary Doctorate for Nate Silver" n. pag). While some may be tempted to dismiss such honorary degrees, perhaps noting Kermit the Frog's "Doctorate of Amphibious Letters" from Southampton College, one would be hard-pressed to deny that they raise questions about the cultural significance of accreditation ("Southampton College: Honorary Degree Recipients" n. pag.; "Kermit the Frog: Honorary Degree Recipient" n. pag.).

While this project is neither an argument for the removal of certified experts nor an advocacy for the treatment of all opinions as equally valid (regardless of the in-/accuracies that inform them, as Professor Tom Nichols fears), it does show that expertise is not confined to programs of study or certification. The abundance of online resources and the knowledge we can teach each other make it possible for people to cobble together their own educational paths. When motivated by personal interests, necessity, and/or passion, people can master abilities and knowledge which (particularly in fields that lack credentialed paths or that previously operated through apprenticeship) runs parallel to traditional notions of the expert. Such challenges to the traditional privileging of academic knowledge can further the scholarly understanding of how and when and why people are able to make meaning outside of the classroom.

CHAPTER TWO

Methods: Lines of Inquiry

"We are always partially researcher; partially participant, partially observer; partially self, partially other – never exclusively one or the other, never wholly one or the other."
-Brenda Jo Bruggeman, "Still Life: Representations and Silences in the Participant-Observer Role" 33.

Introduction

This project addresses the following questions: (1) How do participants use public writing to generate and share new knowledge through the community of the open, online forum? (2) In what ways does the medium of the online forum, including its public sphere and/or community dynamic, support or hinder the knowledge making process? Since this study discusses knowledge generation within public discourse communities, I had to remain aware of the culture of the open, online forum in which these public writing acts occur. This follows Lester Faigley's suggestion that previously anthropological and ethnographic methods should become tools for reading cultures of writing (*Fragments of Rationality* 243). Therefore, this IRB-exempted human subject research used qualitative methods to capture the complicated nature of online forums and public writing, allowing for an emergent design that evolved with the project.

Early into the project's design, I realized I needed to understand the members, their perceptions, and their choices. I also needed to examine the ways in which those manifested in online forum writing. I therefore relied on a combination of ethnographically influenced qualitative methods that directly addressed both individual members and also depended on analyses of the online forum as a public site of knowledge generation. This research design was predominately inspired by a naturalistic

approach that used ethnography, but this was supplemented by grounded theory

methodologies of categorization and classification, particularly in the chapter "Opting-in

Online." This methods chapter opens with a discussion of the research site before moving

to details of the data collection process, after which I explain data analysis procedures

and then conclude.

The Field Site: Delineating the Forum

Christine Hine remarks that, when undergoing qualitative research of the internet,

the field site is not fixed in place, but continually bounded and delineated by the

researchers' choices throughout the research process (1-4). As she explains, "[w]hen a

technology appears to offer up a clearly defined field site… these sensibilities suggest

that one should become suspicious" (Hine 5). Because the field site's borders cannot

always be predicted at a research project's inception, Hine advocates that researchers

avoid prejudging site borders, "and instead engage with situations that are found," a

process that is further complicated by the internet's pluralistic roles as "a tool, a place,

and a way of being" (Hine 4). I began with *Caudata* and *FrogForum*, two forums owned

and operated by the same site creator: John Clare. My preliminary observation queries

indicated that these forums run on the same software platform and feature similar

international audiences of amphibian hobbyists ranging greatly in age and expertise.

Since both forums have the same rules and guidelines, they created a vast field site of

herp forums that exhibit a similar *ethos* to one another.

My choice of *Caudata* and *FrogForum* was partly motivated by my own

involvement in the herp hobby. Like many of these forums' members and the participants

I interviewed, I have been interested in reptiles and amphibians since childhood, and like many within this herping community, I have also been interested in fish, aquascaping, birds, arthropods, and other nontraditional pets. The initial inspiration for this project grew from my endeavors to locate an axolotl breeder in 2009, having decided to add these aquatic salamanders to my menagerie of big-eyed tree frogs, leopard geckos, budgerigars, and tropical fish. Interacting on numerous forums while preparing for my comprehensive exams made me view the forums' conversations as rhetorical texts, and I decided to pursue further scholarly analysis.

While I sent queries to a number of forum administrators, John Clare's cooperation was fortuitous, because I had been active on his forums in the past, and because I am most familiar with the care and maintenance of herps. My previous involvement and familiarity with the content increased my understanding of the community, and it helped me gain access among forum members. While I did not know any of the participants who volunteered for this project before the study began, they could view my member profile, my past posts, and my reputation points to see that I was an insider to the hobby, which helped legitimate my interest in this project.

Shirley Brice Heath and Brian V. Street explain of participant observation in ethnographies that "the truth is that only rarely can we shed features of ourselves to be a 'real' participant" (31). My previous engagement within the community not only ensured that my participant observation was genuine, but it also helped me shape the questions I asked in order to understand knowledge formation within this community. Like others before me, belonging to the community gave me pause, and I wondered how to integrate my own self-reflexivity on my role. Just as Ralph Cintron before her reviewed the

epistemological debates surrounding ethnography, Brenda Jo Bruggeman has remarked

that self-reflexivity "risks turning representation into a solipsistic, rhetorical position in

which the researcher (the self) […] usurps the position of the subject (the other) […] we

have now put *ourselves* back at the center of our talk" (19). I was not comfortable

occupying such a central space, since I entered this project not to understand myself

(perhaps a valuable byproduct), but to understand knowledge making in online forums.

For this reason, while I remained self-reflexive in order both to understand my role as

researcher and to better understand the community I scrutinized, I chose not to insert such

self-reflection into my findings.

As ideas formed, I expanded outward to look variously at the forums' threads,[17]

stickies[18] and supplemental documents, like care sheets.[19] I did this, following danah

boyd's observation that "culture is socially proximate not geographically defined;

creating boundaries by medium or genre not only confuses matters. Thus, it makes far

more sense to find a sample population and try to flush out how they know and the

culture that forms among them" (emphasis in the original, "A Response to Christine

Hine" 28). I observed which arenas explicitly circled this public forum and its posts, and

I began with those.

To gain further perspective of these sites as comparable or contrasting to other

forums, I browsed through an array of forums for pet owners that included *FishLore, The*

Planted Tank, Aquatic Plant Central, and Talk to the Frog. Inspired by grounded

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[17] A thread is a threaded conversation: a series of posts that reply to and build on one another to create an ongoing asynchronous conversation.
[18] A stickie is a thread that an administrator or moderator has made a permanent feature of a forum or subforum. Stickies feature important conversations that recur on the forum to which moderators and administrators would like to draw attention.
[19] A care sheet is a document that lists basic care and maintenance needs of a species.

theorists' recommendations to analyze through comparison (Strauss and Corbin 84), comparative moments feature largely in the following chapter, "A Taxonomy of Online Forums," which situates *Caudata* and *FrogForum* as special subjects of study amid online forum communities as a whole. Such other forums are also referred to throughout the project as needed to provide perspective. Too much outward expansion would prove unwieldy, and it would limit this project's ability to answer the core research questions that drove it, and so, despite brief forays to other forum field sites, the bulk of this project focuses closely on *Caudata.org*: its threads, its members, its stickies, and its supplemental pages.

The field site is more than the ethereal place it occupies online. It is also the culture that the forum creates. Within the vast scope of the internet, it is crucial to remember that, unlike ethnographies of physical spaces, the online landscape is not geographically bounded or all inclusive. Ulf Hannerz explains the greater significance of *cultures* rather than *places* (whether on- or offline), writing that "[a]s collective systems of meaning, cultures belong primarily to social relationships, and to networks of such relationships. […] The less people stay put in one place, and also the less dependent their communications are on face-to-face contacts, the more attenuated does the link between culture and territory become" (Hannerz 39 qtd. in Hine 7). Because knowledge making is a social process, I remained continually aware of the culture and community of the online forums I studied.

I consider the larger community of herp hobbyists to be a framework for the field-site of online herp forums, and so I drew from it to provide meaning and depth to the online arenas I explored. This is a point that Charles Bazerman also makes in *The*

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Languages of Edison's Light, when he explains that language alone is not enough to understand phenomena. Bazerman states that "the environment for action is not always easy to know and is not always institutionally regulated" (342). To this end, I have drawn on the culture of the herp hobby to bring further depth to the rhetorical analyses throughout this work. One reason I succeeded at this is that it is a culture to which I belong, and so I was able to understand phenomenon that might appear ambiguous, unremarkable, or enigmatic to an outsider, and connect it to my rhetorical training.

Unfortunately, as with membership in any community, some facets appeared self-apparent to me; they are so ingrained in the culture in which I am immersed that I could easily miss their significance as phenomenon to explore. Therefore I engaged in self-reflexivity that is commonly advised with qualitative method research (Creswell 233). I followed boyd's advice: "*Never get too comfortable.* Always work to make the familiar strange; do not fetishize anything. When you start seeing patterns, try looking at what you're observing from a new angle. Try to make sense of practices in terms of the practitioner and the observer. Be reflexive of your own biases, and question any and all biases that you have" ("A Response" 29). My reliance on ethnographic and grounded theory frameworks helped me keep distance, and I continually sought constructive criticism from friends and colleagues who would remark upon such moments, allowing me opportunity to reexamine their relevance.

Overall, this field-site focused primarily on *Caudata* and the participants from *Caudata* and *FrogForum* who volunteered for this study, and it did so to maintain depth while exploring aspects of knowledge making process. Overall, to make meaning amid so many sets of data, and to bring that meaning toward a clear conception of knowledge

making on an online forum, I found ethnographic and naturalistic design to be helpful.

However, in the chapter "Opting-in Online," results naturally emerged into categories

that could be examined further, for which I relied heavily on grounded theory methods as

described by Anselm Strauss and Juliet Corbin. Since grounded theory's strength is to

"discove[r] regularities" and "identify elements and their connections," grounded theory

suited the emergent categorizations into which autonomous learners fall (Miles and

Huberman 7).

Data Collection: Participants

  While the online forum is a space open to the public, I chose to privately contact

this owner-operator to discuss the project and seek his blessing before posting my call for

participants to an appropriate subforum for off-topic conversations. My preliminary

observation of *Caudata* and *FrogForum* had shown me that not only were these two

tight-knit forum communities, but also that the site-owner was very actively engaged in

the day-to-day operation of these forums. I decided that it would be best to have John's

approval before moving forward for three main reasons: (1) if John did object, his voiced

dissent would prevent participant involvement, or he could remove my query from the

forums altogether; (2) if John understood the project's general purpose, he could assure

members that this was, indeed, a genuine research project; (3) out of respect to John, his

forums, and the work that he has done, I simply felt uncomfortable proceeding without

his knowledge and consent, even though the public nature of the forum space meant that

the IRB would allow it.

Through the private messaging (PM) system on *Caudata,* John and I discussed the scope, intent, aims, and needs of this project, and once he gave his approval, I posted the call for participants to the "Open Topics" subforums at *Caudata* and *FrogForum.* 11 forum members contacted me in response to the initial call for participants, all of whom received a copy of the project's consent form and an e-mail detailing the nature of the project. Among the 11 people who expressed interest were two minors, as either listed as such on their forum profile or in self-declared response to my statement that participants must be eighteen and over. I rejected these from the participant pool. Other forum members entered into private message exchanges wherein they queried me to better understand who I was, whether I was who I said I was, and what information I sought, ultimately deciding whether they should trust me. After this process, three more members declined participation.

Six forum members from *Caudata* and *FrogForum* committed to the project forming the narrow, purposive sample that I had sought. Following Matthew B. Miles and Michael Huberman's suggestion that "within case sampling helps us see a local configuration in some depth" (29), I was able to collect waves of data in order to examine this particular group of active members on herp forums. This research included participants with diverse ages in order to establish an array of life and literacy experience. The six participants of these open-access forum communities for amphibian hobbyists ranged from 18-60: two women and four men. They reflected the international communities of both of these amphibian forums, as they were citizens of England, Germany, Italy, the Netherlands, Poland, and the United States, and the group included

two native English speakers (NES), three nonnative English speakers (NNES) with high fluency, and one NNES with fair fluency.

As I explained to participants that they would be referred to by pseudonym, I asked them to select a preferred name. None did, and so, to retain the international character of the forum and my voluntary participants, I found myself assigning pseudonyms that reflected countries of origin. My Polish participant, for example, I called Piotr Szott, a first name taken from a friend, and a surname from my godmother, both of whom are Polish. Each participant's pseudonym underwent a similar evolution as I considered friends and loved ones who hailed from the participants' respective nations. The recruitment of voluntary participants meant that I could easily have missed the lurkers.[20] Shani Orgad explains "[l]urking enables patients [in medical forums] to learn about others' experiences and to relate their own situation to that of others without having to necessarily expose themselves and their feelings" (Orgad 43). For this project, I looked most closely at those who actively and directly engage with the forum, contributing to knowledge construction within the community.

However, I was fortunate that one participant who expressed concern about her NNES fluency also described her activities as those of a lurker. She predominately read threads and learned from them without writing and posting replies. Most of the threads she has posted feature dense visual images and a few simple sentences. While participants were not meant to be representative of the entire herp community, or even the entire forum, I was fortunate to collect this data from a lurker in order to retain perspective on and awareness of varied degrees of engagement and activity that forum members exhibit.

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[20] A lurker is someone who watches an online conversation but does not participate.

The participants that volunteered for this study are exceptional, autonomous learners, and the majority holds professional jobs in specialized fields. Two of the participants moderate the forums, and while none has a degree in herpetology, one is an aeronautical worker, one teaches information technology at the college level, and one works on a special task force on the Dutch police. Of the other two participants, one double-majors in history and biology, and the other volunteers at a children's library and keeps children in addition to her pets. One is pursuing graduate degree in psychology; one has a bachelor's and one year toward graduate school before he left; one has a vocational degree in electronics and telecommunications; two are currently enrolled in college (one studying biology and the other double majoring in biology and history); and one participant left traditional educational paths after high school.

This project relied on self-disclosures from participants as a sole means of establishing their demographics, their interest and expertise, their opinions and their practice. For example, it was important to establish participants' expertise with amphibian husbandry in order to ensure a diverse group of participants. However, categorizations of "novice" or "advanced expert" are somewhat arbitrary: blurry at their boundaries. Such labels are difficult among a community of herp hobbyists, many of whom are self-educated or experientially qualified, rather than easily defined by the boundaries of specialists' degrees. Additionally, their expertise is subject to change as they continue to read and learn, self-teaching their hobby and sharing their successes and failures with others. The novice I examine today may very well be an expert by the completion of this study. As Stephanie Kerschbaum asserts, identities are rarely fixed in place, and negotiating labels can be problematic among real life identities, which are

often fluid: far more situational and dynamic than they receive credit for (625). Identities are in a continual state of metamorphosis, shifting from one form to the next, hopping around our self-depictions, portrayals, and estimations like frogs, but far more difficult to dissect.

Furthermore, herp husbandry is nebulous, overlapping numerous related but distinct areas of interest. Some hobbyists may prefer simplicity in their animals' enclosures, while others construct elaborate vivariums[21] that feature waterfalls and live plants. Such dynamic specializations and diverse areas and degrees of expertise are difficult to understand let alone categorize, and yet, such categorization facilitates the understanding of the written interactions that allow forum users to share and generate knowledge that they possess and create. Kerschbaum postulates that composition should not focus on "fixing difference"; instead, she "argues[s] that teachers and researchers should admit to difference as rhetorically negotiated through a process named here as '*marking difference*'" (emphasis in the original, 619). Since this study queries users' perceptions of forum usage and knowledge making, I asked participants to self-identify such aspects as their degrees of expertise, thereby marking their own difference.

The decision to ask members to self-identify a variable like expertise also speaks to the larger reliance on self-disclosed demographics and identifiers when conducting internet research. Orgad discusses the dubiousness with which many approach online research sites, insisting that online spaces are no less genuine or reliable than offline (39). While the fourth chapter discusses reliability of self-disclosed data, it is worth noting here that Azy Barak and Orit Gluk-Ofri, John A. Bargh et al. and Nicole Ellison et al. have found that most people are generally accurate when self-disclosing information. Kristine

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[21] A terrarium is an enclosure that includes both living plants and animals.

L. Nowak argues that this is because online friendships require honesty to function (1457-8). While this is not to say that all online depictions are honest, Malcolm R. Parks and Kory Floyd's finding that many online friendships move offline over time reinforces the apparent role that honesty plays in the formation of community connections.

Jeffrey A. Hall and Natalie Pennington have found that, rather than lie directly about themselves, people are more likely to lie through omission than outright, depicting themselves as best they can and neglecting their negative traits. Because forum members give great importance to community, I saw no reason to challenge self-disclosed participant information. However, because (a) user profiles can feature omissions, and (b) situations and people change, sometimes more frequently than profile updates, the first interview featured demographic background gathering to ensure that I had the same data sets from each participant and to ensure that the information was up to date.

Data Collection Procedures: Usage Diaries, Interviews, Participant Observation, and Textual Analysis

I used multiple qualitative methods, including usage diaries, interviews, participant-observation, and textual analysis to triangulate results with depth. Throughout the process of gathering and analyzing data, I quickly decided that, because of the already wide scope of the research questions and the amount of data I collected, I should not move beyond the established field site of the online environment. While Hine notes that on- / offline cannot be assumed to be automatic delineations that mark the relevant boundaries of people's experiences (18), I quickly learned that my participants' offline

friendships with other herp hobbyists had begun online.[22] It became apparent that what

began as a pragmatic decision to limit the scope of my field site was the most relevant

bounding of field site for this topic. Additionally, while both Kate Eichorn and Brian

Wilson have advocated the combination of online and face to face data, neither studied

environments that revolved around internet use,[23] and Orgad mentions that the push to

include offline data is often motivated by a distrust of online-only data (39). As my

discussion of participants' online identity explains, I believe that I can trust their online

self-disclosures as much as I would those given face-to-face.

Participants kept usage diaries to record their online forum activities and provide

a precise understanding of their perceptions of their public writing and knowledge

generation. Such diaries asked participants to record the dates and times of their

engagement for a span of seven-14 days. Below basic quantitative data fields for date,

time, reason for visiting the forum and description of activities involved, participants

were invited to engage in self-reflection and about that day's forum activities. This

established the frequency of users' participation, as well as their perceptions of their own

forum posts and the dynamic of the forum: its public sphere and the potential of

community. The usage diary's intended purpose followed William Hart-Davidson's

description that usage diaries "hel[p] writing researchers learn more about the distributed,

collaborative, and mediated nature of composing processes" (155). I was able to track

data of post count and frequency through the online forum itself, which lists such

information under the users' profiles in a section called "statistics," but as Hart-Davidson

addresses, the usage diary provides a context through which to give such bare numbers

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[22] There is one exception that is discussed later.
[23] Eichorn studied paper e-zines in 2001, and Wilson studied ravers and youth activists in 2006, whose
physical actions were as significant, or more so, than online.

significance (168). Because these diaries also instigated reflective response, they prompted open-ended discussion that helped guide subsequent interviews.

Following basic interview protocols, the research shaped the questions, which were open-ended, often beginning with prompting phrases, such as "tell me about…" as recommended by Stacy A. Jacobs and S. Paige Furgerson (2-4). I designed each interview tool based on the research and data that came before it, and in the event of an omitted or incomplete answer, I sought further follow-up questions per e-mail. As Earl Babbie suggests, I maintained a neutral stance to (and role with) my interviewees, and because I conducted the interviews via e-mail, I had no trouble applying the same exact wording across all interview tools and recording exact participants' responses, since all were sent the same documents into which they wrote (191). One participant requested additional information before answering each interview tool. In order to prompt participants' general comfort, I had included a few less formal phrasal verbs in the interviews, and the nonnative English speaker with the lowest degree of language fluency e-mailed me for meaning clarification, since her dictionaries had trouble translating some of these phrasal verbs.

Combined with usage diaries, interviews established the frequency of users' participation, as well as their perceptions of their own forum writing and the dynamic of the forum. Interviews provided insight to participants' perceptions of forums, usage, and knowledge generation. All participants were given the choice of conducting interviews via e-mail, telephone, or video conference. All six selected e-mail as their media of choice and so I sent the interview and usage diary tools as attachments through e-mail. One participant's computer did not have Microsoft Word. When she e-mailed me to

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apologize for the delayed return of her first interview, explaining that she had difficulty finding time to use her son's computer to answer the questions in the word file, I offered to re-send the interview tool (and those that followed) in the body of an e-mail so that she could write her responses directly into the e-mail. She happily accepted this proposition.

Three interviews spanned the duration of participants' engagement. The initial interview established relevant educational or vocational background, as well as experience with amphibians and with writing. These questions sought general information about the members, how they became interested in the content, why they participated in the online forums, whether they did so often, and their opinions on these processes. Shortly after completing this first interview, participants began their usage diaries. Once they completed those, I sent them the second interview. While building on the questions of the first interview, this second interview focused on the community of the online forum. It probed members' attitudes toward each other and the overall dynamic, as well as the credibility and trustworthiness of the User Generated Content (UGC) that they read when they visited the forum, which aligns with Stacy A. Jacobs and S. Paige Furgerson's suggestion that easy questions come first (4). The second interview followed the usage diaries, and it queried the social environment of the forums, as well as members' opportunities to share their special interest in herps outside of these online spheres.

Like the second interview, the third built on those that came before, this time adding questions that specifically targeted writing attitudes and behaviors. Staggering the interviews allowed the flexibility to tailor each based on its predecessors in order to examine specific writing behaviors and messages that ongoing participant observation

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indicated. The first interview revealed close connections between forum members,[24] which led me to redesign the second interview tool in order to follow-up more specifically on community dynamic and personal connections. I focused the third interview on writing attitudes because of comments from usage diaries that indicated diverse attitudes toward writing that bore closer inspection.

While participants completed their interviews and usage diaries, I collected data through participant observation. This added another tier to the data set as I was able to engage with and observe the forums, focusing on *Caudata.* I took profuse notes, bookmarking some threads and saving an annotated document with URLs to other threads. This participant-observation began before participant selection was completed, and it continued throughout the process of collecting data from participants. Concurrent to my copious observation notes, I also kept a usage diary of my own, following the same guidelines that I had provided to my participants.

In addition to participants' data and my own participant-observation, I needed to analyze the forum environment and the writing on it. The IRB does not require permissions for texts on public, online spaces like online forums. To appease my own ethics, I decided that, for textual analysis of public forum writings, I would only refer to (a) threads with which my participants had not engaged and (b) threads that were closed (inactive), and at least three years old. As Malin Sveningsson Elm explains, "[i]f we start to compare environments, we will probably discover that we are not faced with a dichotomy between public and private, but rather with a continuum in which several different positions are possible between the variables, public and private" (75).

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[24] By this, I mean the connections between members of the forum community: not between the different research participants in this study.

Elm presents a four-point continuum of public, semi-public, semi-private, and

private, delineating the boundaries by ease of access (75-6). Elm's definitions place

online forums like *Caudata* and *FrogForum* between public and semi-public spheres.

According to Elm, "[a] public environment is one that is open and available for everyone,

that anyone with an internet connection can access, and that does not require any form of

membership or registration. Public online environments can for example be represented

by open chat rooms or web pages" (75). This differs from a semi-public, which Elm

describes as "one that is available for most people. It is in principle accessible to anyone,

but it first requires membership and registration. In this category we find most web

communities or social network sites" (75).[25] The complication with online forums like

Caudata and *FrogForum* is that they do require (free) membership to *post* on their sites,

but this membership is not required in order to *read* the material that others have posted

to the sites.

However, such definition schemes delineate spheres by degrees of *access* rather

than *intent*. How many people posting to public sites such as *Caudata* consider the wide

array of use their words will find over time and through recontextualization? *Facebook* is

an example of a semi-public site by Elm's definition, yet I doubt many people would

expect their status updates to be reproduced on other sites or within scholarship. As Elm

posits:

> In some cases, the fuzzy boundaries between public and private parts of
> online environments may make it difficult for users to grasp the gradual
> transition between private and public spaces. According to this view,
> people may perhaps not be aware of the fact that their actions and
> interactions may be observed by other people, even perfect strangers. Or

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[25] Elm defines semi-private as an arena wherein membership has "formal requirements," rather than being
free and open, and a private arena is "hidden or unavailable to most people [with…] restricted [access]"
(75).

even if they are aware of the publicness of the arena, they may forget about it when involved in interactions. It can sometimes be that even if a certain internet medium admittedly *is* public, it doesn't *feel* public to its users. (emphasis in the original 77)[26]

Facebook in particular is a good challenge to these categories, because even while the site is accessible to anyone with a membership, individuals can choose privacy settings that prevent their profile from being searchable by strangers if they understand how to adjust such preferences. Otherwise, the default setting is that *Facebook* remain entirely public unless a user adjusts privacy settings. In other words, even on that one site, some members behave very publicly, while others might behave very privately (adjusting their settings accordingly).

Elm's solution is that "[r]esearchers may instead focus on a slightly different question about their ethical path: [*sic*] Is the environment *public enough* for us to study it without getting informed consent?" (76). The extreme ends of public and private present clear situations that apply to IRB rules and regulations, while the intermediary zones create greater ethical quandaries for the researcher. For this project, I considered how exposed these public posts become when used for scholarship. If any reader searches online for any exact quote from a forum thread, it will be the first internet search result. There is absolutely no way to both quote threads and maintain confidentiality. This is why, despite the IRB's general stance that a forum post is an example of a public document, I set my own boundaries and used dated, closed threads with which none of my participants engaged. This raises interesting questions about the need to further classify internet research, and future research should explore this further.

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[26] Elm also notes that archiving practices and privacy policies change over time, so that the understood rules of public or private may not be the same later as they are at the time of a post.

Data Analysis Procedures

In summary, the data gathered in the course of this study was comprised of three interviews and one usage diary from each participant, participant-observation notes and a usage diary from me, and the text of inactive forum threads that were at least three years old. The size of the forum community presented one of the largest challenges to this project. Since forum users can create multiple accounts and/or create an account to ask only one question, never to return, it is difficult to ensure representation of the forum population or the population of active members. Additionally, those who chose to join this study shared a high engagement with the online forum that affected results. Instead of aiming for representation, this study focused on particular subjects in a particular context, providing an in-depth view of a narrow situation: a focused snapshot rather than a broad landscape. While this means that the results of this project do not represent of all internet writing or all forum writing, there are advantages to such specificity.

As Nancy Baym cautions, "from a qualitative perspective, particularly a dialogic one, generalizability is neither relevant nor possible. The goal instead is comparability and the ability to offer analyses that can be coordinated with others" ("The Emergence of On-Line Community" 175). Therefore, rather than try to generalize results for the whole of the internet or for all online forums, which themselves represent a broad array of rhetorical situations, as chapter three attests, this project focused closely on writing participation within herp forums, which allowed it to gain precise insights that a broader representation might have inhibited. Chapter five, for example, provides close examination of examples of successful independent learning with more depth and specificity than would have been possible with a more representative pool. The

ethnographic structure of this project allowed emergent groupings of phenomena that I witnessed during participant observation. Once these decisions became apparent, I examined each in more depth. Those variable groupings with the most explicit influence on knowledge making (genre, rhetoric of science, autonomy) became fully articulated into developed chapters that culminate in chapter six's discussion of knowledge making.

However, being so different from the others, each grouping required more or less reliance on different methodological frameworks, different data sets, and analysis thereof. Chapter four, for example, was inspired by the observably scientific tenor of much of the communication on *Caudata* and *FrogForum*, and so it combines rhetorical theory and textual analysis. Chapter five, however, explores the forums' ability to facilitate learner autonomy. Both are immediately significant to understanding knowledge making; the former establishes knowledge domains by which members are influenced, and the latter establishes that forum members teach themselves such scientific influenced content and rhetorical style through self-motivated learning. However, textual analysis was too confined a method to bring to the broader, observed phenomena of self-instruction. Therefore, the latter chapter relies more on the categorizing and theorizing processes of grounded theory methodologies and less on ethnography. Rather than abandoning the latter, the project shifted toward a more categorical way of making meaning from the data that the study provided. In other words, while grounded theory continually shaped this project, it became most specifically influential in chapter five.

Overall, the largest challenge of the project was its scope: a challenge that I continually met with multiple tiers of data collection and diverse method strategies that would allow the project to bend productively toward the findings that data revealed

through one layer after the next. The research questions were complex and multifaceted, as was the research site. Therefore, a lengthy process of data analysis ensured rigor and accuracy in findings. Data analysis required synthesizing and interpreting the notes, texts, and experiences of participant observation, and rhetorical analysis of the forum and its posts. To this end, Strauss and Corbin's variation of grounded theory methodology facilitated an inductive data analysis. At every stage of data collection, I coded multiple sources of data (participant observation, interviews and usage diaries) for recurrent concepts that pertained to the knowledge making and sharing process and participants' perceptions thereof. As Miles and Huberman explain, "qualitative data are more likely to lead to serendipitous findings and to new integrations; they help researchers to get beyond initial conceptions and to generate or revise conceptual frameworks" (1). This allowed me to (re-)shape many aspects of the project over time. Emergent themes in one set of data from an interview tool were followed through the subsequent tool, which revealed the importance of genric conventions and experiential learning, as well as the influence of science rhetoric, and self-instruction, all of which led to a better understanding of knowledge generation as I describe in chapter six. As I looked more closely at each of these inductive categorizations, I deduced influential variables before again examining the data for additional inductions. Each wave influenced survey tools, coding, and the end result.

At many times throughout this project, I relied on rhetorical analysis of participants' data in conjunction with rhetorical analyses of closed threads, as well as interpretations of the forum as a community with a specific, public, rhetorical situation in order to address this study's research questions. I brought depth to this conversation

through rhetorical analysis of the presence and use of discourse strategies within core components (like stickies) as well as discussion and debate in ongoing or closed threads. To analyze the rhetorical dynamic of the forum itself, most of the rhetorical analysis focused on closed threads: inactive conversations that had already ended. As themes emerged through participant-observation, I sought illustrative threads to demonstrate each point.

I chose to reuse the example threads when possible, often selecting the same post for demonstration of multiple points throughout the project. This was not because any one thread was the only or the best example of any or all of my claims. Rather, it was because the online experience and the advanced nature of what I come to call *specialized nonacademic writing* amid many of the discussions required a great deal of framing in order to situate an example for a non-herp-hobbyist audience. Rather than select different examples, the content of which would have to be explained in depth to ensure clarity before analysis, I chose a few strong examples and relied on them as often as was appropriate. Obviously, one forum conversation does not represent the whole of the forum experience, and so I used multiple threads throughout, but I felt that, when possible, revisiting a previous example thread to clarify a new point had the added benefit of showing the layers of complexity held within even a single post.

Meet the Participants

Each participant is more than the basic demographics that the methods chapter briefly reviews. Each is a fully developed human with a unique history and experience

that s/he was kind enough to share with me throughout the duration of this study. These descriptions endeavor to provide a snapshot of the character of each participant.

Anne Janes

Anne is a 45 year old mother of four with a high school degree who works part time at a children's library. Her interviews and e-mails expressed an endearing humility that did not account for the vast knowledge of herps that her forum posts encompass. She worries about her spelling and her handwriting, and despite her vast knowledge, she self-reported as an intermediate hobbyist. She has participated often on the forums since 2007, writing 3,473[27] posts in that time, and her patient and supportive tone has earned her a position as a moderator: a role to which she devotes hours online each day, and brings unending patience and understanding.

Anne was the first participant to contact me in response to the posted call for participants, and throughout my exchanges with her, Anne spoke with excitement about her animals and her breeding projects. She detailed conflicts and concerns with the forum with the same *gravitas* that instructors bring to the struggling writers in her classrooms, and she spoke of the forum as a community of friends, many of whom she has been pleased to meet offline. As a child, Anne saw an axolotl in a pet store and fell in love, and since then, she has continued to keep amphibians. She has seven species of pet salamanders, many of which she breeds, in addition to "a cat, a gerbil, and a family" (Janes Interview 1).

Adam Wolf

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[27] Post counts reported in this chapter were accurate as of October 2012.

Adam is a 60 year old Information Technology instructor at a community college in the United States with a bachelor's degree and some graduate schooling. He has participated on the forums frequently, and like Anne, his ability to teach others, mediate conflict, and moderate debate earned him a position as a moderator. The only *FrogForum* member to volunteer for this project, Adam has belonged to the forum since 2009, and in that time, he has written 1,089 posts. His reply to my participant e-mail found him almost tied with Anne's quick response to the original query. Always the first to arrive, his were the most detailed and thorough responses to interviews and usage diaries. Adam wrote of the forums as spheres for amicable, civil debate: an arena in which he is pleased to take part.

He has collected herps since the age of ten, at which time he lived abroad in Europe. He became fascinated when a fellow student brought local newt and salamander species into show and tell. With his self-taught herp education, he once worked as an amphibian specialist at a zoo. At present, he keeps four species of frogs in addition to a dog and two cats. Like Anne, Adam has forged deep and lasting friendships with many members of the forum community, one of whom, a South African citizen, he has helped apply to universities in the United States. He also reported himself an intermediate hobbyist, despite having enough expertise to moderate the forums and direct other members toward valuable sources of information. He has a specific task list each time that he checks the forums to ensure that he does a thorough job as moderator: a task to which he devotes hours each day. Adam's kindness, patience, and respect glow throughout his posts, his comments, and his interviews.

Kees Gere

Kees is a 30 year old member of a special task force of the Dutch police in the Netherlands, a job that he took because it offered steady work and job security. He has a high school education, and he is now pursuing a graduate degree in psychology. He has very high English language fluency, and he has been a forum member since 2001, in which time he has written 652 posts. His love of amphibians began when he was 8 and a teacher encouraged him to collect tadpoles from nearby pond and raise them to frogs. Since then, he has been hooked, and he has been fortunate enough to find a girlfriend who shares his interest. This is particularly beneficial, because like many of the participants, much of the free space in his home is devoted to herp enclosures. While he began with axolotls, as many caudate hobbyists do, he now keeps 20 species of newts, salamanders, and frogs, 10 of which he breeds, in addition to having two cats.

Kees strives to construct enclosures that replicate a natural environment, and he explained that his favorite part of the forums is that they feature diverse people and views from which he learns, even when he does not agree with the perspectives that others raise. He participates on many forums and belongs to many newt and salamander associations. While his time is spread thin and he would like more time to engage with the forums, Kees still checks them regularly. He has a distinct sense of humor, and his interviews were speckled with moments of levity. He joked about "being a dirty man" in his personal life in order to explain that he self-sensors on the forums (Gere Interview 2).

Gabriella Adorno

Gabriella is a 29 year-old Italian, aeronautical worker with a vocational degree in electronics and telecommunications who joined the forum in 2009, and since that time, she has written 58 posts. She is endearingly concerned about her developing English language fluency, and as a result, while she reads a great deal on these English language forums, she does not write on them often. The threads that she has posted are often image-heavy, showing well-photographed naturalistic enclosures that have rock formations and waterfalls.

Gabriella has always loved aquatic salamanders, but she only began keeping them when she was 24, and she now considers herself an advanced hobbyist, as she has bred many species. She currently keeps six species of salamanders and one species of frog, all of which are aquatic. She not only wrote of a passion for animals, but interview comments and the care that she gives to her enclosures and her photography thereof also reveal her engaged devotion to the hobby.

Gabriella explained that she loves the forum community and its diverse people, and she wished she had more time to spend on the forums. In particular, she reported that she appreciates the forum: the creation of a social community with which she can interact. Despite this, she is occasionally frustrated by new members who write as though they are texting. Her difficulties with English language acquisition make such posts impossible for her to understand. Toward the end of this project, after presenting preliminary results at conferences, I realized that it was difficult to explain the care and effort that went into keeping herps or providing them with naturalistic spaces. When I asked participants to send pictures of their enclosures that I could include for conference talks and other scholarly endeavors, not only was Gabriella the first to respond, but she

did so enthusiastically, sending several e-mails with phenomenal photographs, and an invitation to view the photography that she posts online.

Karl Schmidt

Karl is a 20 year old German whose first interest in herps came at the age of 12. A fur allergy limited that animals that he could keep, and many of his early herps died because of the poor advice that pet stores gave. Six years, later, he found a number of forums with helpful information, and that was when he resumed the hobby. He joined *Caudata* in 2011, since which time he has written 105 posts. He keeps seven species of amphibians, some of which he breeds, and he has a particular interest in lungless salamanders and planted tanks.

While he is also interested in philosophy, Karl is currently a college student studying history and biology, and he hopes to follow a career path toward herpetology. The forums have given him a space where he can learn, which he loves, and he appreciates the diverse people and views that they offer. While he considers the forum a friendly community, he is quite formal in some of his posts, as he was with most of his interview responses.

Piotr Szott

Piotr is a 19 year old Polish college student majoring in biology. He first began keeping amphibians when his father gave him his first newt at eight years old. His father, a biologist, also introduced him to the forums by forwarding a link to an article about salamanders in 2007. Since then, Piotr has been a member of *Caudata*, and he has written

440 posts. Having recently moved to a larger apartment, he is able to keep five species of caudates, an experience that has made him an advanced expert in the hobby, and he also keeps planted tanks and crustaceans. Throughout his interviews and his posts, his confidence sometimes reveals impatience with those who have not yet learned the herp husbandry that now comes easily to him. Despite these moments, he interacts often on the forum, and he values the community and its abundant information.

Conclusion

Observing the ongoing conversations at *Caudata* and *FrogForum* was a rich experience, the value of which was increased through learning about the members of these forums and being invited into this portion of their lives. Through their kindness and generosity, I have come to the understanding of knowledge construction in specialized areas that I share in this project. As Miles and Huberman write, "[q]ualitative data, with their emphasis on peoples' 'lived experience,' are fundamentally well suited for locating the *meanings* people place on the events, processes, and structures of their lives […] and for connecting these meanings to the *social world* around them" (10). As I conceptualized the field site, the participants, the instrumentation, the forums, and knowledge making itself, I realized that each influenced the others. My continually fluid notions of each of these elements testify to the merits of qualitative research, which can allow for emergently designed projects.

CHAPTER THREE

A Taxonomy of Online Forums: Genre Development and Acculturation into Forum Communities

"Because they are historical products of human activity, all socially constructed universes change, and the change is brought about by the concrete actions of human beings. If one gets absorbed in the intricacies of the conceptual machineries by which any specific universe is maintained, one may forget this fundamental sociological fact. Reality is socially defined. But the definitions are always *embodied*, that is, concrete individuals and groups of individuals serve as definers of reality."
Peter L. Berger and Thomas Luckmann, *The Social Construction of Reality* 116.

Introduction

  The online forum is a new media form of Computer Mediated Communication (CMC), and it is important to understand its medium, not only because of its survival since the 1990s, but also because of its continued ability to facilitate tacit knowledge sharing.[28] As a mode of new media rhetoric, forum writing allows collaborative, interactive information sharing and knowledge production, and so genre studies provide an entry point through which to understand such interaction and its results. Therefore, this preliminary chapter considers genre conventions among online forums, as well as facets of the rhetorical situation that shape forum communication, in order to begin answering the second of this project's two research questions: in what way does the medium of the online forum support or hinder the knowledge making process?

  This chapter first explores the online forum as affected by genric expectations and the discourse communities that surround and influence them. Next, it clarifies technological variables' interactions' with genric conventions, along with forum members, the rules they sanction, follow, or disobey. This interaction culminates in the

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[28] Tacit knowledge sharing is defined in the introduction as "associated with skills or 'know-how'" (Cook and Brown 381).

continual evolution of enforced genric expectations as they shape and are shaped by the software, the rules, and the humans that create them. Variables such as sponsorship and forum templates illustrate this, since they impact genre and the human adherence to or rebellion from such conventions. The following sections discuss human interaction amid technological and genric conventions that operate as facilitators and limiters of conversations. Amid these interacting variables, forum members acculturate to the rhetorical situation of a particular online forum. The chapter's analysis is framed by the benefits of supplementing traditional, print media analysis strategies with a heteroglossic approach to new media environments.

Reworking old print media frameworks to include new understandings of CMC clarifies the interplay between the online forum medium, its nature, and its community. Therefore, it is to such an examination that this chapter turns. One prominent conversation in new media studies has been what Martin Lister et al. have deemed "the alleged dichotomy or difference between 'real' and 'virtual' experiences" (209). However, while some depicted online communities as "imagined"[29] or "pseudo-communities,"[30] others such as Nancy K. Baym and Steven G. Jones have made compelling cases for the legitimacy of community formation in online environments (Baym, "The Emergence of On-Line Community" 38; Jones 21). Furthermore, in "Rhetorical Community: The Basis of Genre," Carolyn Miller explains that community is an "internal, constructed" part of rhetoric: not an outside variable (74). Genre studies illuminate community interactions and effects thereof, which provides a foundational

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[29]Benedict Anderson termed online environments "imagined communities" according to Baym ("The Emergence of Online Community" 38).

[30] James Beniger and Scott Peck preferred the term "pseudo-community," as Jones explained before countering the premise (21).

understanding of the social community of the online forum: a component to which this project repeatedly turns.

Miller explains that rhetorical features such as genre provide stability and unity amid diverse and sometimes divergent communities. Since community helps the online forum function, a point to which each chapter of this project returns, genre is fundamental to the forum's generative environment and the knowledge that it produces. The online forum genre features norms to which members must adhere if they wish to enter and remain within the specialized discourse community of the online forum. This process of socialization is important to knowledge making and sharing, which is introduced here and elaborated on throughout the whole of the project. Understanding this online landscape in which forums operate provides a logical step toward conceptualizing knowledge generation in public online forums for herp hobbyists.

In general, complications arise from breaking the boundaries between print and online communications: sometimes because scholarship hesitates to view their underlying drives as similar, and at other times because of an initial reluctance to acknowledge difference. Throughout *Nostalgic Angels: Rearticulating Hypertext Writing,* Johndan Johnson-Eilola marks the problems of applying traditional print media models to new media multimodality, or hypertext as it was known in the 1990s. Multimodality is itself a complex phenomenon that, George Landow characterizes as featuring, "intertextuality, multivocality, and decenteredness […and] although conventional reading habits apply within each lexia, once one leaves the shadowy bounds of any text unit, new rules and experiences apply (Landow 4, qtd. in Lassota Bauman 273). These multimodal components clearly cooperate with the "digital, interactive, hypertexual, virtual,

networked, and simulated" aspects of new media texts (emphasis removed, Lister et al. 13), and yet many landmark genre studies, such as Miller's, precede the widespread internet as it exists today, and so discussions and illustrations focus on print media. This chapter builds on Miller's work, along with Cheryl Geisler et al.'s and Michael Pennell's discussions of genre studies in new media environments, and it includes scholarship of online forums, along with textual analyses and participant data in order to understand the particular new media environment of the online forum.

One of many variables that affects the online forum genre is the technology that forums use. Many online forums, including *Caudata,* customize a standard template. The most widely used forum software is vBulletin by Jelsoft Enterprises Ltd. ("About Us" n. pag.). Even within this program, administrators make policy and set-up decisions that affect the forum's template and users' interactions and experience with the forum.[31] These templates demonstrate what Pennell refers to as the "material component" that affects internet texts' (ITexts') creation. Pennell states that, "rather than functioning solely as the tool for achieving a goal, the technology is always part of both the composing and understanding of the text. The use of ITexts highlights this materiality of composing and sheds light on the (infra)structures within which actors work" (83). This builds on the work of Geisler et al., who situate ITexts as rhetorically driven genres that emerge in response to "the situations, relationships, and activities within which they will be accessed and comprehended" (280). Such material components serve, in part, to delineate the online forum genre, and yet individual and collective exigencies alter the genre, sometimes deliberately, and at other times indirectly.

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[31] vBulletin has a forum space of its own in which software users can discuss ways to modify the forum's template program (see "vBulletin.org Forum").

Since Johnson-Eilola's *Nostalgic Angels*, the complexities of multimodal, new media environments have led many to suggest new, non-print, analytical frameworks. Among such scholars is Jannis Androutsopoulos, who views frameworks of demographic analysis as dated and limiting to the understanding of Web 2.0 environments: "The preference for clear-cut social variables such as gender and age may reflect scholarly convention rather than the categories that are relevant to participants in online communication" (280). Androutsopoulos' proposed solution is to apply Bakhtin's heteroglossia to online environments. This would allow flexible and continually aware analyses of multimodal environments that feature diverse contributors. A heteroglossic framework clarifies the medium of the online forum, its generic features, and the effect of a complex, multifaceted exchange in knowledge making as a social construct.

Through comparative evaluation of a number of online forums, primarily *Caudata* and *TalktotheFrog,* this chapter establishes that: (1) genres evolve through continuous interactions between multiple variables, including technology, that continually affect each other, and the genre; (2) the genre of the online forum is distinctive from that of other ITexts; (3) while online forums share characteristics that can be recognized as a common genre, individual online forums have their own subgenres for different rhetorical situations; and (4) depending on its execution, the online forum genre can either support or hinder knowledge making by enabling or preventing conversation and community development. These four claims establish that genre has a normativizing force within the online forum community. Such a force becomes extremely important to knowledge making and sharing by affecting what knowledge the online forum community accepts: a

point intimated in this chapter and developed more fully throughout later parts of this work.

Situating the Forum Online

In "Genre as Social Action," Miller argues that examining a form without the broader rhetorical situation will not produce a rhetorical theory of genre, and so this section explores both external and internal variables of online communication that affect the forum genre's ability to operate. One influential feature that many scholars have examined over past decades is the seeming anonymity of online communication. However, while early research focused on the implications of online anonymity, Sanja Kapidzic and Susan Herring have found that complete anonymity is less a feature of internet arenas than it has been in the past. While much research explores anonymity's role in gender dynamics, [32] broader features, such as the role of anonymity on members' assumptions about each other's character, are more directly relevant to genre studies.

Additionally, research has proven that humans are quick to presume characters for anonymous conversations partners when information is sparse. Miller explores the rhetorical implications of Turing tests: experiments (created by Alan Turing) in which people converse with online partners and try to determine which are human and which are artificial intelligence (AI) programs. While no Turing test has proven completely successful, people are often partially fooled by the programs, and some form friendly attachments, even when they know that their conversation partner is AI. Amid sparse

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[32] For further discussion of anonymity and gendered communication on the internet, see Balsamo; Barak and Gluk-Ofri; Herring "Gender and Participation"; Herring "Politeness in Computer Culture"; Herring "Computer-Mediated Discourse"; Herring "Gender and Power"; Herring "Gender and Democracy"; Herring "Posting in a Different Voice"; Herring and Paolillo; Kapidzic and Herring; and Lemon.

information, humans impose a character on their electronic conversation partners ("Writing in a Culture of Simulation" 265; 268).

This becomes particularly important for online forums comprised of international communities of strangers who may never meet face to face. The genre of the online forum features marginalia alongside each forum post that facilitates such quick, fill-in-the-blank assumptions of others' characters. While users self-disclose some markers (such as name and location), the forum automatically generates many others (such as post count). While theorists like Jeffrey Grabill and Stacey Pigg characterize identity as "performed and leveraged in small, momentary, and fleeting acts" as part of the dynamic interaction between community members (101-103), others' interpretations also impose identity. The genre's standardized features enable identity formation by leading people toward assumptions of each other's characters: a process that continually interacts with users own, deliberate identity performances.

Concurrent with this imposition is the creation of the subject. More than the demographic data that defines identities (demographic data that people may or may not disclose), identities are composites of internalized social roles, sometimes chosen and at other times imposed, but always culturally and communally created. The "herp hobbyist" identity is a role the people learn and perform through interaction with a larger community. One could not assemble the identity of a "coffee swimmer" because such a thing does not exist. Only in a community where a specific group of people swam laps in tepid coffee could such an identity become possible.

From a sociological perspective, Peter L. Berger and Thomas Luckmann postulate that "[t]he origins of roles lie in the same fundamental process of habitualization and

objectivation as the origins of institution" (74). As chapter five maintains, the hobby's

rarity makes it isolating, and so often, the only lasting community interaction that people

have with others in the hobby is through online forums. This makes the online forum and

its genre extremely important to the identity creation of both the individual and the

community, both of which grow and change together, defining and redefining each other

in the process. By enabling identity construction, which participants' data indicates helps

members decide whose opinions to value and to what extent, the online forum supports

information sharing and knowledge making.

Comparative analysis of different forums has the benefit of revealing ways in

which the multimodal design of a forum affects users and their rhetorical performance.

Comparing *Caudata* to another online forum running on the same platform that focuses

on different, specialized subject matter reveals the subdivision of forums into different

rhetorical groupings. *Caudata's* forum index, when compared to *CatForum's,* for

example, appears similar. Running on the same software platform, both *Caudata* and

CatForum feature the same layout. The forum index features conversation topics (called

forums) and subtopics (called subforums). This is the genre of all online forum

directories, and because these two use the same software, they have the same font and

spatial orientation.

Closer inspection of subforum titles reveals that *Caudata* has a scientific tone and

focus, which becomes apparent through forum heading "Species, Genus & Family," the

subforum "Axolotl Eggs, Larvae & Breeding," and the use of scientific names like

Ambystoma mexicanum, or Tylotriton, Achinotriton, etc. *CatForum*, which does have

topic on health and breeding, also has topic areas for "Cats in Arts and Literature," one

for "Cats in Need," and another for saying goodbye to deceased cats. Herp forums do not

title discussion areas with such explicit *pathos,* and this is a product of the larger

discourse communities that are recreated within these online forums, which helps the

forums develop a more scientific *ethos* through subforums' focus on scientific

terminology: a task first undertaken through the site name, *Caudata*, a word for the

taxonomic order to which newts and salamanders belong.[33] As Miller explains, "[w]e

cannot fully understand genres without further understanding the nature of the

collectivity" ("Rhetorical Community" 72), and so discussion of the content area is

warranted in order to understand the differences between these communities.

Successful herp husbandry requires some knowledge on a range of scientific

topics, and so this community gravitates toward scientific discourse.[34] Cat lovers are a

diverse and varied group, and the undeniable prevalence of adorable cat memes online

reveals connections and approaches to this pet that are more explicitly emotionally-driven

than many of the prevailing approaches among herp hobbyists.[35] Their ease of care and

maintenance indicates that, on the whole, members of *CatForum* have less call to rely on

scientific discourses than the members of herp forums. This dichotomy of each forum's

character is reflected in (and perpetuated by) the color schemes that each forum's

administrators have chosen: *Caudata* is Green and *CatForum* is lavender.

This difference speaks to a larger process of socialization and identity framing

that is culturally situated. People frame their pets and relationships thereto from culturally

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[33] This point is explored more fully later in the chapter.

[34] Herp husbandry draws from such fields as chemistry, medicine, biology, genetics etc., a phenomena which is discussed further in the next chapter, as is the influence of scientific discourse communities on online forums.

[35] This is not to be mistaken as a claim that herp hobbyists do not love their pets. One possibility is that the influence of scientific discourse communities favors non-emotional discussion.

constructed meanings such as "cat owner," "dog person," "herp lover," etc. This affects

many layers of interaction, including of course, language use. As Berger and Luckmann

explain, language use is specific to life roles and knowledge groupings. To illustrate this

process, they discuss the example of language differences between the socially

constructed identities of cavalry and infantry: "This role-specific language is internalized

in toto by the individual as he is trained for mounted combat. […] It goes without saying

that this process of internalization entails subjective identification with the role and its

appropriate norms" (139). In this way, language, knowledge, and skill coalesce and shape

both an individual's subjectivity and the community's identity. Within such interactions

are genre conventions that instantiate and reinforce this process.

This illustrates that online forums share visibly noticeable genre characteristics,

and that they differ from one another partly by their content and also by the communal

ethos that their approach to content creates. While both forums operate on the same

software platform, the rhetorical force of administrators, moderators, members, and the

larger outlying discourse communities (in this case, the scientific community, herp hobby

community, etc.) all coalesce to form one genre. None of these variables on its own is the

sole creator of this IText's genre, and despite the shared variables that create the forum

genre (username, posts, rules, administrators, etc.), it is unusual for these variables to

convene in exactly the same way across all forums, which leads every online forum, no

matter how similar to the last, to feature its own rhetorical situation.[36] To gain a more

precise understanding of the forum, the remainder of this chapter focuses on comparisons

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[36] In the metaphor of evolution that is commonly applied to genres, this is comparable to speciation, through which new species emerge, and while some share characteristics, at times evolving traits independently of one another, no two share the same genetic identity even if they are close on the taxonomic tree. Despite Risa Applegarth's challenge to evolution metaphors for genre, I find them fitting: an idea to which subsequent scholarship will turn.

across herp forums that run on different operating platforms in order to establish that the multimodal and rhetorical design of the forum affects genre conventions and consequently communicative performance.

Multimodality: Visual Rhetorical Relationships to Genre

The importance of technology does not mean that forum software dictates the genre. Androutsopoulos cautions scholars to "be wary of the pitfalls of technological determinism" (294). Instead, technology and genre enter a recursive interaction with administrators' rules, moderator's enforcement, and users' behavior, as well as the style of utterance, use of images and links, and the larger discourse communities from which the content area draws. Holding a given pen might affect handwriting, but not the amount written on a check or the addressee's name. While the technology influences the final product, other external variables impact the overall development of content and genre expectations, and so no single component in isolation defines the genre. Johnson-Eilola broaches the balance between technology and human influence when he writes: "We are neither completely free to construct hypertext according to our own whims nor completely under the sway of the technical system. There is not a simple cause-effect relationship here, but something like a complex set of borders that we are crossing and recrossing, or sets of dynamic, multiple, conflicting social forces" (*Nostalgic Angels* 37). In the forum, a shared technology provides a common template, but within that template, each component shapes others, and ultimately, because of this interrelationship, no two forums ever manifest the exact same rhetorical situation.

Androutsopoulos devotes a great deal of discussion to profile development and layout as heteroglossic visual rhetorics in his analysis of *MySpace*. While people socialize on forums, forums primarily serve as a place for information exchange rather than social networking, and so the user profile, while significant, is not the forum's primary feature. Of tremendous significance is the variation in users' profiles and its dependence on a given forum's chosen operating software. Technology affects the visual rhetorics of online forums. Comparisons between *Caudata,* which runs on vBulletin, and *TalktotheFrog,* which runs on miniBB, indicate this. With vBulletin, profiles give members an arena in which to exert agency because the software enables them to do the following: upload a profile image; answer questions to complete a relevant biography; note their statistics on forum usage; load and share photo albums; have public conversations on their walls and private conversations through a messaging system; make friends; and join member-created groups. Such features facilitate the social and communal components of the forum, helping users form friendships, and they are most effective when they are least noticed. Throughout participant data collection, many members, especially Anne and Adam, focused on the social, communal benefits of the online forum. The forum design elements that strengthen the social community contribute to knowledge making by ensuring a community dynamic to which members continually return for information that they use or build upon.[37]

In contrast, miniBB's software deprives *TalktotheFrog* users of much of this agency. The user account is not linked to the main page. Users must locate their previous posts to click on their names in order to access their profile account, which is devoid of

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[37] The ways in which community affects members' ability to learn information gets further attention in later chapters.

personalization options and shows user statistics only, thereby depriving these users of a great deal of agency. While users form communities through frequent forum interaction and familiarity with members' past conversations, this process lacks the assistance of a user profile that features social functions and customizations. The community is largely limited to the friendship building that occurs throughout the threads themselves, and as a result, it remains largely confined to sanctioned on-topic conversations about frogs. In "Policing Ourselves: Defining Boundaries of Appropriate Discussion in Online Forums," Johnson-Eilola and Stuart Selber explain that self-regulation bounds participant interaction, as people stay within socially accepted, sanctioned topics of discourse in order to remain accepted by the community (282). While the conversation arena of the online forum thread supports community building, it alone will not provide enough freedom to discuss diverse topics that enable fully-formed friendships.

Most significant in the miniBB profile is the lack of user photo-avatars. This creates problems with content as well as community, as the post count indicates. The post count is the number of posts that a user has written: a common denotation across all forums. However, the connotative significance of post count differs from one online forum's rhetorical situation to the next. The miniBB platform lacks a fully developed user profile with a profile photo, and instead, *TalktotheFrog* users' avatars are preselected and assigned based on their post count. The images become more complex and desirable as one posts more, making a high post count a form of social capital on *TalktotheFrog*. Many new members like Partypanda and Killacam enquire about the fixed avatar images,

asking "how do you get different pics on the website i[38] don't want to keep this one pic"

(Partypanda post 1; Killacam post 1). This leads to empty posting, a practice explicitly

discouraged by forum rules that state: "*Making useless posts to increase your post*

counter to morph, etc. ***ALL SPAM/TROLL POSTS WILL BE DELETED BY***

MODERATORS IMMEDIATELY. *If found posting to simply boost post count,*

membership will be banned" (Heather post 1, emphasis in the original). Here, the

deviation from dominant genre expectations to choose avatars (as one on many forums,

but not *TalktotheFrog*) confuses new members. This illustrates Miller's assertion that, to

communicate effectively, people must "share common types" ("Genre as Social Action"

157). This also shows the inevitable socialization process of the online forum, as people

either learn to negotiate this rule or face communal public reprimand.

Upon realizing that the avatar images automatically become more complex with

increased post count, some users post more frequently to obtain a new avatar image. This

correlates with Guo-Ying Wang and Shen-Ming Qu's findings that if users are not

rewarded appropriately in proportion to their contributions, then they will be more likely

to post emptily in order to receive the reward of an automated, numerical rank.

Additionally, this process of repetitive posting exemplifies Marcy Lassota Bauman's

assertion that "because text forms embody all kinds of social and hierarchical

relationships, a disruption to one part of the system is likely to cause disruptions

elsewhere" (272). *TalktotheFrog's* new members' previous understanding of forum genre

conventions does not align with this new experience. They must internalize a new anti-

empty-posting *ethos* and alter their behavior, or else they will be treated poorly by other

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[38] As the introduction mentions, all spelling and grammar in quoted forum threads follows the original. Because some posts are very casual with correct grammar and spelling, it would be burdensome to the reader if each were marked with "sic," and so they are left unremarked upon throughout.

online forum members until they leave the community, either by choice or by force. Empty posting interferes with knowledge making by hindering fluid and continual conversations and information sharing, as repeated, single-word, empty posts interrupt the flow of dialogic exchange.

Because *Caudata* does not link post count to profile image, it faces excessive post counts far less often than *TalktotheFrog*. *Caudata* also has an empty posting policy that limits the number of posts per member per day: "We require all users to agree to a guideline of 8 messages per 24 hour period. Please do not exceed this limit unless it is absolutely necessary. Excessive posting, posting of the same message in multiple places and/or multiple times are considered a contravention of this rule and may result in your account being banned. This will be decided by the administrators of caudata.org" (Clare "Terms of Service (Forum Rules)"). This policy demonstrates the continually evolving nature of forum rules and norms, as it emerged in response to need, and it was preceded by a posting to alert members of the change in 2007 (Clare "Important: Post Limit").

However, unlike *TalktotheFrog*, the administrators of *Caudata* provide forum rules directly on the main page; on *TalktotheFrog*, the rules hide within a forum section titled "Website News," and few users encounter these rules unless someone comments on them, returning them to the top active threads. *Caudata's* administrators have chosen a direct approach to empty posts through explicit and accessible rules. The differences in the design and location and enforcement of forum rules reveal the heteroglossic influence of multiple people and variables in multiple roles, which leads to a shared, genric convention that manifests differently across arenas, inspiring substantial diversity in other genre features and surrounding forum norms. That this and other policies are so well

adhered to on *Caudata* reveals a smoother and quicker process of socialization into the *Caudata* community than other forums such as *TalktotheFrog* exhibit. Not only are explicit rules more available, but they are the product of the community, and so the existing members of the community enforce and reinforce these rules consistently.

Users hold diverse views of the importance of post count and the avatars to which they are linked. Less adept members perceive the rules differently than those with more forum experience. Junior members often desire higher post count as status, whereas senior members tend not to impose connotative meanings, interpreting post count solely by its literal function. A conversation among advanced hobbyists on *TalktotheFrog* begins when JStetz asks for help with a sick red eyed tree frog, and AgalychnisCallidryas replies, "I would ask Sh0e's of Bill's opinion before you do this, though. As you can see from my post count, I'm no expert, but I do have a red-eye and know a thing or two about them" (JStetz post 6). [39] A short time later, another expert, bschwinn, addresses this concern about post count, writing "Agalychnis, just so you know I have at least 10 years breeding and keeping red eyes" and "[j]ust so you know post counts mean nothing as we are all here to offer help and learn" (JStetz post 8; post 11). JStetz acknowledges the flawed logic behind equating post count to expertise by writing, "[y]es Bill, I am aware of that!! LOL This is not the first forum I have belonged to - - I get a kick out of how someone owns something and immediately is an expert. Which is why I ALWAYS trust proven breeders which I know you are one" (JStetz post 12). This conversation occurs

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[39] As the introduction chapter discusses, individual posts of a threaded conversation are numbered and cited throughout this project. While Grabill and Pigg treat these as line numbers, which conforms more readily to existing MLA conventions, this is misleading since a single post can feature one or dozens of lines of text. When referring to multiple posts in the same thread, line numbers would be difficult to follow. Therefore, line numbers are only used later in this project when referring to a single post, examining it closely, line-by-line.

between three members with post counts in the hundreds and thousands. Their thread consists of 46 posts across a span of three days, and it is 17 pages long when printed. The surrounding conversation indicates advanced knowledge of the breeding, maintenance, and health of frogs, the red eyed tree frog (Agalychnis callidryas) in particular.

That senior members have limited themselves to a literal understanding of post counts supports Doug Brent's assertion that genre "is a response to a set of context-specific rhetorical exigencies" (565) and that genre skills develop slowly through frequent practice and usage. Newer members to the forum are less familiar with the rules,[40] and because they have spent less time conversing on the forum, they are less aware of the stigma against empty posting than the members who have belonged to the forum for years. This changes as they remain active members of the online forum community. Consequently, the senior members have internalized the rules and norms of the forum discourse and they do not write empty posts. This is a reaction to the moderators' expressed rules and the general annoyance of other senior members. Newer members to the forum with less experience in forum writing are less aware of and adept at such genre norms. The relationship between profile avatar, empty postings, and stated rules manifests Anis Bawarshi's genre function, since the members' experience of the online forum then shapes their writing acts, and consequently, the genre conventions. This abuse of post count reveals a number of rhetorical and genric components.

A recursive interaction occurs through which genre affects behavior, which in turn affects reception and perception, which affects genre, and so on. The post count convention (genre) led to excessive posting (affected behavior), which in turn initiated trials with new rules (affected reception and perception) changing people's perceptions of

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[40] Admittedly, the *TalkToTheFrog* rules are more difficult to locate than those on *Caudata*.

the post count convention and their behavior as well as the forum's future expectations (genre). Additionally, studies by Namkee Park et al. and Terry Anderson and Heather Kanuka have proven that people are more likely to use software if they perceive it as easy to use, and Anderson and Kanuka also establishes that people are more likely to use online forums if they perceive them to be helpful ("Online Forums: New Platforms for Professional Development and Group Collaboration" n. pag.). Perception of usefulness underlies this process. This may be partly responsible for the quicker socialization process on *Caudata,* the software of which is more user-friendly than *TalktotheFrog's.* This continual spiral of influence exhibits heteroglossic interplay between of software, administrators, moderators, and users, as well as between multiple modalities of written text, image, and the software program itself.

The variables that affect this recursive cycle of genric development include:

- The forum software's capabilities – its active links and hypertext, its visual and textual layout and image sharing capabilities, etc.
- The administrators' customizations and policy development
- The members' social (re-)enforcement of communal mores
- The translation of mores into established rules
- The moderators' non-/enforcement of established rules
- The users' mis-/understandings of rules and their non-/adherence to the mores and rules of the online forum community
- The broader overlapping discourse communities with which they interact via the forum content's focus

This relationship also affects content on the forums; not only will conversations reach more depth when interrupted by fewer unnecessary posts, but since fewer people write empty posts on *Caudata*, fewer threads discuss post count. A thread search for "post count" has 243 results on *TalktotheFrog* and only 73 results on *Caudata*, revealing the influence that forum programs, administrators' policy choices, and moderators'

enforcement have on the context of a given forum's discussions, as well as the members' approach to posting on the forums.

This process features the creation and exertion of power within social norms and conventions of the online forum. By power, I refer to the Foucauldian sense of an ever-present relation of forces that constitute the very individuals and organizations that exhibit and exert power, which is eventually "embodied in the state apparatus, in the formulation of the law, in the various social hegemonies (*History of Sexuality* 93). This is not a claim that forum administrators deliberately wield power as an oppressive force. The power that Foucault describes in *The Order of Things, The Archaeology of Knowledge, Power,* and *The History of Sexuality Volume 1* is not always or only ever explicitly the product of manipulations of a governing body. Instead, Foucault describes power as a result of acting agents and agencies: "a complex strategical situation in a particular society" (*History of Sexuality* 93). As members become socialized into the accepted norms of the forum community, as they gain belonging and respect, their influence exerts increasingly more power on the (re)construction of the communal group. They learn to become part of the community that redefines and reinforces the appropriate behavior of other, newer members to the forum. Those who do this well enough and actively enough are often invited to join the regulating body of forum moderators, as was the case with two of the participants I interviewed: Anne and Adam (Janes Interview 1; Wolf Interview 1).

Rigid Templates with Flexible Functions: Examples of Sponsorship and Marginal Data

Forum sponsorship is the norm, and many forums, such as *Aquatic Plant Central* (*APC*) are commercially funded, which alters genre conventions. For example, *APC* has a subforum devoted to SeaChem, which is a well-known manufacturer of supplies for planted fish tanks. Users like artb rely on this sponsored content area for information, and so when SeaChem terminated sponsorship, closing the subforum, some *APC* members mourned the loss of these threads, most of the content of which they themselves had generated. Users felt themselves fortunate when, within a week, SeaChem returned as a sponsor, thus reopening the subforum (artb posts 1-8). Conversely, my participant observation indicated that *Caudata* members are often skeptical of the sway that a commercially vested interest has on a forum. For such people, a member-sponsored forum has a greater *ethos* among forum members who were wary of vested interests' effects on content.

While both *APC* and *Caudata* share many of the genre conventions typical of vBulletin software, on *Caudata*, the forum administrators do not enable sponsorship, and this component – the presence or absence of sponsorship – alters the rhetorical situation of the forum and its genre. While both arenas share characteristics of the forum genre, each has its own set of genric interpretations. With the decision not to accept sponsors but instead to fundraise and enable a visible icon that acknowledges donors, the *Caudata* administrators retain full control over the forum and subforum headings, as well as policies and rules. Administrative choices form the genre in response to members' actions and needs as well as administrators' perceptions thereof. Even though most moderators are fairly autocratic, a structure that Timothy J. Ellis and William Hafner have found helps collaborative learning in asynchronous environments, no subforum

would disappear from *Caudata* without an open discussion between members and moderators. While *Caudata's* forum authorities do have control, participant observation indicated that *Caudata* invites members to engage in conversation on decision-making processes, which has the added benefit of enhancing community among forum members.

Most forums do not allow links to commercial sites: a policy that often deters spam but also one that sponsorship also affects, since members' links to competitors' sites would be undesirable. *Caudata*, which is funded by members' donations, has a very concise and simple policy that states, "[w]e do not permit links to commercial websites of any kind. This includes links in signatures. By agreeing to this list of rules you agree to not link to commercial websites in your signature or profile and only to link to such sites when it is absolutely necessary in a discussion" (Clare "Terms"). This policy prevents commercial endeavors, but it also allows for the possibility of relevant links as an additional source of knowledge sharing within threads. Additionally, it allows for linking to non-commercial online information sources, and the practice of sharing links to *Caudata Culture*[41] articles is widespread among site members.

Many commercial sites funded by sponsors have far more elaborate policies regarding links. *FishLore*, for example, allows links in threads as long as they are not promotional, in which case, the link should go through a separate section on the site for "reciprocal links" (Mike post 20). Additionally, *FishLore* only permits links to "non-competing websites" in signatures, requiring pre-approval for "competing websites," whether or not they are for profit (Mike post 25; post 29). These basic forum usage rules require advertisers to obtain permission through an advertising form that is linked directly from the forum rules (Mike post 36). Specific policies regarding "competing" and "non-

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[41] *CaudataCulture* is a series of articles about caudates that is linked to www.caudata.org.

competing websites" and affiliates reveal the influence of the sponsors on *FishLore*. Thus, the sponsors become one of many voices in this heteroglossic arena, while simultaneously acting as a contextual variable that affects the other voices of the conversation as well as its permissible content. Their presence gives moderators the added task of enforcing policies that serve commercial interests, policing threads to remove links to competing businesses in addition to their roles as facilitators in ongoing conversations.

As a background component, sponsorship also impacts users' experience of the forums. When people are not logged into a forum funded by sponsors, ads appear within the threads themselves, interrupting the linear progression of a conversation (LeeLee post 1). In this way, the presence or absence of sponsors affects genre expectations and consequently, impacts knowledge making and sharing. *Caudata* is among very few forums that operate through member donation rather than sponsorship. Among the other examples, this demonstrates the distinctive rhetorical situation of every forum, as *FishLore's* content and layout, as well as user and moderator behaviors are affected by sponsorship; *Caudata* does not have such sponsorship effects.

So far, this chapter has shown that genric rules shape and are shaped by the community, and this affects content differently in each forum. To further illustrate this functionality, I turn away from the sponsorship toward the remainder of the marginal data that forums list alongside each post. Because the forums' primary function is information sharing, and because the remainder of this project's chapters explore ways in which information sharing creates knowledge, the illustration herein explores a function that marginal data holds for users themselves; marginalia allows users to make trust

assessments of one another. Not only do trust assessments demonstrate that components of the forum's medium affect knowledge sharing, but also, understanding how the online forum's genre helps people assess credibility is important to later chapters' understandings of how they share and assimilate knowledge.

Amid the deluge of internet information, trust-building and evaluating are ever-important, and Lee Rainie and Barry Wellman describe trust as "the primary currency of social networks" (19). Therefore, "[i]n the less hierarchical and less bounded networked environment – where expertise is more in dispute than in the past and where relationships are more tenuous – there is more uncertainty about whom and what information sources to trust. The explosion of information and information sources has had the paradoxical impact of pushing people on the path of greater reliance on their networks" (18). While *Caudata* is not a social network, the participants' reports indicated that the community dynamic was highly influential to their engagement with the forum. In this case, the genric conventions that include a post's marginalia can ameliorate some of the complexities of trust assessments in a digital landscape.

The interaction between profile, software, and post count illustrates a broad sweep of genre and its ability to shape and be shaped by a social discourse community. Many other structural conventions to the online forum demonstrate both common traits of forums and characteristics that differentiate each forum from the next. This section surveys the marginal data, including: usernames, status listing, nationality or location, age, and reputation points noting their impact on genre conventions across and within online forums. While some of these criteria are traditional to language variation analysis, their broader context reveals, among other things, that genric conventions of marginal

data facilitate trust assessments among forum members. This groundwork of exploring

trust assessments that genre enables is crucial to this project. Neither information nor

knowledge can spread unless among a believing audience. Various genric components of

the online forum medium enable such credibility by building and establishing trust.

Usernames facilitate trust assessments in two ways. These names are usually

variations of real names or else variations of animals or species name. One *TalktotheFrog*

member, for example, has the username AgalychnisCallidryas. This is the scientific name

of an anuran, a species commonly known as the red eyed tree frog, and so with this

pseudonym, the user has established expertise and interest with the species.[42] That he did

not choose the username RedEyedTreeFrog demonstrates his scientific knowledge

beyond the beginner level of frog care. However, few usernames shape other members'

trust evaluations as explicitly as this.

Usernames are more likely to facilitate trust assessment much as identity operates

in face to face communication. People remember each other and pass along one another's

reputations through observed or overheard experiences. In a personal interview, Piotr

Szott explained that he decides whom to trust based on word of mouth, relying on forum

users he has heard of above all others (Interview 1). Users recall individuals from past

conversation threads, and in this way, users garner characters to their online presences.

Other genre staples that affect forum members' perceptions of the trustworthiness of

posts are the status listing (such as "junior member") and join date, which appear beneath

the username and indicate how long a member has belonged to the forum.

While seniority and credibility differ, some users determine whose information to

trust based on longevity and familiarity. While not all senior members have reliable

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[42] Chapter four provides further discussion of the influence of scientific discourse on *Caudata.*

information on all topics, many such members have an above-average knowledge base of caudates, as evidenced by the vast seniority of moderators. This imperfect gauge of expertise under-credits experienced, well informed members who have only recently joined the forum. However, it is very likely that those who have stayed on as active site members the longest do have advanced knowledge via experience and time spent engaged in the forum's learning community. Fortunately, most forums provide additional credibility markers.

Users themselves exhibit a variety of assumptions and accompanying positions about potential links between seniority and expertise, which can range from thrill at a benchmark post count as Eric's celebration of his thousandth post indicates ("My 1,000[th] Post" post 1), to the frustration at the limited functions of a beginning user's account that tradog99 expresses ("Help Posting Replies" post 1), or the encouragement for senior members to remain patient and productive when addressing junior members' concerns that Jennifer voices ("Important: Member Status and Advice" post 1). Longevity indirectly affects users' perceptions of trustworthiness, as they are able to build relationships gradually over time and recall members whose information has been most helpful in the past and who have previously established credibility. The participants of this study alluded to – and at times directly wrote of – trusting some known forum members' information above others.

This is the case with multiple forum members, one of whom announced "[w]hen members which I think to be experts give information, I'm more convinced of the value" (Gere Interview 1). This is an outcome of longevity itself, rather than of a longevity marker, but the marker itself provides a short-cut to these assessments, and it works in

conjunction with other modes of trust assessment, such as verifying information against other sources and one's own prior knowledge, as all interview participants reported (Adorno Interview 1; Gere Interview 1; Janes Interview 1; Schmidt Interview 1; Szott Interview 1; Wolf Interview 1). The join date, a genric feature that hints at credibility, reveals seniority, which previous forum conversations also indicate. These two variables of status listing and textual posts work in conjunction to help members form judgments about trustworthiness. That forum users place varying emphasis on the importance of status listings proves that no single marginal indicator forms an effective trust judgment on its own. It also shows one way in which the conventional data of the genre supports knowledge making.

Other features, such as reputation point systems, form more overtly correlative measures of trustworthiness. Abraham, a site contributor[43] at *Caudata*, comments that forum members give each other reputation points for useful threads. This weighted system gives well-reputed members more voting power, since user reputation points are weighted by seniority and the rater's own reputation (Abraham). While the importance of this collaboratively generated credibility marker varies among site members, one *Caudata* interviewee said "[t]he rep system can be a reliable indicator to who can give good advice," thereby explicitly attributing her ability to trust other users' information to the reputation point system (Janes Interview 1).

The members themselves refer to the reputation system as a measure of credibility. In a thread titled "Tiger Salamander with Frog?" a debate emerges in which

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[43] A site contributor is someone who donates to a forum, thereby privately sponsoring it so that the forum remains free of corporate advertising.

one member resists the dominant values of the community.[44] Amid this debate, in defense

of the dominant view of the forum community, Sharon writes:

> Neither Johnn (Sludgemonkey) nor Pete are newbies to this hobby or
> frogs. / If you look under their names on the left side of the screen you'll
> see a veritable string of little green dots. Those dots mean people respect
> them and their advice because its good solid advice founded in fact and
> experience. / If you look under most names here, you'll see only a couple
> of green dots or a single black/gray dot and occasionally a red dot. The
> green dots mean they are up and comers i.e. Learning about caudates. The
> black/gray dot means a newbie who is an unknown quantity. And the red
> dot means - well, its not good. / If Johnny & Pete told me to not house a
> frog with a salamander I wouldn't do it. I hope you see the logic. / Good
> luck! (Bunnygirl post 5).

This response calls the Original Poster (OP) to examine the reputation points of the

discussants engaged with this thread and note that all members with higher reputation

points have sided against her and with the dominant views of the forum. Responses such

as these indicate that reputation points play a crucial role, not only in trust assessments,

but also in the process of socialization and the larger production of knowledge amid the

forum community. The reputation points, and conversations such as these that remark

upon them, indicate which knowledge is deemed valuable and reproducible within the

community.

While most online forums have reputation systems, Abraham's thread reveals that

even within the same software program, each forum applies genre conventions

differently, affecting behavior and, consequently, perceptions of trustworthiness

differently from one forum to the next. Since forum participants award reputation points,

this feature reveals members' perceptions of credibility more explicitly than any other.

As Sharon's post indicates, *Caudata* even labels its experts; a hovered mouse above the

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[44] This thread is examined as an instantiation of knowledge production and norm reinforcement in the final
chapter.

reputation bar reveals pop-up descriptions that range from "an unknown quantity at this point" for a member who has not yet had a post rewarded by ratings points, to "has shown reliable knowledge," to "is considered an authority at caudata.org" (*Caudata*). Most noteworthy to the genre's structure is that these features are not universal to all forums. Those running on miniBB have only username and post count alongside each post. They lack nationality, age, status and join date, leaving credibility assessments wholly to the function of the text itself. Therefore, they miss the benefits of trust assessment that facilitate knowledge making and sharing.

Still, even when operating on the same platform of shared features, each online forum itself carries its own reputation and credibility. *Caudata's* credibility is high among the herp community due to the specialized nature of its information and its high degree of scientific discourse. The latter is indicated by its title, *Caudata,* which indicates the forum's credibility. Newts and salamanders belong to the taxonomic order of vertebrates known as Caudata.[45] The adoption of this scientific nomenclature as the site's title (rather than a common language domain name like *www.newtsandsalamanders.com*) inclines the forum toward scientific conversations by participants whom, on the whole, I have observed have an above average interest and knowledge base in the sciences, even though most do not directly engage with that domain in their professional lives.[46] The title garners a scientific character as well as a degree of expertise through its choice of scientifically affiliated nomenclature.

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[45] Caudata is the New World term for the taxonomic order of newts and salamanders. The Old World term is Urodela.
[46] The next chapter, "A Rhetoric of Science among Experientially Self-Trained Hobbyists," engages this idea in further depth.

Furthermore, *Caudata* itself has a high degree of credibility because of its content, and many members reported that it is one of the best resources of information in English on such a specialized topic as particular caudate species. Piotr reported that there was very little information available on the Central American lungless salamanders (Pethodontide sp.) that he keeps and breeds, and much of the available information is in German and French, two languages that he does not speak (Szott Interview 1). Karl and Anne also mentioned the diversity and specificity of information that *Caudata* has, noting that it was more thorough than much other information that they could find (Schmidt Interview 1; Janes Interview 2).

The forum itself has an *ethos*: a reputation and credibility of its own. Susan C. Herring and John C. Paolillo have proven that genres hold stronger genders than individual authors' texts ("Gender and Genre Variation in Weblogs" 441), a finding that reinforces my conclusion that genres themselves have characters, and each subgenre (each type of forum in this case) is rhetorically distinct as partially characterized by its individual *ethos*. Members of *Caudata* often enter the site already biased in favor of its information's credibility, having been referred to it by a trusted source that praised the site's information as Piotr and Kees reported in their interviews (Szott Interview 1, Gere Interview 1). The reputation of *Caudata,* its expertise and formality are neither generalizable to all forums, nor to all exotic pet forums; it is a unique feature of that particular forum. *Caudata's ethos* reveals the difficulty of making broad, representative assertions about new media environments. While one can quantify the online forum by its genric traits, the rhetorical experience on each forum differs.

The high quality of *information* affects the dissemination of *knowledge*. The

community of specialized nonacademics gathers and places the information within a

framework of communally embedded values and ethics,[47] and passes that knowledge to a

community of self-identified herp hobbyists. On the macro level of scientific discourse

communities with which amphibian hobbyists interact, *Caudata* itself is well reputed as a

reliable source of often scarce information. Within the forum community, the process of

building and recalling credibility is facilitated by the online forum template's genre

features. While interactions with people's writings play an undeniable part, the easy

location of username, and in some cases, users' identification of their expertise through

username choice, helps people recall one another and make decisions about whom to

trust, thereby helping to construct the community.

The Heteroglossia of the Forum Genre: Re-Envisioning the Significance of Demographic

Data

Androutsopoulos notes limits of language variation analyses of new media texts,

primarily that language variation focuses on traditional demographic criteria such as

nationality and age (279), and for this reason this chapter has avoided them until now.

While demographic variables alone do not adequately represent ITexts, their omission

from new media genre studies is an extreme that would paint as faulty a portrait of forum

genres as one composed only of demographics. Nationality and age operate in highly

contextually contingent ways with flexible and situational significance.

The nationality marker and accompanying national flag icon along each post

instantiate visual-verbal rhetoric that allows member to infer the regionally available

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[47] The final chapter revisits this process in further depth.

species to which users have access (through the pet trade or in the wild) and therefore familiarity and knowledge with given species.[48] While each forum houses its own online community, local communities also emerge within physical spaces, and information and resource sharing develops further in person. Forum threads reveal that, after becoming comfortable members of an online forum community, some people arrange meet-ups or group outings (Alan; Clare "New England Reptile Expo Meet up"; Fabre; Kaysie; and Morg). While less ubiquitous than username, avatar, and join date, location identification pervades many common forum templates.

The nationality icon helps users identify a community from within their own geographical region, sometimes sharing resources, such as recommendations for pet stores or veterinarians, or even organizing face-to-face social functions. Such acts develop an ongoing sense of community throughout the online forum. As Phillip Agre suggests, new media environments form communities, and adhering to genre conventions indicates belonging within a social frame as much as it indicates rules for writing. This means that users' effective navigation of the forum's template, whether as composer or consumer of written word, allows them to develop and discern credibility while simultaneously engaging in a community structure that, over time, facilitates the forum's genre conventions. Again, the recursive evolution of genre (Genre ➔ Behavior ➔ Reception/Perception ➔ Genre, ceaselessly repeating) is visible through this process.

In "Genre as Social Action," Miller describes this relationship as a continuous and recursive circle, an image which I modify to a recursive spiral, since genres, once influenced to change, cannot return to exactly what they once were. This adheres to the

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[48] *Caudata* even has a subforum for "Laws, Legality, and Ethics": another instance wherein the genre itself facilitates trust assessment.

metaphor that genres evolve if we see the spiral as branching outward, each genre dividing into subgenres that are related but noticeably distinguishable from one another: a taxonomy of genric development and speciation. Because of the scarcity of information on special topics, *Caudata* has attracted an international community, which greatly affects the significance of nationality marker as a genre component, and has even made its way into the terms of service, which has the following "Country Rule" clause: "We take pride in the international nature of Caudata.org. For this reason, you are required to include your country of nationality in your profile (e.g. France). This is publicly viewable" (Clare "Terms of Service"). The diversity of both the forum's information and its participants affects this policy. Understanding the culture of the herp hobby and the culture on *Caudata* illuminates this process.

Genre evolution happens on global and local levels, occurring within each, forum environment and affecting it. For example, the identifying marker of age has context-specific significance, no one meaning transfers across all forums because herp keepers rarely follow linear educational paths, and so age rarely indicates experience; herp hobbyists often report beginning their hobby before puberty (Gere Interview 1; Szott Interview 1; Janes Interview 1; Schmidt Interview 1). While this counters the commonly shared narrative that experience comes with growing older, it also clarifies the non-traditional, experiential nature of many forums, on which the conventional, educational lines of explicit knowledge do not often define authority and expertise, and so members do not base trust assessments on this demographic.

Amid the forum *Science Buzz,*[49] Grabill and Pigg located a situation in which users self-identified their youth in order to establish *ethos*. In a conversation about the HPV vaccination*,* Grabill and Pigg observed that one thread became heavily populated by teenagers and young adults who shared their tacit knowledge regarding teen awareness of the vaccine and the experience of it, and so youth became the most credible voice of experience in that conversation. One must examine not only the actual demographic of age, but the likelihood that age and experience and education all run parallel. No single understanding of a data set's significance transfers to all conversations or genres, since their relevance depends on a broader context within the discourse communities. As Bawarshi remarks, genre affects "not only texts but … their contexts, including the identities of those who write them and those who are represented within them" (335). *Caudata* constitutes and is constituted by its members, the scientific discourse communities on whose fringes it sits, and the knowledge communities it houses. The online forum medium's genric characteristics facilitate the process.

In addition to demonstrating the shared genre characteristics of age marker and its diverse interpretations across different forums, this also places identity formation within communities and underscores the problem with a language variation approach to new media analysis. While new media studies commonly analyze demographics, only through broader awareness of the contextual frame in which "the unique experience of each individual is shaped and developed in continuous interaction with others' individual utterances" can one further understand the new media environment (Bakhtin 89). Each context alters the broader significance that age holds for the genre. As Paul Seely Brown

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[49] *SciBuzz* is more anchored to traditional, certified expertise than *Caudata,* since its administrators and moderators are highly directive, providing answers to questions on science topics, as is the forum's purpose. This further demonstrates the distinct rhetorical situation that each forum creates.

and Paul Duguid describe, part of the process of engaging with a community is the process of defining oneself in relation to the community. In reference to Jerome Bruner's work, they write that "[e]ven when people are *learning about* in Bruner's terms, the identity they are developing determines what they pay attention to and what they learn. What people learn about, then, is always refracted through who they are and what they are learning to be" (138).

Recursive Genre Development in an International Forum

The online forum presents one new media environment of diverse and contingent language that adapts depending on the needs of each forum community.[50] However, unlike online forums on many other topics, *Caudata* users write overall grammatically clean posts and prefer scientific names to common names.[51] This attracts second language speakers. At the same time, the international community affects the language that is used because Standard English (SE) has become a requirement in order to meet the needs of nonnative English speakers, which manifests in the following forum rules:

> We require that English speakers not write in nonsense words (such as those used in text messages). Please refrain from the use of words like "gonna," and please use good grammar and punctuation. Remember that new subjects and sentences warrant the use of a capital letter. Proper punctuation will make your message

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[50] As mentioned earlier, *Caudata* features information that is hard to locate in English through other sources. The relevance of this example and the scarcity of herp information is discussed further in chapter four.

[51] Scientific species names are less confusing than common names, which often differ regionally. For example, Ambystoma tigrinum is commonly known in the United States as a tiger salamander, a water dog, or a mud puppy. To further complicate common names, water dog and mudpuppy are widely used terms for a number of medium sized salamanders. The correct usage of the common name, mudpuppy, refers to neotenous aquatic species in the genera Necturus and Proteus, but many people wrongly use the term for Ambystoma species as well. Amid an international community that houses many nonnative English speakers, such common names can be confusing, particularly since their use is often colloquial, rather than standard, and it is therefore more difficult to look up a translation. Even standard taxonomy is subject to disputes and regionalisms, and one forum thread discusses the old world preference for the term "Urodela" to signify the order of newts and salamanders, rather than "Caudata," which is the new world's preferred term at the moment (Johnson "Use of the word 'caudate'").

much easier to understand, and thus improve the discussion. Banning won't occur for such offences, but we actively encourage moderators and users to lower the reputation of users who insist on speaking drivel. Nonnative English speakers will not be penalized for grammatical errors" (Clare "Terms").

Phrases like "nonsense words" and "drivel" reveal an underlying value judgment that favors SE,[52] but personal preference is not the only force that drives these rules. The closing statement, "Non-native English speakers will not be penalized for grammatical errors" reveals clear and cooperative communication between diverse participants with multiple degrees of fluency as an underlying goal. Participant data reinforced this interpretation, and one participant, Adam, explained that informalities like common names create "confusion because popular names are not standardized. I try to use scientific names along with popular names. Also, some bodily functions and behaviors are difficult to describe because people do not know the proper terms. So, I will be lenient when someone uses the word 'poop'!" (Wolf Interview 2). In other words, because moderators are aware of individual poster's limitations, they decide which rules to enforce and how, based on each post.

Moderators' enforcements of these rules further clarifies that the primary goal is effective communication amid an international community. When one U.S. user named diztorcion posted an unpunctuated plea for help, a fellow user requested that he use SE and avoid slang in order to prevent confusion among the nonnative English speakers (NNES) on the forum. diztorcion offered to delete his post (abandoning his quest for help), and a moderator replied, "[t]here is no need to earse your thread, the question is

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[52] I believe that SE is a mythical form of English: an attempt at a norm that is, generally, not normal. But the myth becomes more substantial each time it is taught. Whether or not Americans speak and write SE all or even some of the time, many people know its conventions, and it is this set of conventions to which I refer when I use the term SE. Any theoretical implications beyond that fall outside of the purview of this project.

legitimate. Just try to be careful when typing your texts – it's also good practice to help

improve your English! 😬" (diztorcion post 4). Forum members learn quickly that they

must follow social mores and stated rules if they wish to remain accepted members of the

community.

Like diztorcion, many forum members are chided by the greater community if

they do not follow the implicit and explicit community rules, and moderators like

Jennifer frequently provide constructive criticism such as the following:

> Ammar, there are many wonderful people on this forum who are willing to
> share their experience and advice with those in need. It will help if you
> post your question in a)the correct area[53] and b)in a format of English that
> others can understand. I personally have difficulty interpreting your slang.
> There are many users on the forum for whom English is not their first
> language but still make the effort. As Ester pointed out people are more
> likely to help you if your posts are more intelligible. (ammar post 10)

Perhaps most importantly, moderators also positively reinforce endeavors with SE, as

was the case later in ammar's thread: "Ammar, I notice in your last post here that you are

expressing yourself a bit more clearly. Thank you! Keep it up, and we will try to help"

(Jennifer in ammar post 26). Among participant accounts, Anne, Kees, Adam, and

Gabriella all voiced opinions preferring SE to slang or abbreviations. Such views ranged

in extremity from "I think it should be avoided. A forum isn't a chat room" (Kees

Interview 2); to "[t]ext-speak or slang is not welcomed as far as I am concerned" (Wolf

Interview 2); to "I loathe hate and despise it" (Janes Interview 2). This latter view from

Anne showed the most strong dislike for slang, and she wrote that "[i]t frustrates me that

it [slang] has become more acceptable to use across forums. […] I appreciate that text

speak and slang is part of the evolution of our language, but I do not think it is

appropriate on international forums. […] I fear I may have to accept it one day" (Janes

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[53] Here, Jennifer refers to the different subforums on the site that address different topics.

Interview 2). While she may eventually be forced to tolerate linguistic informalities in the future, as a moderator on a forum with a clear SE policy, she can continue to enforce correctness in the language conventions of the forum.

With direction and correction from fellow forum members, moderators, and administrators, each user is socialized into the culture and customs of the given forum community, which differs from one digital space to the next. This exemplifies the continually recursive evolution of genre in the forums, as well as the creation of the community and the individual identity formations within it. Members learn to enact the role of appropriate forum poster who belongs within the community. The international community necessitates SE usage, a point reinforced by one interview participant who admitted that she often relies on an online translator when reading posts (Adorno Interview 2). This affects the forum rules, the moderators' enforcement of language use, and the members' use of language. All of these variables act upon themselves and each other, and each enables a common dynamic in which knowledge making and sharing are possible.

The genre continually evolves because of its diverse contributors, and in doing so, it continually shapes the community into which forum members become socialized. As Androutsopoulos writes, "heteroglossia does not *occur*, as one might say with regard to language variation, but it is *made:* it is fabricated by social actors who have woven voices of society into their discourses, contrasting these voices and the social viewpoints they stand for" (emphasis in the original, Androutsopoulos 282).While the software on which a forum runs influences the genre of a forum, members themselves, the availability of tacit knowledge they can bring to the forums, and the conventions of the wider discussion

communities from which the subject draws have as great an influence. Other forums have far less formal language use and very different genre conventions. One member, when chided for his informal language use remarked "[s]orry for not using proper grammer, punctuation and all of that stuff, the only other forums ive been to are for video games and its not really enforced to use proper grammar consodering all of the little kids and gamer slang" (FredLikesNewts post 4). While not the case on all forums, *Caudata's* language use attracts nonnative English speakers who affect the language used via rules and their enforcement.

Conclusions

Having established that human, content, and technological aspects facilitate forums' recursive, genric development into rhetorical environments, this chapter ascertains that each of these components has the ability to support or hinder knowledge making depending on the specific rhetorical situation. This suggests that rhetorical needs manifest differently across different online forum environments. Additionally, it shows that any one genric variable, whether the presence of customizable avatar, a language policy, or moderators' culture of enforcement thereof, can have tremendous impact on the whole of the forum and the community that inhabits its online space.

By answering Androutsopoulos' call to approach new media through a heteroglossic framework, this chapter ascertains that, not only does each new media technology feature its own genre conventions, but within individual new media arenas, conventions often differ. The heteroglossic framework facilitates the examination of multimodality in new media environments, moving beyond traditional criteria (age,

nationality, gender) to examine visual rhetorics and heteroglossic discourse. This approach reveals the continual interplay between diverse contributors in multiple roles, including the technology itself, as well as the human participants: administrators, moderators, and members. Each variable works amid the others to shape the genre of the online forum, and the comparison between *Caudata* and *TalktotheFrog* reveals that each forum, while sharing genric characteristics common among forums, is its own environment, featuring genre characteristics that distinguish it from others and create a unique rhetorical situation. In this way, "the material, the social, and the individual" are tied together through language as James Berlin had described ("Rhetoric and Ideology in the Writing Class" 678).

In *Audience and Rhetoric,* James Porter asserts that the roles of rhetor and audience have evolved so that, in many rhetorical situations, the same person fluctuates between one the two at any given moment. In "Key Differences between Web 1.0 and Web 2.0," Graham Cormode and Balachander Krishnamurthy also discuss this feature of new media environments, remarking that they exhibit "co-mingling of commentators and creators, and every visitor has the opportunity to click, comment, create, etc." (sec 5.2 n. pag). ITexts and online forums in particular are collaborative spaces that undergo rapid and change, continually responding to the subtle need of internal (members, moderators, administrators) and external variables (language communities, discourse communities, technological capabilities and limitations and advances, along with sociocultural and commercial pressures).

Amid these changes in rhetorical operations, genre acts as a significant normativizing force. Participants assimilate the expectations of the genres with which

they interact in order to successfully communicate and become part of online forum communities. Forum members learn genre conventions through experience in a continual interchange between these diverse internal and external variables. In addition to this blurring of boundaries between roles, there is an undeniable blurring between rhetorics: between visual rhetorics, such as profile imagery and the textual content that emerges in response. The multimodality of the online forum is an undeniable factor in its genric form, one which is applied through each specific forum and one that can have tremendous impact under the right conditions, such as amid the widespread expectation that users may select their own profile images. A number of contextual variables, ranging from the software used to the larger discourse communities from which the forum's content draws, impact forum genre. The genre evolves continually, adapting to changes in these external conditions as well as changes to the community within, and so any present-day snapshot may prove insufficient in later years, when the forum has changed conventions: a process which happens more rapidly in online, collaborative texts than with traditional print or univocal rhetorics.

This is significant for questions of knowledge generation because it indicates that, as Berger and Luckmann describe, the roles that people enact are the performance of a culturally determined institutional framework that they have learned after being socialized into communities with varying degrees of success (73). Berger and Luckmann explain that, "[b]y internalizing these roles, the same world becomes subjectively real […] To say, then, that roles represent institutions is to say that roles make it possible for institutions to exist, ever again, as a real presence in the experience of living individuals" (74-75). The forum would not exist without willing participants who (knowingly or not)

choose to perform and enact the forum by adhering to its genric conventions. By performing, housing, and reinforcing the social conventions of a community's approach to a specialized field, the genre both enables and facilitates knowledge making and sharing, in part through members' acculturation to the norms of its environment.

CHAPTER FOUR

A Rhetoric of Science among Experientially Self-Trained Hobbyists

"This scheme does not lead to an anarchistic relativism. It does, however, indicate that
arguments based on the permanent rational structures of the universe or in the evidence of
the deepest and most profound personal institution should not be accepted without
question. The material, the social, and the subjective are at once the producers and the
products of ideology, and ideology must continually be challenged so as to reveal its
economic and political consequences for individuals"
-James Berlin, "Rhetoric and Ideology in the Writing Class" 679.

Introduction

Amid the greater task of examining knowledge making on *Caudata* and *Talk to

the Frog*, there lies a surprisingly scientific discourse for a nonacademic realm, and it

influences the type and quality of knowledge that members produce and share. From its

site name, *Caudata,* which is the taxonomic order of newts and salamanders, to its thread

titles, which frequently include precise species names rather than common names, the

ubiquitous presence of scientific language on *Caudata* warranted a close examination of

the rhetoric of science as it appeared within this nonacademic User Generated Content

(UGC). By examining *Caudata's* ability to facilitate accurate information exchange and

rational debate within what many refer to as a popular realm, this chapter

reconceptualizes the spread of scientific knowledge, expanding beyond the traditional

binaries of credible versus popular, and formally educated versus uneducated. This

chapter shows that, on *Caudata,* scientific discourse influences forum writing, and it

suggests that knowledge making in public spheres of UGC is sometimes less distanced

from academic and professional knowledge making than many would assume.

Rhetorical explorations of science begin with Thomas Kuhn's work, *The

Structure of Scientific Revolutions.* Kuhn situated science within culture as a practice that

strove to make meaning as effectively as it could within the historically situated

technologies and paradigms through which it is understood. Rather than deny the

possibility of knowable meanings, Kuhn argued that meaning is interpreted through

human perspectives and paradigms. Ultimately, Kuhn's work provided a garden in which

many postmodern theories grew, and from which epistemic rhetorics emerged in the

1960s and 1970s.

Like Kuhn, rhetoricians of science such as Alan Gross, Charles, Bazerman, Greg

Myers, and Jeanne Fahnestock see rhetoric as part of everything (including science),

which does not negate efforts towards empirical science so much as it loosens the

framework through which empiric efforts are understood, acknowledging that they are

not transhistoric. Each of the aforementioned rhetorical theorists presents a statement that

defends the Kuhnian perception of science, addressing its position along a spectrum

between absolute empiricism and absolute relativism. Bazerman, for example, explains

this as follows:

> Geometry as a study is the product of human consciousness, but geometric forms are claimed to preexist human invention. Thus the task of the molecular biologist is not to create a structure that approximates nature, but to discover and express in human terms the actual structure resulting from all the forces and accounting for the behavior and appearance of the molecule. *The claim of representing* an actual structure rather than creating an approximate model results in a strong requirement for correspondence between data and claim. *This correspondence, as we shall see below, is the main criterion of persuasion offered to the audience.* (emphasis added, *Shaping Written Knowledge* 29)

Science strives for representation and discovery rather than rhetoric and creation.

However, even among those forms of science thought to be most representable

(Bazerman's example is geometry), rhetoric has a presence. There can be no conveyance

of information and ideas without language, and as each of the above science rhetoricians

explains from her/his own vantage point, language can be figurative and metaphoric, sometimes through the necessity created by the effort to represent an entirely new concept for which there is no pre-existing referent.[54] It is through such communication that science strives for consensus, and ultimately, strives to make the best meaning of the world that it can with the cultural and technological tools available to it.

In "The Social Construct of Two Biologists' Proposals," Myers combines sociological and rhetorical approaches to science in order to consider scientific documents both as cultural artifacts and the object of linguistic study. Combined sociological and rhetorical approaches to science bring depth to scholarship, and this chapter follows suit by examining the cultures of the herp hobbyist and the online forum in addition to the scientific communities that inform their convergence in order to ground rhetorical study in cultural context. Much as Bruno Latour and Steven Woolgar focus their study on the laboratory, Bazerman and Gross on the scientific report, Myers on peer review, and Fahnestock on rhetorical figures, this chapter focuses its study on the thread: an asynchronous conversation on an online forum.

Underlying the interpretive differences in the rhetoric of science is a debate on the roles of perspectivism and objectivism amid scientific contexts. In "Reclaiming Rhetoric of Science and Technology: Knowing in and about the World," James H. Collier accuses a majority of rhetoricians of science of neglecting such underlying philosophical questions, and this chapter is certainly guilty of such neglect. This guilt is ameliorated by

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[54] Visual communications of scientific information face similar processes of transmission through figurative communication. Greg Myers touches on the need for further exploration of visual rhetoric ("Discourse Studies of Scientific Popularization" 272-3). In more widespread, new media domains, scientist Michael Stevens spoke on *Mental Floss* about common but inaccurate illustrations of scientific facts with which Americans are raised, such as the scale of the solar system when depicted in science textbooks (n. pag.).

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the discussion in chapter six. However, such endeavors must be undertaken in works that devote their entirety to the subject matter, rather than those that only visit the rhetoric of science as one component of online knowledge making, as this chapter does. While Collier explains, "I am calling for the collective negotiation of the narrative we have constructed about science and technology" (Collier, 300), this chapter cannot explore the epistemologies of science and rhetoric as wholes. Instead, it questions core components, fundamentally significant to both. Its focus lies in notions of credibility and education.

Online forums represent a nonacademic setting that most would consider popular, since they are online, open to the general public, and certainly are not credible by most traditional measures. This is precisely why *Caudata* is such a fascinating arena to study; it facilitates accurate scientific information exchange and rational scientific debate within what many refer to as a popular realm. To these ends, this chapter explores dissemination of science in an experientially trained arena in order to argue that scientific information can be widespread without being popular science (with all of the connotations that entails). After entering the ongoing debate about the popularization of science, this chapter reviews the position of science in online forums, presenting an alternative location on the spectrums between academic and nonacademic, and professional and popular, by establishing the relevance of science to the culture of the herp hobby on which *Caudata* focuses as it is illuminated by participant data. Then, it examines the appropriation of scientific rhetoric on *Caudata* before turning to a close reading of one demonstrative post, the conclusions of which I illustrate and reinforce through participant data.

While the preceding chapter ascertained the material components of the forum that affect members' interactions and approach to forum writing, this chapter provides preliminary answers to the project's first research question by discussing forum members' appropriation of scientific rhetoric through the public forum environment. The Western world holds a cultural narrative that values formal training and professionalization above experiences or informal self-instruction. While not alone, this fuels the dichotomy of "real" or "credible" scientific discourse against popularized science, with very little room for alternatives between these two extremes. Additionally, as Susan Herring explains in "Grammar and Electronic Communication," there are assumptions that Computer Mediated Communication (CMC) features informalities and slang, inhibiting formal written development (n. pag.).

This chapter creates space for these areas between borders by challenging the binaries of (1) official expert vs. untrained ignorant populous, (2) "real" science vs. "popular" misrepresentation, and (3) formal, Standard English (SE) in print vs. incorrectness online. At no time amid these challenges do I argue that examples that reinforce these binaries do not exist; instead, this chapter argues that *while* they exist, they are not always at odds with one another, and many other categorizations live in between the extremes. By examining *Caudata's* location in the space between established realms, this chapter establishes the influence, use, and spread of science rhetorics amid herp hobbyists through processes of acculturation into a discourse community of the hobby.

The Question of Popularization

If experience shapes expertise, then it is likely that the popular audience is

drastically different from the pervading conceptions thereof. Fahnestock and Myers enter

into debate regarding popularization of science, holding stances that appear to contradict

one another. In "Accommodating Science: The Rhetorical Life of Scientific Facts,"

Fahnestock explores the rhetorical means by which credible, regulated, and officially

accepted scientific articles become misrepresented and oversimplified through a process

of media reproduction in order to suit a popular audience. Such popular (nonacademic)

articles, blogs, and news stories often presume an under-informed audience, or the

average person may be as under informed as the media assumes: concepts to which I will

return momentarily. Many have witnessed such moments in which a subject is

misconstrued in a process of sensationalism and sound byte transmission. However, this

is not the only possible outcome when ideas are reproduced for diverse, non-specialist

audiences. In conversation, Fahnestock has told me that she feels misconstrual is most

likely to occur with heated, polarized, and politicized topics (Personal Interview). Herp

hobbyists rarely enter such politicized arenas on herp forums. Communication is varied

and multiplistic, and there are as many ways to shape ideas as there are audiences,

rhetors, and purposes.

In "Discourse Studies of Scientific Popularization: Questioning the Boundaries,"

Myers challenges Fahnestock's view of popularization, arguing that conceptions of

popularization carry with them several myths, which he reviews as follows:

- that scientists and scientific institutions are the authorities on what constitutes science
- that the public sphere is, on scientific topics, a blank slate of ignorance on which scientists write knowledge
- that this knowledge travels only one way, from science to society

- that the content of science is information contained in a series of written statements
- that in the course of translation from one discourse to the other, this information not only changes textual form, but is simplified, distorted, hyped up, and dumbed down. ("Discourse Studies" 266)

Myers notes that, while many studies have proven what the public does not know, few undertake to explore what the public does know. He raises, as an example, situations in which parents have children with medical conditions about which they become expert through a process of love and necessity (268). Since the publication of "Discourse Studies," the Pew Research Center for the People and the Press has undertaken the task of discerning the public's knowledge in various topic areas. A quiz-based, online survey of 1,006 American's knowledge of scientific information indicated that, while public knowledge of scientific topics is varied, some pieces of information are widely understood ("Public's Knowledge of Science and Technology" n. pag.).[55]

For example, 83% of respondents understood that sunscreen "protects" against ultraviolet radiation; 78% knew that red blood cells "carry oxygen," and 75% understood that control groups are used in drug testing to measure drugs' efficacy ("Public Knowledge" n. pag.). While there were also questions on which Americans tested poorly (only 20% of respondents knew that the majority of the atmosphere is composed of nitrogen), perhaps more significant to understanding the scientific knowledge on *Caudata* are *which* demographic sectors scored well and which did not. Scores were significantly higher among those with some college education, and unlike other knowledge surveys that Pew has conducted, people under 30 scored as well as their older counterparts, with

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[55] Myers complicates surveys of what the general public knows by asserting that what one knows is not the only variable to affect how one acts; trust and experience are also influential ("Discourse Studies of Scientific Popularization" 273).

the exception of elderly adults who scored rather poorly ("Public Knowledge" n. pag.).[56]

This is significant to the herp hobby because, as observation and interviews indicated, the

majority of *Caudata* members are under 65, and many have attended some college or

post-high school education.[57] Additionally, since such forums center on specialized

science topics, and since they frequently attract international members, this is likely to

affect the UGC knowledge base to enter further depth than the Pew studies indicate.

Myers' and Fahnestock's views of the popularization of scientific information

appear incompatible, and it is easy to see them in opposition to one another. However, the

unspoken mistake lies in assuming that one mode of idea transmission from credentialed

professionals to an audience that is interested but not-credentialed characterizes the

whole of its operation. An exploration of the concept of the popular audience can

elucidate this point. There is not one popular audience any more – not the singular,

generalizable popular audience in which it is often conceived to be. In "Inventing the

University," David Bartholomae writes of the complications of teaching undergraduates

to perform "college-level writing" for a "general audience," and he argues that each

discipline features unique rhetorical components, as does every genre; the needs of

audiences vary greatly as well. In composition and rhetoric, we remain ever-alert to

diverse rhetorical situations and their influence on the communications that negotiate

them, and yet the myth of a singular popular audience pervades, even amid our fields.

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[56] I suspect that older Americans scored poorly because scientific knowledge and its instruction have changed drastically since their high school science requirements. Even in the comparatively short span of time since my high school education in the 1990s, Pluto has been reclassified as a dwarf planet, and the Higgs boson has been proven. This reinforces Kuhn's argument that scientific knowledge can evolve amid cultural and technological change.

[57] As chapter two explains, five out of six of this study's participants had education beyond a high school degree; many specified that their country's schooling system differed from that of the United States, and so some had post-high school, vocationa,l or graduate training without attending university.

As the introduction has mentioned, 91% of Americans get their information from the internet ("What Users Do Online" n. pag). Also, Ryan Nakashima has reported that in 2012, the Nielson ratings estimated that there are five million such "Zero TV" homes, up from an estimate of two million in the 2007 survey. In addition to "Zero TV" homes, also known as "cord-cutters" in the industry, phrasing has arisen for "cord-shavers" with lower television channel subscriptions and/or fewer televisions in the home and "cord-nevers," young adults who have literally never subscribed to television. Increasingly, people are able to customize their media consumption, which creates different popular cultures: different subgroups of the population that share a popular culture that is differentiate from other groups' popular cultures (n. pag.). Lee Rainie and Barry Wellman call such phenomenon *networked individualism*, in which people "have become increasingly networked as individuals, rather than embedded in groups" (6).

In addition to the control people exert over their own viewing and reading habits, ours is increasingly a world in which exposure to ideas and media is influenced by algorithms. In *The Filter Bubble,* Eli Pariser convincingly argues that we are all, each of us, in our own "filter bubbles": selective snippets of information spread and access, only a small percentage of which do we consciously control. As example, Pariser writes of Google search algorithms which base an individual's search results, not only on their location, age, and gender demographics, but also on their past search and click histories. Pariser explains that even two people with shared demographic data can locate drastically different search results with the same search terms. Pariser also notes algorithms in social media, such as *Facebook*, that omit the status updates of friends that users interact with infrequently (Pariser 2-14). Inevitably, such programming fosters an environment in

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which people easily encounter views and information with which they are already comfortable, and they are less and less likely to be exposed to competing perspectives unless they actively pursue them.

Such phenomena suggest that shared culture based on a unified set of experiences and encounters is dwindling, and instead, there are multiple experiences of culture and idea transmission. Instead, knowledge is a patchwork fitting George Siemens' description: "Knowledge can be woven, connected, and recombined in limitless ways… creating the possibility of personalized networks of knowledge" (*Knowing Knowledge* 82). By this view, Myers' implication that individuals may have pockets of expertise outside of their credentials of formal training functions quite fluidly. Simultaneously, the view that popular culture as pluralistic phenomena does not negate Fahnestock's argument that reproduction to non-credentialed audiences births misconstruals. Instead, these represent viewpoints that, despite their seeming opposition, can cohabitate the same broad sphere of science transmission, their differences caused by different audiences with different experiences. This presents the difficulty that, without a claim to formal training or certification, one's self-taught education in an arena is not easy to quantify. Each person wears different labels, and others understand and interpret such labels differently (based on their perspectives and their encounters with formal education in given fields), but there is a shared understanding that professional degrees automatically confer upon their bearer an indication of expertise, authority, and credibility. These are the people that Peter L. Berger and Thomas Luckmann would call "officially accredited definers of reality" (97). Unfortunately, expertise that falls outside of credentialed systems of labeling does not communicate significance as widely or effectively as traditional degree

labels. Expertise is traditionally established through regulated processes of accreditation, but such processes do not measure all bodies of knowledge equally or accurately.

The Convergence of Science and User Generated Content (UGC)

An individual's experience can contradict many of the assumptions about the collective knowledge base, which is more erratic than the mythical popular audience accommodates. To illustrate this point, this chapter turns to *Caudata,* which is largely populated by self-trained, experientially taught individuals. As Rainie and Wellman explain, "[t]he role of experts and information gatekeepers can be radically altered as empowered amateurs and dissidents find new ways to raise their voices and challenge authority" (14). *Caudata* is not representative of *the* popular audience, but it represents one general audience that defies many pervading myths. Berger and Luckmann explain that "[a] society's stock of knowledge is structured in terms of what is generally relevant and what is relevant only to specific roles" (77). *Caudata* creates a space for those within the role of herp hobbyist but outside of professionalized science. Additionally, as the introduction explains, *Caudata* is not necessarily representative of all online forums. Instead, the close examination of one example of scientific discourse and debate provides evidence of an alternative mode of idea transmission: one that is neither the professional, accredited voice of traditional expertise nor the dilution of such a voice to a misinformed and ignorant audience. I call this alternative specialized nonacademic writing.

Caudata is a space for discussions of herp husbandry that lean on many knowledge domains. Aquatic salamander keepers benefit from a knowledge of chemistry in order to understand the nitrogen cycle, which could kill their animals if misunderstood.

Many herp keepers have a basic knowledge of enough veterinary medicine to provide at home, over the counter remedies for common ailments. Those who keep diurnal[58] reptiles must understand enough biology to know that ultraviolet light is essential for their animals' vitamin D production and calcium absorption. The list of potentially relevant and beneficial knowledge domains is extensive, and it might include such fields as genetics, anatomy, reproduction, diet and nutrition, animal behavior, etymology, and care of live food cultures.

For the subset of herp hobbyists who keep planted tanks or construct elaborate "builds" (modified or constructed enclosures that simulate a wild environment), this list could expand to include knowledge of non-/toxic plant species, gardening, landscaping and aquascaping aesthetics, and construction. This is not to claim that all herp hobbyists (or all *Caudata* forum members, for that matter) are experts on all things. Instead, this partial listing demonstrates some of the fields with which the hobby interacts. Exigence determines interaction in knowledge domains, since members garner varying degrees of proficiency in diverse domains through experience as it becomes needed and desirable for the maintenance of the species they keep. This phenomenon is much like the hypothetical example that Myers provides of a parent learning to care for an ill child because of a specific, circumstantial convergence of needs and desire ("Discourse Studies" 268).

Multiple domains converge for those in the herp hobby, and it is easy to find generalist publications for beginners, such as Philippe de Vosjoli's Herpetocultural Library series or *Reptiles* magazine. Unfortunately, there is a vast chasm between such publications' basic care descriptions and the scholarly discourse communities that inform them. Very few intermediary or advanced hobbyist materials exist in print. ITexts fill that

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[58] Awake during the day, as opposed to nocturnal.

chasm with a variety of intermediary level or untrained-but-expert resources, including a number of online forums. In fact, the more specialized the subject matter, the more difficult it is to find online, too, which brings information-seekers to specific communities that might be among very few that hold such information. *Caudata* in particular has garnered a reputation for its accurate and wide-reaching information on newts and salamanders.

The value of the site's reputation is immeasurable to the members themselves, and this cultural context of the herp forums clarifies why site members turn to each other and forum resources, rather than credentialed experts, for information on this specialized subject matter. As Piotr explained in his interviews, there is little English Language information on Pachyhynobius species and Pachytriton species; while this bilingual *Caudata* member speaks his native tongue, Polish, and a second language, English, most of the relevant information he found before *Caudata* was in French or German: two languages he does not speak (Szott Interview 1). Other interview subjects had similar experiences. Kees reported that he had trouble locating information on the precise care for Paramesotriton deloustali, and Anne, found *Caudata* to be more comprehensive than the print media she had found on axolotl (Ambystoma mexicanum) care (Gere Interview 1; Janes Interview 1). While all six participants felt that *Caudata* was very well informed, three felt that they could learn the information elsewhere, but they preferred *Caudata* to print material, citing community exchange, depth of information, and the collaborative nature of online forums as motivating factors. Karl even went so far as to call *Caudata* "the largest and best source for information on caudates" (Schmidt Interview 1).

The high esteem in which *Caudata* members hold *Caudata* raises questions about traditional notions of expertise and credibility. Andrew J. Flanagin and Miriam J. Metzger have conducted numerous studies of internet credibility, and in "Trusting Expert- Versus User-Generated Ratings Online," they look closely at arenas of UGC. Their research indicates that people trust experts when there is less information available on a topic, but that, amid an information glut, a high volume of user-generated ratings help information-seekers decide whether or not to trust non-expert, UGC. In such situations, people are less likely to seek traditionally-held experts, and they are more likely to rely on high ratings that may bring them to the information of non-traditional experts.

Most significant to this question of the popularization of scientific information, Flanagin and Metzger found that much UGC is formed by a combination of experts and laypeople, and that experiential knowledge may be used in lieu of or addition to traditional expertize: "[o]ne consequence of the recent rise in user-generated content online is the co-existence of the credentialed authority of experts alongside the experiential credibility of typical Internet users" (1632). [59] Such intermingling of traditional and nontraditional experts occurs on *Caudata,* which features a range of formally trained and self-taught novices, intermediates, and experts. Furthermore, as Adam explained in his interview, while many members have areas of expertise, "[n]o one person on the forum is an expert on every species" (Interview 1). Arenas of UGC exhibit a communal endeavor to provide a wide array of reliable information on a given subject

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[59] For further information, see Flanagin and Metzger's "Perceptions of Internet Information Credibility," also Metzger, Flanagin, and Zwarun's "College Student Web Use Perceptions of Information Credibility and Verification Behavior."

matter, and as *Caudata's* reputation indicates, this is an arena in which *Caudata* succeeds.

 Caudata members span a wide array that includes both children and adults who range from beginners with their first herp to such credentialed professionals as veterinarians and certified herpetologists. However, the latter are minority populations among the forum community. While none of the interview participants reported completing formal education in a scientific field, each has a varying degree of experience and self-instruction. Adam is a perfect example of a self-taught expert. He has absolutely no formal, educational background in biology, zoology, or animal care. Still, he was able to get a job at a renowned zoo because, as he explained, "[m]y interview impressed the curator [of] reptiles and amphibians. He told me I know more about amphibians [than] anyone else he had interviewed" (Wolf Interview 2). Experience and self-motivated learning in the arena of herp husbandry can facilitate an expertise that defies traditional assumptions about the role of certification. For this reason, it is helpful to be inclusive with conceptions of expertise and credibility.

Scientific Features in a Threaded Conversation

 The diverse participants on *Caudata* reinforce Myers' assertions, widening the landscape to include more than binaries of either traditionally expert or lay audiences (268). *Caudata* exhibits a rhetorical situation that falls somewhere between these two points, as it includes conversations among people with varying expertise and formal credibility or experiential knowledge. To demonstrate *Caudata's* place amid a wide spectrum of credibility, as well as its impressive inclination to exhibit formal writing that

emulates scientific discourse conventions, this chapter turns to one particular thread that broaches a debate on the benefits and/or dangers of breeding for hybridized species or for select traits to create new morphs/phases: "Phase/hybrid-Let's think a little."[60] In this thread, 11 *Caudata* members debate the potential risks of breeding hybrid species for the pet trade, as well as the potential dangers of breeding species for unique coloring or pattern variations, some of which have been observed to coincide with disproportionately high rates of neurological disorders. This conversation reveals the influence of scientific discourse on this forum, and the role of experiential credibility in the forum community, while demonstrating that the dispersal of information is not always an all-or-nothing proposition.

Among these 11 forum members who engage in this thread, eight are from the United States, one is from Spain, one is from England, and one is from Canada. While four gave no indication of age on their profile pages, three are 19 years old, one is 28, one 33, one 55, and one self-described as "middle aged." While three participants in this conversation did not list a profession when crafting user profiles, the rest of the group is comprised of two college aged students who are in school, a machinist (who reveals in the thread that he is also a breeder), two graduate students, a post-doc (who also reveals in the thread that he is also a breeder), a substance abuse educator, and a retail manager.

While the preceding chapter reviews the limitations of traditional demographic data in multimodal environments as noted by Johndan Johnson-Eilola (*Nostalgic Angels*) and Jannis Androutsopoulos, it is worth noting that these demographics among the thread's discussants are fairly close to those of this study's interviewees, who were also international and ranged in age from 19-60. However the content of the thread has

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[60] The lower-cased letters in this title reflect the original author's choice.

attracted more people with formal training than are present among my participant pool.[61]

Aside from the consistency with interview participant data, the profile information on the *Caudata* members who engage in "Phase/hybrid" is likely to be accurate. Numerous studies suggest that, in communal online environments where socialization is a driving force, most people are fairly honest because honesty is a prerequisite to the building and maintaining of online relationships. Mitia D. Back et al. explore honesty on *Facebook*, synthesizing their conclusion in their title: "Facebook Profiles Reflect Actual Personality Not Self-Idealization." While Jeffrey A. Hall and Natalie Pennington's "Self-Monitoring, Honesty, and Cues on Facebook: The Relationship with User Extraversion and Conscientiousness" differs by suggesting that some personality types, which they term "high self monitors," emphasize the best of themselves, Hall and Pennington find no indications of lying. Rather, some people are selective with their self-disclosures (Nowak 1458), and some personality types may be prone toward self-disclosures than others (Hall and Pennington 1561), but in a community environment, people are unlikely to explicitly lie. [62]

In "Choosing Buddy Icons That Look Like Me or Represent My Personality: Using Buddy Icons for Social Presence," Kristine L. Nowak explains that community involvement deters outright lying because online friendships depend on honesty (Novak 1457-8). Additionally, Malcolm R. Parks and Kory Floyd's work indicates that many online friendships become face-to-face friendships over time: an unlikely event among false personas. While the self-monitoring that Hall and Pennington discuss borders on small social lies commonly known as "white lies," their work suggests that people reveal

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[61] As chapter one explained, participants' professions consisted of a housewife, an IT adjunct instructor, a special unit police officer, an aeronautical worker, and two college students.
[62] For more on honesty in online situations, see Barak and Glik-Ofri; Bargh et al; Ellison, Heino and Gibbs.

their positive features more often than their negative. This suggests that rather than tell explicit lies, people lie by omission; a self-disclosed age is not likely to be a lie, but an omitted age may be a conscious choice to depict oneself more favorably in his/her own eyes. Additionally, Hall's earlier collaborative work focused on dating sites, in which agendas and experiences are noticeably distinct from the platonic environments on *Caudata* and *FrogForum* (Hall et al. "Strategic Misrepresentation in Online Dating"). Because *Caudata* exhibits a thriving community, and because all six interview participants referenced this particular community dynamic as a reason they engaged in the forum, user-profile information that members choose to self-disclose is most likely reliable.

This particular thread, which is 72 pages when printed and comprised of 106 different posts, exhibits a surprising amount of formal language, scientific discourse and terminology, and exploring these key points establishes the influence of scientific rhetoric on *Caudata* while broadening the landscape of popularization beyond its traditional conception as an all-or-nothing proposition. Within the "Phase/hybrid" thread, forum members visit many scientific domains, and members categorize each by noting statements that contributed to the discussion with accurate information that did not merely repeat information that preceded it. When JWerner writes, "[t]he basset and the English Bulldog have wrinkles that cause fungal problems and so forth. The Bull Terrier has the Roman Nose that causes nasal problems that lead to respiratory problems. Both are breeds that have begun without the now common characteristics" he adds specific and accurate knowledge to the thread, even though he does not attribute it to a source as is the convention in many academic and professional fields (post 15). Scientific arenas that the

discussion enters include genetics, ecosystems, animal health and biology and disorders (including those of fish, reptiles, amphibians, and dogs). Other, non-scientific areas that the participants demonstrate degrees of proficiency and expertise in include laws (such as international import regulations), the pet trade (its practices as well as the sale of wild-caught versus captive-bred animals), and most impressively, an awareness of research methodology. It is worth noting that underlying the entire conversation is an in-depth, intellectual discussion of ethics (the ethics of breeding) that eventually turns to philosophical debate that centers on such questions as "what is natural?" and "what is the role and responsibility of humans on the planet?"

One remarkable feature of this particular thread is its continual awareness of the lack of extant research to empirically prove a correlation between specific color and pattern variants among species in the pet trade and neurological disorders. One example that is somewhat notorious in the hobby is the "enigma" gecko: a leopard gecko (Eublepharis macularius) that features reduced spotting (except for its tail) and light colors. Hobbyists have often observed that leopard geckos with "enigma" patterning exhibit signs of neurological problems, such as spinning in circles or staring into space for prolonged periods of time, which are symptoms of seizure states ("Enigma" n. pag.). Because this is a problem for hobbyists that neither exists in nature, nor is likely to advance scientific projects of concern to humans outside of the hobby, this observed phenomenon has not yet been scientifically proven. The widely observed correlation leads many hobbyists to believe that the gene carrying the "enigma" patterning also carries illness, but this remains unproven by laboratories.[63] By the ninth post in this

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[63] Similar phenomena have been observed with other species' pattern variations, which Rodrigo mentions in post 51.

thread, the question of scientific proof arises, and on eight separate occasions throughout the next 61 posts, Rodrigo, Jay, and Pete all ask for scientific information.

In *Laboratory Life,* Latour and Woolgar write about the role of credibility in science quite extensively. They explore the quantity and purpose of citations among the scientific research papers regarding thyrotropin-releasing hormone (TRF) that two competing laboratories released from 1962-1969, noting that citations can be used to confirm one's information or to challenge existing information (110-115). Latour and Woolgar focus on the citation's role as a credibility marker, particularly in one case in which two laboratories contested priority rights. Bazerman also traces the function of citations, noting that conventions shift over time, beginning generally and turning toward "a roll-call of previous work in the general arena" (*Shaping Written Knowledge* 262-3). Such a socio-historic approach emphasizes the emergence and standardization of conventions that adapt to suit authors' and audiences' and disciplines' needs. As Myers explains, citations, in particular, help situate ideas amid extant bodies of research, sometimes presenting these new ideas as continuations that bring new contributions, and at other times presenting new research as a contrast or conflict to existing research frameworks ("The Social Construction of Two Biologists' Proposals" 229). All three of these scholars indicate the situated role of citations, which serve the academic community specifically – newspapers and magazines certainly do not adhere to MLA and APA conventions– and so their absence amid ITexts is unremarkable.

What is rather worth remark is that, over the course of the "Phase/hybrid" thread, a debate emerges regarding the presence or absence of established, scientific scholarship. Obviously, not all *Caudata* members are "experts" on all of these things, but they engage

when informed, often qualifying their statements. Among the 106 posts by these 11 participants, five participants make a total of seven statements that qualify their expertise, such as "I am vastly unqualified to speak about reptiles, as I know next to nothing, but as an avid aquarist, I have thought about similar issues" (Hayden in Rodrigo post 59). Furthermore, this particular thread features 26 allusions and references to external information. Of these 26 mentions, only two are specific citations to print journals, which I myself provided while participating in this thread two years before the start of this research project. That I was the only one to follow such conventions suggests that mine was a deviation from standard practice on the forum. However, while these are the only formatted citations for source material, these are not the only references that these posts make to external information.

Of the 26 indications that knowledge originated with a source beyond the forum poster him/herself, nine were vague references, such as "I have read" (post 7). Among these nine were mentions of information gathered through past threads on the forum and prior engagement with the forum. Of these 26 indications of knowledge garnered from a resource, another 15 featured exact URLs to an online source. These sources varied from readings on webpages to links to past *Caudata* threads to photo-share and video-share sites. Most strikingly, these references do not come from one or two forum members, but from ten of the 11 participants, all of whom provide specific and accurate information and or examples. It is also worth mentioning that nine of the 11 contributors to this thread quote other participants through the forum's quote-and-reply feature, and they use these quotes to respond to one another in continued discussion. Furthermore, eight members

write 15 posts that directly discuss their experience or those of others they have known, as evidence toward claims.

Such data reveals the citation conventions that prevail in professional, academic, scientific discourse communities are prominent on *Caudata,* although they have been modified to suit the needs of a CMC environment. Much as CMC features a combination of oral and written styles, this thread reveals convention appropriation that is influenced by the genre conventions among the communities from which it draws. Latour and Woolgar explain that, amid professional research domains, "[t]he production of papers is acknowledged by participants [in the laboratory] as the main objective of their activity" (71). Since online forum users have different goals, their rhetorical and choices differ. Without incentives like priority rights, funding, the establishment of fact, or career maintenance and advancement, forum members have no need to follow formal citation guidelines, and yet information is used and referenced in ways similar to scientific rhetorics.

While *Caudata* has no formally sanctioned citation rules, loose conventions apply creating references that are functional for a community of self-instructed information-seekers. Among others, Latour and Woolgar chart citations as they are used to affirm or counter results (113-116). On *Caudata*, members use external references for similar reasons: to support some claims and counter others. Additionally, because the online forum favors experiential knowledge, and because many forum members are experientially self-taught, observed and lived experience supplements and sometimes supplants the external sources on which members rely to develop and support ideas and arguments.

This awareness of research methods and source conventions not only reveals the influence of scientific knowledge domains on *Caudata*, but also defies notions of the popular audience as a singular presence, often conceived as the only alternative, and it sharply contrasts with professional knowledge communities. *Caudata* challenges this segregation in many ways. It is entirely possible for UGC to feature the myths that Myers posits the mythical popular audience, such as that "that the public sphere is […] a blank slate of ignorance on which scientists write knowledge" and that "in the course of translation from one discourse to the other, [scientific] information not only changes textual form, but is simplified, distorted, hyped up, and dumbed down" ("Discourse Studies" 266). Not all online forums are like *Caudata*, nor are they all like the popular audience as it is commonly conceived. Instead, each text that falls outside of a professional domain can be independently assessed (not as representative but as one potential example among many in its genre). *Caudata* suggests that there are almost as many intermediary points on the spectrum between a misinformed public and a highly informed specialist as there are texts.

Rhetorical and Linguistic Choices: A Close Reading

The modified appropriation of citation conventions is not the only adaptation of scientific rhetoric on this particular *Caudata* thread. To establish the presence and function of formal language, scientific terminology, passive voice constructions, and a scientifically weighted inclination toward *logos* over the other *pistis*, this chapter looks closely at the following sample paragraph, which occurs roughly one third of the way into the thread. Here, Rodrigo, the Original Poster (OP) and a nonnative English speaker

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from Spain, responds to JWerner's calls for scientific proof that a gene carries both a

desired pattern variation and an undesired genetic illness, which at this point in the

conversation has become a main claim some members have raised in opposition to the

practice of breeding for specific herp morphs:[64]

> Jwerner, i see your point, but personally i don't think it makes a difference. Wether the color trait is intrinsically linked with a neurological problem or not, the fact remains, we are breeding faulty bloodlines regardless of the result. There is proof that certain problems are definitely linked to a color mutation, as is the case of albinism/piebaldism[65] and the associated conditions. I read somewhere that the genes that cause the spider mutation in ball pythons, are the same that cause the jungle mutation[66] in morelias[67] (both are pattern reduction traits), and both animals suffer a very similar neurological condition...that certainly points to a link between the trait and the problem. There is no scientific proof that other mutations are linked to problems because nobody in the hobby seems to care. As long as the animals can breed and make more snake shaped money bags, who cares if the poor thing wobbles like crazy and can't even catch its prey in the first 10 tries.[68] (Rodrigo post 51)

This paragraph exemplifies interspersed scientific terminology, discourse style,

and polysyllabic formal word choice that is peppered with small typographical errors.

These errors are distinct from what Susan Herring has termed "e-grammar."[69] Herring

characterizes e-grammar as a series of grammatical choices that address the rhetorical

situations of CMC ("Grammar and Electronic Communication" n. pag.), and one might

expect to find such informalities, abbreviations, and slang across all online forums.

However, the language demonstrated throughout this passage – and indeed the vast

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[64] The term "morph" is an abbreviation of morphology, the study of forms and appearance. This abbreviation is widely used among herp keepers to indicate the different colorations, patterns, and sizes that one species can have if selectively bred.

[65] An albino animal is one that lacks melanin, appearing white and featuring blue (in the case of mammals) or pink eyes. A piebald animal is one that features two different color variants that appear as blotches or sometimes divide the animal's coloration in half.

[66] Spider and Jungle are used to refer to selectively bred pattern variations in captive-bred pythons.

[67] A genus of python.

[68] This refers to neurological problems that have been observed in reptiles with specific pattern variants, such as the jungle or spider patterning of pythons or the enigma variant of leopard geckos, some of which spin in circles or freeze into an epileptic stare when stressed.

[69] Herring prefers this term to "netspeak," which she feels suggests a single, codified set of rules for all CMC ("Grammar and Electronic Communication" n. pag.)

majority of *Caudata's* threads – defies the expectation that CMC inclines toward e-grammar and away from SE. The errors in this passage, such as "i" and "wether," can most accurately be described as typographical mistakes rather than the e-grammar thought to pervade CMC forms. As the previous chapter explains, while *Caudata* shares many features with other forums, it is distinct from other online forums that allow less traditional language usage.[70] The international participants on *Caudata* benefit from SE, which suits varying degrees of second-language fluency and many conversations necessitate SE usage and scientific terminology, which is more accurate and easier to translate than abbreviations, colloquialisms, and idiomatic language.

Two of this study's interviewees discussed this propensity toward scientific terminology. One observed that "[m]any members have a scientific approach regarding the hobby, which results in a lot of good information" (Gere Interview 2). Kees marked a quality that is common to many (although not all) herp owners. Throughout this chapter, I have referred to members who engage in this thread as well as the voluntary interviewees of this study as herp "hobbyists." According to the American Veterinary Medical Association (AVMA), only fractions of a percent of the population that owns reptiles and amphibians ("U. S. Pet Ownership Statistics" n. pag), and yet this already small group does not exhibit one unified set of characteristics. Among them lies a subset of these are people who approach herp-keeping as a hobby, as well as (or at times in lieu of) viewing their herps as "pets." Among the interviewees in this study, all but one began keeping

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[70] See chapter one, "A Taxonomy of Forum Genres" for a discussion of the prevalence of SE on *Caudata* and its contrast to the rules of other forums. *Caudata* has strict forum rules that mandate SE, and moderators consistently enforce these rules because (a) the forum hosts an international community with varying degrees of fluency, and (b) many of the conversations necessitate accurate scientific terminology in order to hold meaning, i.e. species names are more precise and cross-cultural than common names, which may often be vague, inaccurate, and/or not translatable.

herps in childhood.[71] *Caudata's* user profile provides a field for "species kept" in which many forum members list dozens of species. My six interviewees, for example, reported that they kept a combined total of 46 herp species. The interviewee with the fewest herp species reported five, while one interviewee reported 20 herp species kept.

Herp hobbyists often collect reptiles or amphibians until they reach spatial, financial, or temporal constraints that limit their ability to do so. Kees explained, "we've got some space left for other animals, but we don't know which animals we want at this moment. […] I always kept reptiles, but when I moved another keeper bought my animals, because I didn't have enough space. Since I missed keeping 'weird' animals, a lot of other amphibians followed. [My girlfriend and I,] We share the hobby, so nobody is complaining about the space our hobby takes" (Gere Interview 1). Some hobbyists convert whole rooms or basements into habitats or displays.

For those who view herps as a hobby, learning about the animals is part of the passion, and some herp hobbyists construct elaborate terrariums, vivariums, and/or aquascapes[72] to replicate wild environments. Hobbyists are also likely to have bred their animals (as was the case with four of my six interviewees), and raise live food cultures (as two of six reported). For these reasons, hobbyists often become well informed on the species they keep, and they strive to share that information effectively among forums with members at various stages of experience in related knowledge domains. Adam explained this phenomenon when he wrote, "[w]henever you are providing advice to other people, you need to be clear and concise. Your writing style has to convey

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[71] I was surprised by this exception because participant observation had shown me that beginning the hobby in childhood is the norm.

[72] A terrarium is an enclosure with living plants; a vivarium is the same, but it includes animals; an aquascape is a planted aquarium that is designed to be aesthetically pleasing.

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important and often scientific, difficult to understand information to an individual or group that may not be well versed in such terms. If I use a term or concept that is not 'general knowledge,' then I try to define it as simply as possible" (Wolf Interview 3). This accounts for a fluctuation between scientific and common terminology which is apparent in the above sample passage. Note that the process of simplification that Adam described is different from the pop cultural simplification of science that Fahnestock discusses. This concurs with Reiner Grundmann and Jean Pierre Caville's findings that scientist often simplify, and this is not the same as stupidity. Adam made no assumption that the audience (readership on *Caudata)* was unintelligent or incapable of understanding complexity; instead, this forum user perceived the varying degrees of self-taught expertise, and his composing choices reflect this audience awareness.

In addition to negotiating formal, SE usage, Rodrigo uses a series of specialized, scientific terms such as "mutation,"[73] "albinism,"[74] "piebaldism,"[75] "pattern reduction traits,"[76] and he uses these terms with a thorough understanding of their meanings, the underlying implication being that the color variants present in genes can also carry neurological disorders on the same genes. When he discusses particular examples of this from the pet hobby, the language turns to a combination of pet terminology and scientifically accurate terminology, as visible in his use of "spider mutation," and "jungle mutation," both of which refer to genetic variants that lead to coloration patterns in snake species that are known in the hobby as "spider" and "jungle."

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[73] A mutation is a genetic irregularity; when a captive bred animal exhibits a mutation that a breeder finds desirable, such as a unique coloration, the breeder will select the mutated animal to breed.
[74] Albinism is the absence of melanin, or pigmentation in the skin.
[75] A piebald pattern is one in which the animal exhibits irregular patches of color.
[76] Pattern reduction traits are genes that carry a reduction in the animal's naturally occurring coloration pattern. For example, a snake species that, in the wild, has horizontal stripes, might feature mottled patches, blurred bands, or no discernible stripes at all if it carries a pattern reduction gene.

As Rodrigo notes, the genetic makeup of pet animals is under-studied, and so formal, scientific language for referring to these particular pattern variations in snakes does not exist. Even if it did, the choice to use the phrasing most common to this audience shows awareness of his rhetorical situation. Rodrigo shows a similar awareness when he refers to the common name "ball python" to refer to one snake species that is very widespread in the pet trade, and the scientific name Moreali to refer to a genus of python snakes (Obst, Richter, and Jacobs "Morelia" 539) less widespread in the pet trade.

Additionally, passive voice constructions often accompany the terminology that Rodrigo uses, and S. Michael Halloran notes that, of science writing's features, passive voice is the "simplest and most frequently noted by critical readers" (74). As Halloran explains, "[t]he effect of the device [passive voice] is to suppress human agency, to imply what are essentially rhetorical acts […] can be accomplished without human volition" (75). This is the aspect of the passive voice on which Bazerman centers his discussion of Watson and Crick's landmark publication. Rodrigo moves to passive voice specifically when discussing links between genetic traits for pattern and coloration to genetically transmitted health concerns: "There is proof that certain problems are definitely linked to a color mutation, […] There is no scientific proof that other mutations are linked to problems" (Rodrigo post 56). The passive construction arises specifically when Rodrigo conveys scientific information. While this could be because his recollection of precise sources is vague – he cannot attribute the information to a precise body of research – it is as probable that he defers to the scientific convention of emphasizing the result above the individual scientist who can produce or replicate it.

When the passive is not in use, the first person singular is used, and this exemplifies the conversational nature that pervades in CMC. The first person plural "we" is also used in this passage. Halloran analyzes Watson and Crick's language, noting that their language features a "sense of supreme confidence … stylistically, the most striking quality of the paper is its genteel tone" (74). He later notes that this "genteel tone" becomes a "burlesque" (75) at times when Watson and Crick use devices like the first person plural to insert and assert their presence as proprietary researchers, much as Bazerman explains in *Shaping Written Knowledge.* Halloran terms this characteristic style "The Scientist Speaking" (80). However, for Rodrigo, the first person plural is less an assertion of the presence of a researcher, and more an inclusive statement to refer to reptile and amphibian hobbyists as a communal body.

In contributing to the argument that there must be ethical approaches to the captive breeding of reptiles and amphibians, Rodrigo establishes his *ethos* through this informed, formal language use, its incorporation of scientific discourse, as well as the underlying concern for the well-being of animals in the hobby, the latter of which takes the form of a *pathos* driven argument toward the end of this sample paragraph: "As long as the animals can breed and make more snake shaped money bags, who cares if the poor thing wobbles like crazy and can't even catch its prey in the first 10 tries" (Rodrigo post 56). This claim prominently displays ironic sarcasm that serves the dual purpose of eliciting emotional responses from readers who vale the animals' lives above their potential as profitable merchandise, while simultaneously condemning those whose values invert these positions.

However, appeals to *logos* dominate the thread. The majority of this sample paragraph features a rational discussion of the potential health effects of breeding for selected traits, as well as the scarcity of established, empirical research on this matter. This illustrates the influence that scientific discourse communities have on the members of *Caudata*, since such prominent *logos* also dominates science writing. Much as the passive voice foregrounds replicable results above the researchers who construct them, *logos* foregrounds logical appeals above the underlying *enthymemes* that inspire them.

While this thread does not contribute specific, proven genetic data to an established and credible scientific community, it contributes scientifically by establishing an absence of empiric data on matters that are of specific concern to hobbyists, breeders, and the pet trade. Additionally, it increases awareness of possible detriments of selective breeding in the hobby. While this thread has only 11 contributors, it has been viewed 2,792 times between its start dates of August 19, 2010 and March 31st, 2013 when my drafting began. This absence of hobby-specific, scientific data adds value to the experiential nature of much of the knowledge in online forums. There is widespread diversity in how this experience manifests. For example, there are also forums for baseball. These also range from those like the *USSMariner* which attracts discussions on players' statistical analytics to those like *LookoutLanding*, which feature more general discussions appreciating the Mariners ("U.S.S. Mariner: Seattle Mariners Blog for Analysis, Commentary, and… Sigh"; "Lookout Landing: A Seattle Mariners Community"). To further emphasize the range of experience that online forum users exhibit, one can recall Nate Silver, who, with a degree in economics (not politics) and a job as a baseball analyst, predicted the 2008 presidential election results on a blog he

wrote under a pseudonym, later publishing the book, *The Signal and the Noise* under his

own name (Green n. pag).

Conclusion

Much as Thomas F. Gieryn explores the process by which science is defined in

contrast to other fields, this chapter has marked some of the linguistic, stylistic, and

content parameters of communication acts on *Caudata* by contrasting *Caudata* with

expectations about the popular realm, as well as prevalent expectations of ITexts.

Additionally, this chapter indicates that *Caudata* adopts and adapts the conventions of

"The Scientist Speaking" (Halloran 80). Through socialization into the discourse

community on *Caudata,* forum members learn to emulate the publically viewable

rhetorical practices that are sanctioned by the group. As Bazerman writes, "who

individuals want to become, who they indeed do become, how they become those people,

and what they perceive they have become are dependent on participations in social fields

and deeply implicated in the kinds of literacies they have learned to negotiate"

(*Constructing Experience* 37). Fahnestock is correct when she argues that information

can be warped and misconstrued for easy consumption by a broad audience. However,

the implication that this is *popularization* is troubling. As Myers explains, presenting

binary between credible and popular audiences neglects an entire spectrum of knowledge

bases and expertise. While it is easy to imagine a state of absolute opposition between a

un-/under informed general public and a cadre of professionally trained experts because

their stark contrast is increasingly apparent, there are more states of audience and

information spread than these two alone. As this chapter's brief discussion of Nielson

ratings suggests, popular culture has become less and less popular, and as I have argued, the popular audience is itself a less and less homogenous group.

Even the concepts of popularization and popular culture are more complex and contested than one short chapter can do justice. Some might wonder if *Caudata* is a "popular" realm in which science is "popularized." If widespread understandings of these concepts continue to impose a binary relationship between popularization and the traditional credibility of credentialed experts, the "officially accredited definers of reality" (Berger and Luckmann 97), then by virtue of what it is *not, Caudata* is an instantiation of popularization. It is only by broadening the framework that the question of whether or not *Caudata* is popular becomes appropriate. If, then, one continues to view *Caudata* as popularization to one (of many) general audiences, then the online forum illustrates an alternative mode of scientific transmission that is neither ignorant nor ill-informed. Because it is not representative of all online forums or popularization, *Caudata* demonstrates one alternative among many that challenge the binary conception.

Fuller's discussion of Kuhn analogizes *The Structure of Scientific Revolutions* to *Being There,* a 1971 novel by Jerzy Kosinski that was turned into a movie in 1979 starring Peter Sellars.[77] Much as the characters in *Being There,* affected by their own preconceptions and biases, interpret Chance's simplicity as enlightenment, Fuller argues that readers are prone to attach interpretive biases to Kuhn's work. One could say the same of credibility and popularization. After all, as Thomas J. Johnson et al. explain in "Every Blog Has Its Day: Politically-interested Internet Users' Perceptions of Blog Credibility," "[c]redibility is a perception held by the audience, not a characteristic

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[77] Ironically, Fuller fails to mention the book, focusing exclusively on the movie, thereby falling victim to another form of accidental ignorance by popularization that many have experienced, this author included.

inherent in a message, a source, or a media channel" (n. pag). The process of

popularization is one that lends its discussion to interpretive biases quite easily, and this

chapter makes no claim to immunity. One's opinions of the public, its education and

experience, and its distance from formal and traditional education, as well as the

importance of that education, can easily sway any synthesis of even the most quantitative

data.

Caudata presents an alternative to the binary: an example of a way station

between the popular and the professional. Accurate information can be found in places,

such as online forums, that are not traditionally considered credible spaces for

information. This is particularly correct amid special-interest topics that lack their own

formally credentialed domains of expertise, or that draw from so many traditional

domains that their precise convergence is not represented through an extant academic

program. One cannot get a degree in herp-keeping. Degrees in zoology, biology,

herpetology, etc., may approximate certain aspects of the hobby, but keeping reptiles and

amphibians in the home is its own particular specialization that currently lacks a formal

accreditation process. Experience might be as (if not more) important to developing

credible expertise in this arena that lacks an established path to certification. This is not

unique to herp husbandry, and it can be found amid other specialties that lack training

programs and/or are more effectively learned through experience than formal study, such

as surfing[78] and sports.[79] For such specialties, specialty themed, online spaces of UGC

occupy a place where groups converge.

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[78] Special thanks to Tim Amidon for his feedback and contributions, which drew parallels between the surfing hobby and the herp hobby.
[79] Special thanks to Eric Wilson for his feedback and contributions, which drew parallels between baseball enthusiasts and the herp hobby.

Precise delineations between academic and nonacademic realms are challenged amid the exceptional examples of border disputes that herp forums present. Members learn scientific content and a modified rhetoric of science, and they do so primarily from each other. Styles ripple outward from the scientific community, and non-professional hobbyists learn linguistic mannerisms and scientific content because of personal investment in the material. This chapter demonstrates that, rather than engage in either academic or nonacademic writing, an alternative inhabits the herp forum. Members engage in specialized nonacademic writing; discourse that, while operating outside of traditional, established, professional and scholarly spheres, borrows from the discourse conventions of science rhetoric and appropriates the language for a new and specific rhetorical situation that surrounds herp care.

The professionalism in much of *Caudata* and *FrogForum's* discourse allows autonomous learners to adopt, appropriate, and adapt conventions of scientific and academic writing, and of education itself as either academic and certified or nonacademic. This reinforces Harvey Graff's notion of the "the reification of dichotomies," through which literacy is often objectified and understood as an either-or proposition of extreme opposites (17).[80] The temptation to draw a precise line between academic and nonacademic spheres and styles creates such dichotomies, and the learning and writing on *Caudata* and *FrogForum* challenges this reification, providing exceptional examples of disciplinary border dispute. The divide between academic and nonacademic writing and learning is an artificial convenience that creates more problems than it solves.

Academic writing is itself a mythical style and genre, as no single set of writing conventions suits all disciplines' needs. As David Bartholomae argues, people invent and

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[80] For more on Graff's conception of reification, see Mariolina Salvatori.

reinvent its fictions on a daily basis. Russel K. Durst observes that, in the 1980s, the study of academic disciplines emerged (as did WAC and WID), and as a result, writing *outside* of this was often lumped into the catchall term *nonacademic* (1658-60). Even so, the latter is often used to indicate workplace writing. Lee Odell and Dixon Goswami's *Writing in Nonacademic Settings,* for example, is an anthology with multiple contributors to 14 chapters, all of which are about workplace writing and the researching thereof. Even still, the workplace writing that a food server does is quite different from the writing of a receptionist or data entry specialist or insurance salesperson, and so even this classification is troubling. Just as this project has already shown other binaries (popular vs. academic or credentialed versus layperson) to be convenient and widespread but nonetheless ineffective, it also complicates the simple division of writing and learning into either academic or nonacademic.

Caudata features a unique rhetorical situation in which reliable information is relayed to-and-by experts whose training exists predominately outside of academic structures. However, *Caudata* is not representative of all online forums, nor is it representative of all online forums for reptiles and amphibians, and this reinforces the diversity of audiences and expertise among online environments. Other forums, even within the herp hobbyists' realm, can be extensions of magazines, breeding classifieds, or organizations, and each of these starting points affects the community the forum attracts and the conversations the forum invites. This speaks to a need to subdivide communication genres further. As chapter three has argued, IText genres can exhibit enough subgenres that, to fully understand the operation of a text, one may need to examine the subgenre in which it operates.

The wide spanning influence of science rhetorics on *Caudata* demonstrates that

uncredentialed but interested parties can generate specialized nonacademic writing: a

communal act of knowledge making in itself that provides a rhetorical style through

which to discuss and interpret the care and maintenance of herps. This discourse style and

the information and knowledge it communicates, differs identifiably from the

professionalized science communities in which they originate, and yet it is not (as the

mythical binaries would have it) incorrect or misunderstood scientific knowledge. As the

next chapter shows, members teach themselves this specialized content area remarkably

well. As the final chapter explains, rather than misunderstand and perpetuate faulty

information, forum members on *Caudata* take the information they have learned and

internalize it, packaging it within meaning frames that cohabitate with their self-

identification as herp hobbyists. The borders between different arenas of science

transmission are amorphous and ephemeral. Gieryn asserts that, amid and around

scientific fields, boundaries are seemingly firm but flexible enough to be redrawn for

different situations, and this chapter makes the same claim for the boundaries that loosely

confine the popular audience and online forum genres. Their possible manifestations are

infinite, confined only by the rhetorical and cultural situations of their time.

CHAPTER FIVE

Opting-in Online: The Success of Learner Autonomy in Voluntary Online Forums

"Autonomy involves learners taking more control over their learning… linked to the
philosophical idea of personal autonomy which involves people struggling for greater
control over their own lives."
–Philip Benson, *Teaching and Researching Autonomy in Language Learning* 16.

Introduction

In order to contextualize knowledge making, the two preceding chapters focused

on members' abilities to learn conventions of the discourse communities with which they

interact. Chapter three showed members' acculturation into accepted genre conventions,

and chapter four revealed members' creation of a specialized nonacademic writing that

appropriates scientific rhetorics for use among hobbyists. While such incidental learning

through belonging and doing matters a great deal, forum members also learn information

and knowledge through deliberate efforts. The self-taught, experiential nature of the

hobby and the forums on which hobbyists interact raises questions about forum members'

abilities to and means of teaching themselves their special interest effectively. This

chapter turns toward the learning that occurs on *Caudata* and *FrogForum*, independent of

formal instructors, coursework, and a grading or accreditation process.

As the preceding chapter has established, many herp hobbyists approach the

forums as a source of information for lack of alternatives. Often, a particular exigency – a

newly purchased newt, an unexpected breeding incident, a sudden change in water

quality – drives the quest for knowledge. With specific, individualized learning goals,

herp hobbyists read, interact, and practice, teaching themselves along the way. However,

both self-instruction and online learning are underexplored areas of scholarship. June

Griffin and Deborah Minter insist that research of online learning must proliferate, asserting that amid the plethora of quantitative data and excitement for online learning, pedagogical research is still underdeveloped (147).

Amid special interest topics such as herp husbandry, people learn through online interactions and experience rather than formal instruction. Such ability to self-instruct is learner autonomy, an educational theory propounded by Henri Holec. This chapter shows that, to varying degrees, the medium and dynamic of the forums themselves enable *Caudata* and *FrogForum* members to learn autonomously. Therefore, this chapter further addresses the research questions by arguing that the medium of the public online forum supports knowledge making by facilitating learner autonomy.

While early scholarship such as Leslie Dickinson's positioned autonomy as entirely independent of instructor assistance or course design, research quickly moved to classroom applications, and research on learner autonomy outside of the classroom is nonexistent.[81] As Philip Benson observes in *Teaching and Researching Autonomy in Language Learning*, independent learning often flat-lines. However, while independent learning outside of a classroom environment challenges people enough to fail frequently, looking at *Caudata* and *FrogForum* – online environments in which autonomy thrives – helps applications of learner autonomy in the classroom by furthering the understanding of effective independent learning.

After a brief discussion of learner autonomy, this chapter reviews criteria of successful learner autonomy, establishing its presence and relevance in forums. The

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[81] While this project is rhetorically oriented, this chapter refers to research on forums and learning in classrooms in order to frame conclusions on independent forum learning outside of the classroom. Philip Benson himself writes of this that, "In the recent research, fostering autonomy is no longer primarily a matter of individualizing learning through out-of-class initiatives, and classroom-based approaches clearly predominate" ("What's New in Autonomy" 17).

online forums *Caudata* and *FrogForum* create a sphere for specialized nonacademic writing by engaging a discourse community that exhibits specialized conventions appropriated from professional and academic science rhetorics and used among the narrowly focused special interest group of amphibian hobbyists. While preceding chapters have shown that learning genric and rhetorical conventions occurs through acculturation, this chapter turns toward information acquisition – a preliminary step that precedes constructing knowledge frameworks – making this chapter an important prerequisite to the discussion of knowledge making that follows in chapter six. Before people can create knowledge in a discipline, they must learn the information of that discipline.

By investigating the learner autonomy that manifests on *Caudata* and *FrogForum* – arenas for public deliberations and discourse in which many individuals can learn autonomously – this penultimate chapter brings depth to the overall understanding of knowledge making that is elucidated fully in the ultimate chapter. Forum users develop and design, implement and self-assess their own learning goals without the explicit guidance or direction of an instructor: a process that parallels Holec's original vision of learner autonomy. Benson outlines common "claims" that unite diverse discussions of learner autonomy: "(a) language learners *naturally* tend to take control of their learning, (b) learners who lack autonomy are *capable of developing it*, and (c) autonomous language learning is *more effective* than non-autonomous language learning" (emphasis in the original, "What's New in Autonomy" 16). Benson approaches autonomy from the language classroom, but the fundamental core of Holec's definition for autonomy as the "ability to take charge of one's own learning" applies broadly across many disciplines,

including autonomous literacy development, both in and out-of-classrooms (emphasis removed 3). Holec's original definition remains the most used and cited in discussions of learner autonomy (Snodin 210). This chapter follows Holec's terminology, referring to learn*ers* as autonomous and learn*ing* as independent, in order to distinguish from the autonomous learner form the broader autonomous learning situation (Holec 4).

Past scholarship has emphasized the need to acquire and develop skill sets and abilities in order to learn autonomy. The remainder of this chapter reviews and discusses the core components of learner autonomy and their presence in the open online forums of study in this work:

• *Engagement and Motivation* –driving forces behind effective autonomy (Illés; Snodin).

• *Collaboration and Community* – collaboration facilitates learning (Snodin; Eneau and Develotte). Additionally, community fosters both collaboration and learning (Eneau and Develotte; Kop; Blin). Learning occurs through communities even amid social, rather than educational, driving forces (Eneau and Develotte 12).

• *Autonomy is learned by degrees* – people learn autonomy through degrees that move through various stages of self-directness, since people must independently navigate materials (Snodin; Kop).

• *Publicness*[82] – despite some conflicting evidence that trepidation about the public nature of CMC deters participation among some learners (Eneau and Develotte 13), most research asserts that writing amid a public drives individuals to perform well (Wang et al.; Kop and Fournier; Blin; Snodin; Eneau and Develotte).

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[82] While in organization theory, publicness means "a characteristic of an organization which reflects the extent the organization is influenced by political authority" (Bozeman and Bretschneider 197), the term is used here by its more general definition: "the quality or state of being public" ("Publicness" 1106).

• *Metacognition* – a core component of independent learning (Eneau and Develotte; Kop; Blin).

Caudata and *FrogForum* house learning environments that foster autonomy, and the participants in this study indicate varying levels of success with each of the above criteria. As chapter one has explained, this project features a narrow, purposive pool of participants that allows close examination of how people learn in voluntary online forums that they have opted-into because of a shared, personal interest in a given subject matter. The six volunteers from the international communities of *Caudata* and *FrogForum* ranged from 18-60 years old, and lived in England, Germany, Italy, the Netherlands, Poland, and the United States. Two were women, and four were men; two were native English speakers, and three were nonnative English speakers. The theme of self-instruction appeared throughout participants' usage diaries and interviews, and in combination with analyses of ongoing threaded conversations and the cultural context of the forum, degrees of autonomy based on the above criteria became apparent. Therefore, this chapter synthesizes participant data in order to demonstrate the presence and nature of learner autonomy through the medium of the online forum, thereby showing that, by fostering an environment through which individual needs are met through communal collaboration and support, online forums can facilitate learner autonomy.

Engagement and Motivation

Engagement and motivation affect the success of autonomous learners, and in the case of herp forums, these two coexist in symbiosis, inextricable from one another. In classroom settings, Ruti Gafni and Nitza Geri have found that the lowest performing

quarter of their classes averaged the same scores across optional as required forums, but for the remainder of students, the groups that posted regularly for a grade requirement out-performed ungraded forum participants. Not only does this indicate what many instructors have witnessed, that grades often encourage student engagement and participation, but more importantly, that regular engagement and active participation increases learning through forums (Gafni and Geri 340-1).

In an open online environment like *Caudata* or *FrogForum* in which those who participate have joined the community voluntarily, motivation comes, not from grades, but from a pre-existing, shared passion in the subject matter. This does not mean that every participant engages equally. Forums have lurkers: people who read without actively engaging. Such members have long-held accounts and show up as "online" from time to time, but have little to no post count. Furthermore, those who do not share the special interest in amphibians, or who are uncomfortable with or lack access to new media technologies, simply do not locate and join such sites. Those who remain and post with some regularity have chosen to engage with a given content area. This is very different from a composition classroom in which many students attend for general education requirements, rather than genuine interest. By requiring participation as a component of a grade, Gafni and Geri replicated the experience of engagement that opt-in forum members experience regularly. On *Caudata* and *FrogForum*, belonging to a community is often its own reward, supplementing information acquisition on a subject about which participants feels passionately.

As this project's interview participants recounted their entry into the world of herp keeping, their narratives became impassioned origin stories, intimating trajectories

that influenced the course of their lives to varying extents. Karl, who began keeping herps at twelve, provided a detailed description of his fur allergies and his love of "exotics." The misinformation of pet stores and difficult to keep, disease-prone herps dampened this early enthusiasm. As he recounted, he returned to his beloved hobby when he "stumbled upon a few pages in the web and decided it was time to start anew. Since then, I have been getting (and also getting rid of) more amphibian species than I would have imagined when I started, and have also gained a lot of friends and good contacts from the hobby – now, I consider it my favorite occupation outside Uni and politics" (Schmidt Interview 1). His motivation to learn intertwines with his passion for amphibians, which closely interlinks with the forum community and its "friends and good contacts from the hobby" (Schmidt Interview 1).

All six of the participants in this study had different origin stories, but five began the hobby in childhood, and four gained entry to the hobby through a trusted adult: a parent, grandparent, teacher, or the parent of a friend. As one might expect, all participants shared a love of herps, and they described this through often repeating metaphors of falling in love (mentioned six times by three participants), becoming addicted to herps (mentioned one time by one participant), or having passion (mentioned seven times by two participants). Similarly, each participant described an introduction story that detailed her/his first exposure to *Caudata* and/or *FrogForum*. Four of the participants found the sites through internet searches on the species they kept, and the other two were referred to the sites: one by his father and the other by a member of another newt and salamander organization to which he already belonged. While briefer

than descriptions of falling in love with herps, these stories[83] also emote passion, and one common theme is appreciation for the rich amount of information on the forums. Kees reported, "I immediately noticed the enormous amount of information on this site, and I loved the fact that it was an international forum" (Gere Interview 1). Similarly, Karl became interested because of the "diversity of caudates [and the] people keeping them" (Schmidt Interview 1). While every participant echoed this appreciation for information, Anne also mentioned the community as a motivating factor for her initial involvement.

As chapter four has indicated, this study's participants have very little formal training in herpetology, but Karl admitted that he "would prefer doing something especially herpetologically scientific in future" (Schmidt Interview 1). Adam explained that his uncertified experiential knowledge helped him get a job at a famous zoo (Wolf Interview 1), and Gabriella reported that, had she known then what she knows now, she might have pursued training in a related field (Adorno Interview 2). Professional desires and origin stories that discussed amphibians as though speaking of a first love revealed that participants entered online herping communities with ideal engagement and an intrinsic motivation to learn: prerequisites for independent learning. Additional side projects also made an argument for the high level of engagement among this study's participants. Adam runs herp related websites, and all of this study's participants belong to other organizations or forums in addition to *Caudata* and/or *FrogForum*. The high level of engagement with both content and community motivates members to learn and to keep the discussion active.

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[83] Six repetitions of the variations of the word "passion" came from one nonnative English speaker, who may have faced more difficulty than others with higher fluency at finding synonyms, such as "love" or "enthusiasm" (Adorno Interview 1; Interview 2).

The usage diaries that participants submitted reported regular visits to the online forum. Each participant described a routine to his or her login that varied slightly from day-to-day depending on either the member's interest in the content, his or her available time to navigate the recent posts, and her or his obligations outside of the forum. All of the forum patterns involved scanning titles, reading posts, and with the exception of one nonnative English speaker, self-conscious about her fluency, all of the collected usage diaries reported writing as part of their routine, either in threads, private messages (PM), chats, or all of the above.

Complications accompany this type of motivation and engagement, however. As Nicholas A. Valentino et al. explain, many internet users seek information that matches their interests and ideologies, exhibiting far less engagement with information or ideas that fall outside of desired bounds, particularly when they know of no need to defend their positions or they feel anxious (606), as would be the case for the worried owner of a sick pet. This raises questions of how to harness engagement and motivation within required or general education courses in order to reap these full benefits of learner autonomy. Of this challenge of online learning in for-credit environments, Jérôme Eneau and Christine Develotte explain that, "[l]earning through one's own actions, online, probably requires more time, organisation, and strict dedication than learning in a classroom, and the process is one that shakes up preconceived ideas and habits" (15).[84]

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[84] The conference presentation "Opting-in Online: Self-Motivated Knowledge Making and Literacy Development through Public Online Forums" builds on the observed phenomenon of learner autonomy in public online forums. It argues that, to increase autonomy in classroom settings, an instructor can design public, interactive learning spaces that require frequent participation, combined with self-reflexive tasks. This replicates some of the experience of a voluntary forum, while targeting the criteria of learner autonomy discussed herein (Lee).

However, these challenges diminish within the voluntary, opt-in environment of the public online forum. Because forum members join with a personally relevant exigence – a sick animal, seeking ideas for an enclosure's décor, etc. – online learning comes more easily to opt-in forum members than to those in-class. Open forums sustain a frequent rhythm once they have an established member base. This indicates that, while not all forum users learn all of the time, learning constantly occurs in the open online forum.

Community and Collaboration

If a classroom can emulate the regular rhythm of an open forum, the setting can develop community. Gafni and Geri stress the need for instructors to plan and moderate online e-learning that supplements class learning. Open forums like *Caudata* and *FrogForum* lack instructors and assigned tasks. Instead, voluntary forum users receive the support and guidance of forum administrators who arrange stickies and FAQs, and moderators and members who answer questions and provide direction for further information as well as support. Even without anyone actively designing the forum as a learning environment, it acts as one. Collaboration itself fills these functions, which raises the important role that community and collaboration play in learners' development of autonomy.

Some independent learning categories pair particularly well to others, and community and collaboration exhibit the strongest bond. Many studies of hybrid classroom environments parallel Janice W. Fernheimer's findings that in a face to face class with online components, Wikis help group writers assess their collaborative essay

writing projects. The online community dynamic of such spaces fosters learner

autonomy, as supported by this study's observation and participant data. Participants

widely reported enjoying the community on *Caudata* and *FrogForum*, each participant

in-/directly mentioning benefits of the online forum community dynamic at some time

during the course of the interviews. To fully understand the importance of online social

interaction on herp forums, it helps to understand the isolation of the herp hobby. When

asked "where (other than this forum) do you have conversations about amphibians and

their care?" Two of six participants reported solely online venues. Of the four that

mentioned face to face interaction, all found herp-loving, face to face friends through an

organization, rather than a pre-existing face to face friendship. Of the six participants,

only Kees had an entirely offline friend who shared the interest in herps: his girlfriend

(Gere Interview 2).[85]

Not surprisingly, participants reported enjoying the community dynamic and

making friends through the online environment. While national pet stores now carry

some easy to care for herp species, such pets remain a specialized interest. *National

Geographic's* poll on pets asks which species are "most terrifying," and the top two

answers are both reptiles; 19% of respondents chose snakes, and 18% chose alligators

(Dell'Amore n. pag.). Clear social biases relegate herps to exile along the banks of the

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[85] In a poll on *Caudata* from 2011 that asked, "How accepting are your spouses/family about your hobby?" only 17.27% of 249 respondents answered, "As excited as I am – I have to share ownership!"; 37.75 selected "Accepting – willing to lend a hand now and again"; 18.47% answered "Grudgingly accepting – they like to look now and then, don't want to be involved"; 7.63% reported that their families are "Indifferent – could care less about them, not for or against the hobby"; 7.63% have families and/or partners that "Put up with it – lets you do it but it is not their favorite choice of hobby"; 6.83% answered "Tolerant to a point – you can do it but they are strict about # of tanks"; 2.81% reported that their families "Dislike it – wish you would get a new hobby but lets you have a tank or two"; and 1.61% answered that their families and/or spouses "Hate it – would be happy to see you give it up completely" (Jenste n. pag.). Overall, this can be lumped into 18.88% of families and/or spouses that are unhappy with the hobby, 7.63% that are indifferent, and a 73.49% majority that are (to varying degrees) accepting of the hobby. However, while an accepting family can provide support (or at the very least, not provide alienation), it differs from a community of fellow hobbyists. This is the communal benefit of the online forum environment.

mainstream. The Humane Society of the United States (HSUS) estimates that 46% of households have a dog and 39% a cat; they do not poll for any other pets ("Pets by the Numbers" n. pag.). With lower cat and dog estimates than the HSUS (36.5% for dogs and 30.4% for cats), the American Veterinary Medical Association (AVMA), does poll for additional species (n. pag.).

While the AVMA gives birds and horses percentage-based categories of their own, herps are lumped under the heading "Specialty and Exotic Animals," in which small mammals by species dominate (6 of 14 categories). Reptiles are divided by type – turtles are in 1 of 1,320 homes; snakes are in 1 of 555 homes; lizards are in 1 of 726 homes – and the poll either omits amphibians, or mistakenly assumes they suit either the category of "other reptiles," which are in 1 of 365 homes, or "all others," which are in 1 of 246 homes (AVMA n. pag).[86] In other words, while non-mammals comprise a minority special interest among pet-owners, amphibian owners such as those found on *Caudata* and *FrogForum*, are further othered within an already marginalized community. Additionally, the category of "all others" is troubling, as it may include not only amphibians, but other underrepresented pets, such as hermit crabs, tarantulas, and praying mantises.

Because of their minority status within an already minority population, amphibian forums form an observably close community that members value greatly for lack of face to face alternatives. Interviews revealed that participants appreciate the friendly dynamic of the online forum community, and Anne explained that, by comparison to other forums she has visited, *Caudata* does not encourage cliques or meanness (Janes Interview 3):

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[86] The preceding categories of "turtle," "snake," and "lizard" include all reptiles, leaving one to wonder the intended purpose of the category "other reptiles." Furthermore, in application, some survey respondents might easily (if wrongly) have included their amphibians among "other reptiles" rather than "all others."

"most of the time we all rub along nicely. […] There tends to be a core group of users that frequent the forum, people from the core drop out and are replaced by new people and dynamics change" (Janes Interview 2). Gabriella voiced appreciation for *Caudata* because it attracts a diverse, international environment (Adorno Interview 2).

Anne, Gabriella, and Kees all referred explicitly to the forum as socialization through the course of their interviews and usage diaries, and five of the six participants referred to forum friends and the forum's friendly nature. Karl made two references to friendliness; Piotr made three; Kees and Anne each made four; and Adam used the words "friend" and "friendly" 11 times throughout his usage diaries and three interviews. As Anne explained it, "there are a few members that I have known for a long time. When using the chat room, you get to know more about them, some friendships then develop more on facebook. It's been nice to be able to meet up with some of them in person too" (Janes Interview 2). This dynamic forms, in part, because of specialized and often isolating interest area. As Kees explained, "none of my friends share this hobby, except the friends I made through this hobby" (Gere Interview 1).

While preliminary discussions of online environments quickly discredited online communities as "pseudo-communities" or "imagined communities" (Beniger and Peck qtd. in Jones 21; Anderson qtd. in Baym, "The Emergence of On-Line Community" 38),[87] by the late 1990s, many had risen to defend the authenticity of online communities. Stephen Jones countered James Beniger and Scott Peck's "pseudo-community," and Nancy Baym challenged Benedict Anderson's "imagined community" by reviewing the defining criteria of a community to prove that internet spaces met all but a face to face

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[87] Despite his reluctance to view online environments as genuine communities, Brown and Duguid explain that Anderson did believe shared texts tied people together (194-7).

component that she felt nonessential to a functional definition (Jones 21; Baym "The Emergence of Online Community" 38). More recently, Catherine Dwyer explains that new media environments often facilitate relationships' development (n. pag.), and Malcolm R. Parks and Kory Floyd find that most online relationships eventually move offline (Parks and Floyd n. pag.). While Martin Lister et al. explain that the role of community has been a core conversation since new media scholarship began (13),[88] the conversation now seems aligned toward the consensus that the community experienced online can be as real as any other.

When Anne wrote in her usage diary, she often referred to other members specifically, recounting interactions as one would discuss past events among face to face friends. Some forum friendships go far beyond acquaintances. Adam has a particular interest in Australian and South African species, which has led to close friendships with many *FrogForum* members from these countries. He helped one South African friend apply to U. S. universities. As he explained, "[i]t is these kinds of friendships that encourage me in continuing my moderator duties" on *FrogForum* (Wolf Usage Diary). Such close connections to other forum members cannot be negated. This community is very real to its members.

While socialization draws members to online forums, unlike social media sites, their members arrive at the forum seeking information, and many of the comments participants made regarding the online forums' community alluded to collaborative processes and their benefits. Gabriella, Karl, and Adam reported getting to know, trust, and respect specific site members and their information. (Adorno Interview 1; Schmidt

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[88] Lister et al. list "simulation" as one of six core criteria that characterize new media (13). See definition and discussion of new media in introduction chapter.

Interview 1; Wolf Interview 1). As Adam reported, "[t]he best way to learn is from other

people. The things I learned from others … helped me become a better keeper" (Wolf

Interview 1). Piotr paralleled this sentiment when he wrote that "[s]haring experience

with ability to discuss at the same time is the best way to gain knowledge and

understanding about, in this case, newts and salamanders" (Szott Interview 1). Not only

do forum members learn through and with each other, but they are also aware of this

phenomenon.

      The statement that most resoundingly demonstrated the convergence of

community and collaborative learning amid a very isolated and isolating interest special

group came from Karl, who explained:

> I have conversations mostly with people that I got to know on the web and
> many that I met in the AG Urodela meeting (international newt meeting).
> Those often help me with problems or let me know about their projects
> etc., which is nice not only because of the knowledge gained out of this
> chats, but as well for not feeling so 'alone' with the hobby (and having the
> chance to 'boast' about successes, etc., which I think is a part no honest
> hobbyist can deny). (Schmidt Interview 1)

Karl's statement makes the herp hobby's solitude explicit. As he described it, the online

community combats this social isolation. His "boasting" on online forums implies

comfort and camaraderie. That he pairs this with notions of "help" and "knowledge"

reveals the collaborative learning that undergirds the social, communal, role that such

online spaces fill, thereby nudging forum members toward learner autonomy. Autonomy

grows from the information-sharing community and the collaborative support that it

provides.

Learner Autonomy by Degrees

As the previous sections indicate, people who participate voluntarily without extrinsic incentives like course credit achieve successful autonomy more often than those driven by external variables. However, this experience is not uniform across all forum members. Rita Kop establishes degrees of autonomy when, in her study of classroom autonomy, she reveals that some students prefer independent learning, while others have difficulty motivating and self-directing (31). As the previous chapter has indicated, participants set their own goals, motivated by their own personal exigencies, the specialized subject matter, and the scarcity of intermediary level publications. High levels of experiential learning among the majority of forum participants indicate correlating high degrees of learner autonomy. Participant observation allowed me to witness the types and degrees of autonomy that members exhibited, and I traced their presence through forum posts. However, people learn autonomous behaviors over time, and throughout this process, they move through various degrees of autonomy. Éva Illés characterizes this process with such components as "decision making, choosing topics, materials, and activities" (507).

Because much of the contemporary research on learner autonomy studies classroom environments, models of degrees of autonomy tie directly into the classroom, and discussions of these stages often presume the ultimate goal of moving away from reliance on an instructor in order to learn a class' material (Illés 507). For example, David Nunan's 1997 model of learner autonomy features stages of "awareness…. involvement… intervention… creation… and transcendence," all of which exist in relation to the classroom and its pedagogy (195, qtd. in Benson, "Autonomy in Language Teaching and Learning" 23). While Holec's initial definition positioned autonomy as

operating with little to no assistance or course design from an instructor, Benson finds

that such entirely self-directed instruction can flail and fail ("What's New in Autonomy"

17).[89] Because *Caudata* and *FrogForum* support learning for specific goals, often to

assist a sick amphibian, many members of *Caudata* and *FrogForum* self-direct their

learning without floundering.

The success of autonomous learners on *Caudata* and *FrogForum* holds a few

implications. First, the participants that volunteered for this study are strong autonomous

learners, the majority of whom hold careers in specialized fields. Two of the participants

moderate *Caudata* and *FrogForum*, and while none has a degree in herpetology, one

works in aeronautics, one teaches information technology at the college level, and one

works on a special task force on the Dutch police. These professions suggest success at

highly complex tasks.[90] Because the forums self-select for autonomy and because the

participants further self-selected into this study are more likely to be autonomous,[91]

scholars and instructors cannot *expect* similar environments, but they can *learn from*

these successful models, emulating the forum features that most support learner

autonomy.

Participant observation on *Caudata* and *FrogForum* allowed me to witness three

degrees of autonomy that pervade the online forum environment, each of which aligns to

Sanna Järvelä and Päivi Häkkinen's classifications for levels of discussion in

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[89] As Benson explains, "technologies tend to presuppose autonomy, rather than foster it" ("What's New in Autonomy" 17).

[90] Of the other two participants, one double-majors in history and biology, and the other works part time at a children's library, keeps children in addition to her pets, and keeps a home. While not all would agree, I believe that both of these tasks present as many challenges as the above professional tracts, and they indicate a propensity toward independent learning skills.

[91] Since a forum is an environment in which people learn outside of the classroom, by definition, forum members must have some capacity to self-instruct in order find the community helpful and remain within it; additionally, the participants who volunteered demonstrated high levels of self-instructed skill with the care and maintenance of herps.

asynchronous environments. Järvelä and Häkkinen study asynchronous online communication that supplements classroom learning in order to examine degrees to which students understand and interact with others' perspectives. Their classification of cognition development in discussion types correlates with degrees of autonomy that individuals exhibit in postings on *Caudata* and *FrogForum* as follows: (a) *The low-autonomy information seeker* correlates to Järvelä and Häkkinen's "low level discussions," (b) *the moderately autonomous information seeker-sharer* to "progressive discussions," and (c) *the high-functioning information seeker-sharer* to "high level discussions." The following sections briefly review each categorical degree of autonomy as present in *Caudata* and *FrogForum*.

The Low Autonomy Information Seeker pursues simple answers to an often-answered, basic questions. Experienced members often tell this member, with varying degrees of decorum, to "Google it." In such cases, the forum community norm is that, for basic questions, one ought to attempt to locate answers through minimal searching on the forum or through a search engine before starting a new thread. Many members view an un-researched basic question as a waste of time or space, motivated by unwillingness to look before asking. The "Google it" phenomenon reflects "low-level discussion," a concept that Järvelä and Häkkinen explain "involve[s] mainly separate comments and opinions. Students' [in this case, forum members,] comments do not take into consideration the earlier discussion, but rather represent each student's independent and often unilateral comments" (Järvelä and Häkkinen 87).

This often frustrates members with higher degrees of autonomy. Four participants mentioned "Googling" or searching as a basic first-step that precedes their own posting

processes, and interview responses indicated that these participants expect basic research

efforts from their peers (Adorno Interview 1; Gere Interview 1; Kees Interview 1; Janes

Interview 2). Piotr explained that he avoids "threads with as-basic-as-possible questions,

like 'what kind of substrate' 'what to feed my newt' and in 90% of cases – everything

that has 'axolotl' or for worse, 'axie' in its title" (Szott Interview 1). This attitude

regarding basic questions prevails enough that other participants also addressed it through

the course of interviews. While Piotr appeared impatient with *Caudata's* less autonomous

learners, Anne had far more empathy and understanding for beginners. In one description

of the forum dynamic on *Caudata*, she explained, "I dislike how [some members] treat

some of the new users as being stupid, they have joined to learn" (Janes Interview 2).

Caudata has a heterogeneous population of learners who are at different stages and

degrees of their learning processes. High autonomy learners exhibit different degrees of

patience, empathy, and tolerance of lower-level autonomy learners.

Piotr's focus on axolotls also reveals the broader cultural context that affects some

members' perceptions of writing and knowledge sharing. Axolotls are more popular than

other caudates, which leads some members to perceive this species as a beginner pet.

Hierarchies emerge within the herp community. Of 147 forum members polled on

Caudata in 2009, 76 (51.70%) had axolotls (Otterwoman n. pag.).[92] Three other widely

available species followed this majority population: 54 have "Chinese Firebelly (Cynops

orientalis)"; 45 have "Other Cynops"; 42 have "Tiger Salamanders (all types)"

(Otterwoman n. pag.). Perhaps the cause of their popularity, many perceive axolotls as

cute, and participant-observation revealed that axolotl owners ascribe human

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[92] Since herp hobbyists often keep more than one species at a time, this pollster allowed multiple votes per person, and so percentages by species do not indicate popularity well, as altogether, the total percentage for all species is not 100%, but 313.21%.

characteristics more often than the owners of other newt and salamander species, and the affectionate diminutive "axie" indicates the tendency to infantilize and anthropomorphize. In a community heavily influenced by science and populated by some trained scientists along with those who emulate their discourse, many view such anthropomorphism as inappropriate or undesirable.

Piotr's and Anne's interview responses indicated that more autonomous members know that other members, particularly among those beginning the hobby, sometimes have lower levels of autonomy than they. These responses indicated a driving force that participant observation also revealed; whether patient or not, whether tactful or not, experienced, autonomous forum members avoid directly answering easy questions, preferring instead to link additional information or encourage the Original Poster (OP) to conduct basic, preliminary research before turning to the online forum community in search of information and advice. This models the behavior that the community prefers, and when combined with the frequent impatience of some members, it normativizes behavior by encouraging those who remain in the community to increase their autonomy in order to increase their social standing.

The Moderately Autonomous Information Seeker-Sharer participates more often and more actively than the low-autonomy member. This user pursues basic information and builds on it, asking questions when stuck and actively seeking and receiving feedback: activities that parallel Järvelä and Häkkinen's second level of asynchronous discussion, *Progressive Discussions*, which:

> involve some cross-references, generalizations, and joint knowledge-building. … They have plenty of comments, but also experience-based postings and postings with new points or questions. In the course of the discussions, the students' postings are constructed on the previous, mainly

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experience-based postings, but in the end of the discussion, general thoughts and ideas are usually voiced. No theory-based discussion occurs. A typical feature of the discussions is a rich dynamic in conversation: cross-references and a variety in types of postings. (Järvelä and Häkkinen 86).

Observation revealed that the majority of threaded conversations on *Caudata* and *FrogForum* met these criteria.

Throughout participant observation, I observed a majority of threads in which members asked for help and helped one another, providing information that moved the OP toward a learning goal. One common thread title, "Help, Sick Axie!" recurs frequently throughout the forum, and such threads indicate that an OP wants to learn how to expedite the recovery of a sick or injured axolotl.[93] The scarcity of herpetological veterinarians outside of densely populated urban centers often makes the public forum a sole source of medical information for many herp owners. Even when available, exotic veterinarians often have only broad, surface-level knowledge of herps, or else they specialize in more commonly kept reptile species like iguanas or aquatic turtles. *Caudata* addresses this need particularly well with a library of articles by forum administrators, many of which address the care of sick or injured newts and salamanders. Over the years, herpetological veterinarians have belonged to *Caudata*, offering medical advice. While such information scarcity is not a required component of learner autonomy situations, it is undoubtedly part of the reason that autonomy succeeds in the examples of *Caudata* and *FrogForum.* There are few alternative means of learning the special interest of herp husbandry in this specialized, nonacademic community.

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[93] Such threads are so pervasive that, under the forum "Axolotls," *Caudata* has a subforum titled "Sick Axolotl?" (*Caudata*).

In such situations, members use writing to seek knowledge in order to solve a problem. They have a self-set goal (to heal an animal), and they self-assess their process of knowledge assimilation based on the progress of the animal's health. Some recurring situations, such as fungal infections in salamanders that are kept at temperatures above 74 degrees (Twahn n. pag.), have specific threads and pages of information on treatment. When members ask for help on such a common problem without searching the stickies or archives, they indicate low levels of autonomy. However, many low-level, how-to threads progress through visible stages of independence as the OP learns to search for additional information on the forum and on other sites. This process sometimes happens within the course of a single thread.

The High Functioning Information Seeker-Sharer exhibits full learner autonomy. These individuals have actualized their potential for independent learning more so than many others. I have observed numerous threads in which members used scientific terminology to discuss theoretic implications of herp breeding and ownership and the ethics and laws of herp keeping, as well as advanced breeding projects and "builds": constructions of elaborate vivariums and aquascapes, many of which include live plants, waterfalls, rock formations, false bottoms, and colonies of isopods referred to as "cleaning crews" or "tank janitors" for their ability to maintain a clean and healthy, naturalistic environment. While not entering academic theoretical scientific debates, such conversations move well beyond the particulars of need-based practice and problem solving, entering realms of theoretical abstraction and intellectual curiosity. Many highly autonomous learners engage in Järvelä and Häkkinen's "high level discussions": "shared, theory based discussions [that] maintain high-level postings, such as theory-based

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postings and postings involving a new point or question. Comments […] support the construction of a topic to be discussed. Rich cross-referencing is typical" (Järvelä and Häkkinen 86). They interact on complex matters in order to build ideas and problem-solve advanced situations or theoretical frames of reference.

Rodrigo's "Phase/hybrid-Let's think a little," the focal text of chapter four exemplifies an advanced conversation among members that adheres to Järvelä and Häkkinen's definition. Discussants respond to Rodrigo's initial post about the genetic implications of selected breeding for aesthetically desired traits that do not exist in wild populations of given species. Among the ten people who respond to Rodrigo's post, all share an understanding of genetics and the pet trade on which to base the conversation. The conversation exceeds requirements for a moderately autonomous learner's Progressive Discussion. The members move beyond "some cross-references, generalizations, and joint knowledge-building […as well as] experience-based postings and postings with new points or questions" (Järvelä and Häkkinen 86). Ten of the 11 discussants "maintain high-level postings, such as theory-based postings and postings involving a new point or question […and] Rich cross-referencing" (Järvelä and Häkkinen's 86). Only one post lacks these characteristics. A site member of seven years, AJ, responds, "[w]ell done Azhael. The 'pet trade' sickens me. It's all about the money and we need to change that" (Rodrigo post 2). This short moment of assent follows a level of moderately independent learning, and while AJ has other more complex and elaborate conversations elsewhere on the site, he does not join in developing a high, theoretical conversation on this thread.

This project's interview participants all indicated that their level of engagement varied according to specific content areas of interest or expertise, which may account for why highly autonomous members do not always respond with advanced conversation building. Each of the six interviewees reported specializations with which they held increased engagement, ranging from specific species to breeding or tank-construction projects. Many also qualified descriptions of their expertise. When the first interview asked participants to label themselves "beginner/novice … intermediate … advanced … expert … paid professional, or other," half of the participants reported high confidence, but joined that confidence to a qualifier, mentioning specific species or projects. Karl, for example, wrote "I am a beginner, for I fail from time to time […] I am intermediate because I managed to get some very common and 'easy' caudates into breeding. I am 'advanced' because I read countless texts, had personal contacts with professionals all over the earth" (Schmidt Int1). Not only does this indicate that larger contexts influence autonomy, as previously established by Snodin (209), but it also indicates awareness of one's own learning and expertise: an important aspect discussed below under the subheading of metacognition in learner autonomy.

Publicness in Learner Autonomy

The community sometimes motivates people to opt into the public online forums, and byproducts of the forum community include the collaborative nature of learning and rhetorical development.[94] The very publicness of the community structure affects the

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[94] For additional research on forums that situates them in classroom-based learning and/or collaboration, see the works by Scardanakuam and Bereiter; Gilbert and Driscoll; Schellens and Valke; Desanctis, Fayard, Roach and Jiang 2003; and Li 2004 that are included in the works cited. Such research illustrates the scholarly focus on the classroom realm, which often neglects *open* online forums.

learning and writing that occurs. Jinghui Wang et al. confirm that the relationship to audience helps individuals "take great pride in, and responsibility for, perfecting completion of their learning tasks" (Wang et al. 8). Navaporn Snodin finds that students try harder in public venues because they want to match or surpass their peers' performance: "when some members did not follow the group norm… they received negative comments from their peers. Several learners commented on the fact that seeing their classmates engage… was a positive inspiration for them; their classmates' behavior motivated them to follow suit" (Snodin 214). Such a normativizing process pervades online forums, as the preceding discussion of the "Google it" phenomenon as chapters three and four asserted.

Public visibility affects individuals' ability to learn autonomously. Eneau and Develotte had a high impression that others' social and emotional contributions helped facilitate overall learning, even though they acknowledge that a minority of students do not perform as well in a public environment. Snodin explains that the students he studied "were also more motivated. For example, they found out from the online journals that their classmates were studying hard, this motivated them to study harder because they did not want to fall too far behind" (Snodin 214). This also fosters a community dynamic. This correlates to Gafni and Geri, who find that, in a public setting, students "try harder, they devote more time for this analysis, so their learning improves, their grade in this specific assignment is better, and as a result, their exam grades are also higher. So the fact that the analysis is published and exposed to the eyes and criticism of their colleagues, improves student performance" (Gafni and Geri 339). Unlike classroom settings, people who do not wish to perform publicly on an opt-in forum can choose not

to join to the public experience. While this means the environment does not reach everyone, it also means the environment features rich engagement among self-selected people who enjoy public performance.

Maria Kuteeva's research further supports the claim that publicness improves autonomy. In a study of student participation on Wikis within a class environment, Kuteeva found a 60% majority considered audience more overtly when writing on a Wiki than in other assignments. Such Wiki writing also correlated to increased engagement, which as the preceding section of this chapter has revealed, enhances learner autonomy. This study of *Caudata* and *FrogForum* corroborates findings that regular interaction in a public setting increases learner autonomy. One participant, Gabriella, revises each post thoroughly to ensure the clear communication of ideas: a concern that preoccupies her as a nonnative English speaker (Interview 2). This is not surprising, since cultural context greatly affects autonomy in nonnative English speakers (Snodin 209). However, native English speakers also worry about clarity in communication. The publicness of the forum leads some members to careful craftsmanship for correctness, clarity, or both. Anne explained, "I take a lot more care on how I write, and I hope I make the responses clear and concise. I tend to double check the question to make sure my response is applicable and I tend to check my facts first" (Janes Interview 2). Publicness affects both process and product.

Furthermore, as chapter three has mentioned, the publicness of information affects each participant's process of verifying information. Because anyone in the public can post and not all members know one another personally, participants reported that they often verify information in other public, online arenas before they act on it. Not only does

this reveal a different mode of information assimilation than for face-to-face or private interactions, but it also indicates self-awareness of environment. Such metacognition also facilitates autonomy, as the next section shows.

Metacognition and Self-Assessment

Metacognition and the self-assessment that accompanies it are crucial to the ability to learn autonomously. Throughout the course of interviews, participants showed high self-awareness of their level of expertise, its situatedness among different subspecialties of content, and its applicability across wide arrays of subject matter. Each participant indicated posting only when s/he felt informed on the subject matter, otherwise deferring to others or avoiding engagement. All participants reflected analytically on their lives, educational paths, and the origins of their love of herps. Ultimately, narrative accounts proved highly self-reflexive, and all members wrote longer answers when prompted to discuss their own life experiences than when responding to queries about posts and their content.

Without the ability to self-assess, people cannot develop effective strategies for independent learning. While later discussions of learner autonomy by Eneau and Develotte, François Blin, and Adriana Lazar focus on self-evaluation as a component integrated within classrooms and graded structures, Holec's original conception of learner autonomy does not anchor explicitly to instructors' evaluations. Instead, Holec cautions that "evaluation must be distinguished from certification" (16). Holec focuses on "internal evaluation" based on the learners' – not the teachers' – "personal criteria" (18). Self-assessment serves as an important task that falls within the learners' purview, a view

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explained further through a footnote in which Holec clarifies "[a]lthough there may be learning without certification or external evaluation, there cannot be learning without internal evaluation" (Holec 17). Only a minority of *Caudata* and *FrogForum* users has traditional certification in a related field, and yet many demonstrate above-average knowledge of herp-keeping and related science fields because of their ability to learn autonomously and experientially, which includes the ability to reflect on their learning over time.

Interviews, usage diaries, and participant observation, revealed that much of the forum's learning is experiential and problem-based. It is, therefore, no surprise that members frequently measure the success of their learning against the survival of the herps they keep. For example, Karl's aforementioned statement of self-identified degrees of expertise succinctly indicates species' survival as a means of self-assessment:

> I am a beginner, for I fail from time to time (e.g. losing a species because keeping them too dry). I am intermediate because I managed to get some very common and 'easy' caudate[s] into breeding. I am 'advanced' because I read countless texts, had personal contacts with professionals all over the earth. I am no expert as of yet, but I think going on this way I will become one one day. (Schmidt Interview 1)

In this statement, Karl explains that he measures failures through animal deaths and successes through breeding. Survival and breeding, along with feeding and creating a suitable environment, emerged as learning categories through which each participant measured his/her progress with learning the forums' content.

Kees and Anne both discussed treatment measures for sick caudates[95] that they had learned through *Caudata* and applied successfully (Gere Interview 1; Janes Interview

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[95] Both participants discussed the practice of "fridging": putting an aquatic salamander that prefers cool water temperatures (as low as 40 degrees Fahrenheit) into a refrigerator to help it fight potentially lethal fungal infections that frequently occur at temperatures above 74 degrees Fahrenheit (Twahn n. pag.).

1). Adam, Piotr, Kees, Gabriella, and Anne all discussed species identification[96] and reproductive measures that they had learned through forums, the success of which they measured by the reproductive success of their animals (Adorno 2; Gere Interview 1; Janes Interview 2; Szott Interview 1; Wolf Interview 2). Adam and Kees discussed feeding measures that they had learned through the forums. Adam explained his process of learning about a specific food item, the success of which he measured by its color enhancing function (Wolf Interview 2), and Kees discussed his successful efforts to culture earthworms: a nutritious food staple for aquatic caudates (Gere Interview 1). Furthermore, Adam, Karl, Anne, and Gabriella all discussed learning to create and maintain herp environments through the forums. In particular, they learned how to design and build décor for enclosures (Adorno Interview 2; Schmidt Interview 1), and how to manage water quality (Janes Interview 2; Schmidt Interview 1; Wolf Interview 1). In each instance, the example of information learned was measured by the successful application of the information in question. Forum members self-assess the success of their projects, and they also turn to the forum community for feedback, posting threads that show ongoing processes like breeding projects and enclosure builds.

While forum members self-reflect as they learn and apply content information from the forums, the participants of this study also exhibited varying degrees of analytic reflection about the forum itself, their writing on it, and their relationships to it. Kees and Adam, for example, focused on tonal distinctions in formality between the forum and the other writing in their lives. Adam, an information technology instructor, described forum writing as less formal than most of his other writing: "One important difference is that

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[96] Species identification is important to breeding projects, since sometimes different species that are taxonomically close can look quite similar to one another.

forum posts do not have to be so formal. So, I don't have to worry too much about grammar as long as the message is understood" (Wolf Interview 2). Kees, who works in the Netherlands on a specialized unit of the police force, also focused on formality, but he believes his forum writing is more filtered and formal than his other communicative acts: "I'm used to writ[ing] in public, so I always try not to offend people. I don't have a lot of crazy opinions so I can state almost everything that's on my mind, except for a couple of things of course, being a dirty man and all" (Gere Interview 2). This last remark shows that Kees knows he must modify his rhetorical approach, including the tenor of his humor, from one situation to the next. Participants were aware of the context of the forum and its situational needs, and they adapted their writing to this specific rhetorical situation.

Additionally, perhaps a result of past educational experience, participants revealed awareness of audience, purpose, and rhetor with no explicit prompting. Kees, for example, emphasized purpose in his responses, maintaining, "my school work and police work results in a lot more text than a single post. I need to check them thoroughly. My posts contain a couple of sentences most of the time, so there's less room for error" (Gere Interview 2). Adam explicitly addressed audience, announcing that "my writing style reflects the type of audience it is intended for" (Wolf Interview 3). Because these responses indicate awareness of rhetorical situation, such statements reinforce Kathleen Blake Yancey's assertion that people often develop literacy skills online and out of the classroom (298-302).

When participants shared details about their writing process and attitudes about writing, all acknowledged that editing and revising were part of their posting process.

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Participants also acknowledged individual attitudes about writing. As this project has indicated, Gabriella worries about her degree of fluency in English, and as a result, she reflects on correctness and correcting (Adorno Interview 3). Anne worries about her skill with writing. She confessed that she devotes time to her writing and frets about her spelling, sometimes becoming "distracted" in the process, which can interrupt the "flow" of her posts (Interview 2). Although Anne is self-conscious about her writing, she also reflected on it frequently, and her responses about writing entered more detail than the other participants' by including such specific examples as her preference for typing over pen and paper, with which she does not feel comfortable (Janes Interview 1; Interview 2). Participants were also self-reflexive about the online forum community. Anne, for example, showed awareness of social roles and the dynamic of the forum, as well as her relationships with specific members (Janes Usage Diary). The forum community is important to her and she values the socialization it offers.

Overall, members reflected, not only on the success of their animals, but also on the forum itself, both of which facilitate autonomous performance. This suggests that, while some of the linguistic, rhetorical, and content knowledge and information that participants learn occurs over time through acculturation to forum norms, some of this occurs through deliberate, reflexive practice. Forum members can and do control much of their learning process.

Conclusion

Because of the scarcity of information for hobbyists of specialized species, herp hobbyists turn to shared interest communities of experiential experts. Through such new

media environments, people can learn to teach themselves, thereby furthering their own expertise in specialized subject matter and contributing to the cumulative knowledge base. While not all people learn autonomously in all online environments, autonomous learners can use forums to develop their skills and their knowledge as this study's participants demonstrated. New media environments invite independent learning situations. One key criterion of new media is that it is "interactive" (Lister et al. 13): a component that facilitates community and collaboration, which in turn, enhances engagement and motivates. Specific sites, particularly those on specialized topics can house environments that invite learner autonomy. Individuals then decide whether or not to accept this invitation to engage with the interactive space. Those who do opt-into the environment learn through ongoing participation and personal goal-setting and assessment. In this way, the forum medium supports the knowledge-making process by facilitating learning throughout its interactive, collaborative community.

While people learn autonomy over time and with effort, the online forum environment attracts autonomous learners, facilitating and expanding their development. If this were not the case, low-level discussion would dominate and frequent replies to "Google it" would not appear in response. Members learn based on the usefulness of knowledge in their own lives, which changes over time: a component of autonomy that Holes describes as "dividing knowledge into *useful knowledge* and *useless knowledge* at each stage of the learning, in a different manner from the traditional division" (emphasis in the original, 14). As Holec suggests at the outset of the learner autonomy movement, this process happens through self-evaluation rather than accreditation, as people set and work toward their own goals based on their own needs (9-20).

On these forums, members learn scientific content and an adaptation of scientific rhetoric, and they do so from each other because of personal investment in the material. This personal engagement, matched with collaboration, community, learning through degrees, publicness, and metacognition creates an environment in which learning can flourish as it does among the participants of this study. While this may not be accurate of all writing on all forums, such opportunities exist elsewhere on the internet for those that would take them.

Interestingly, the criteria of learner autonomy suit the learning situations discussed in the scholarship on collaborative learning. Kenneth Bruffee believes that dialogic exchange and verbalizing thoughts forms knowledge in and amid communities ("Collaborative Learning" 642). This is exactly what occurs when participants develop and assert their autonomy in order to learn within the forum group. Future research should pursue the ways in which learner autonomy and collaborative learning run parallel in order to strengthen the application of collaborative learning in educational environments: academic or otherwise. On *Caudata* and *FrogForum,* people teach themselves large amounts of specialized information, most of which is difficult to locate through traditional, print media means. Understanding that people successfully self-instruct such vast amounts of information provides a solid springboard from which to explore the ways in which this information is framed, constructed, and presented as knowledge: an understanding to which the next chapter now turns.

CHAPTER SIX

In the Gaps: Knowledge Formation and Transmission in Specialized Nonacademic

Discourse Communities

"Knowledge is the product of human beings in a state of continual negotiation or
conversation"
Kenneth Bruffee, "Collaborative Learning and the 'Conversation of Mankind'" 646-7.

Introduction

This qualitative research sought to understand (a) how participants use public

writing to generate and share new knowledge through the community of the open, online

forum and (b) in what ways the medium of the online forum, including its public sphere

and/or community dynamic, supports or hinders the knowledge making process. Thus far

along the journey, the chapters have focused on the ways in which forum members learn

the content and discourse of their herp forum communities. Through a combination of

acculturation to socially enforced norms and deliberate efforts to self-instruct, forum

members learn genres, rhetorical proclivities, and perhaps most importantly to their

immediate, situational needs, the information of the herp hobby.

The above conclusions address the forum medium's role, and with that foundation

in place, this chapter focuses on the primary research question by asserting that

participants use the forums' interactive, public community as a vehicle for making and

sharing knowledge, which I define as *information that exists within a social frame of*

individual or communal value positions formed through the human relationship to

information.[97] This definition is a synthesis of social constructionist and connectivist

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[97] While George Siemens worries that "To arrive at a true definition of knowledge is to render it useless for
diverse implementation" (*Knowing Knowledge* 17), the function of any definition is to bound a concept.

conceptualizations of knowledge. Social constructionism posits that "knowledge is grounded in the relationship between the knower and the known" (Anderson and Kanuka, n. pag.),[98] a premise upon which connectivists John Seely Brown and Paul Duguid add, while also integrating a distinction between information and knowledge that emphasizes the presence of human understanding and interpretation as fundamental criteria for knowledge. This is much like Walter J. Ong's statement that "knowledge, verbalized or other, can exist only in a knowing subject" (25). Social constructionists view knowledge as a social construct, whereas connectivists typically view knowledge as existing within a series of networks and connections in which humans interact (Downes, "What Connectivism Is" n. pag.).[99] The defining principles of connectivism are "autonomy," "diversity," "openness," and "interactivity" (Downes *Connectivism and Connective Knowledge: Essays* 71).

As the introduction chapter has explained, the two theories of constructionism and connectivism are compatible,[100] and this chapter shows that connectivism's defining characteristic of "interactivity" provides valued insights to new media environments, which Lister et al. also define in part by the criterion of "interactivity" (*Connectivism and Connective Knowledge: Essays* 71; Lister et al. 13). For example, in relation to the wikis he studied, James Purdy defined knowledge making by stating that "public knowledge making means the growth, development, and evolution of ideas through dialogic

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When the boundaries no longer map the terrain on which we move, it is time to revisit the concept and redefine it.

[98] The social constructionist conception of knowledge closely parallels a sociological understanding of knowledge, about which Berger and Luckmann explain, "the **sociology of knowledge** is concerned with the relationship between human thought and the social context within which it arises" (emphasis in the original, 4).

[99] This seems to follow suit with Ong's prediction that "Eventually, writing will create a state of mind in which knowledge itself can be thought of as an object, distinct from the knower" (25).

[100] This is a point that connectivism's founders, Stephen Downes and George Siemens, argue consistently throughout their works. See literature review in Introduction chapter.

interchange in publicly accessible forums" (352). The fundamentally *interactive* nature of this definition pairs it well with connectivist conceptions of knowledge. Additionally, the criterion of autonomy that is essential to connectivism is also well-suited to such autonomous learning situations as online forums. As George Siemens explains, "[c]onnectivism provides insight into learning skills and tasks needed for learners to flourish in a digital era" ("Connectivism: A Learning Theory" n. pag.). Furthermore, Philip Benson implies that connections are essential to autonomy when he explains that recent social turns in theory have led many to see personal and pedagogical autonomy as socially constructed, which "implies interdependence rather than independence" (16). This indicates that, even amid a social constructionist theory of knowledge, the collaborative, interactive, and autonomous situations that new media environments allow also facilitate knowledge making and sharing through the connections that humans and technologies form.

Neither theory of constructionism nor connectivism negates the other if knowledge is a social frame with which a person or community approaches and integrates information. The social frame grows from both the connections of the group and the individual, social being. If knowledge is information framed within social value positions, then both the social construct and its connectivity and interactivity are essential to the understanding of how knowledge is produced. So far, this project has remained closely focused on the realm of information: its style of presentation and its acquisition. Now the project builds on the previous conclusion that forum members learn through concurrent self-directed effort and inadvertent acculturation, in order to conceptualize such learning's relationship to the construction and spread of knowledge. This chapter

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moves away from information and toward the value-laden frameworks into which information is embedded to create knowledge.

As the fourth chapter reviews, the scientific community is an empirical sphere. As Kuhn explains, socially influenced paradigms shape that sphere. Each generation of science knows the world as best it can with the tools and within the paradigms available to it. This chapter applies Richard Rorty's broadening of the Kuhnian paradigm in order to analyze knowledge situations on *Caudata*, ascertaining that individuals can shape knowledge and then transmit it to the larger community, and that subjectivities affect individuals' approaches to the species in their charge, and that both normal and abnormal discourse enable the production of knowledge on a communal level. These points rely on Rorty's discussion of ab-/normal *discourse* rather than the Kuhnian discussion of ab-/normal *science* that inspired Rorty. This is because there is not yet an established science of the herp hobby to shift or define, and because much of what is discussed herein is not *science*, but it is all discourse.

Of course, there are established scientific facts that undergird the hobby, such as that a frog will not live in an oven set for 350 degrees Fahrenheit, which defies even the most basic of care needs. Not all such information of herp care has such easily observable, reproducible results, and there is not yet a rigorous discipline devoted to knowledge of the herp-keeping community for hobbyists to turn to. In his usage diary, Adam explained a debate on the forums about whether gut loading[101] or dusting[102] was more nutritious for terrestrial frogs since nutrition requirements for species are not

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[101] Gut-loading refers to the practice of feeding insects nutritious food in order to relay vitamins to reptiles and amphibians.

[102] Dusting feeder items involves coating them in prepared vitamin and/or calcium supplements in order to relay vitamins to reptiles and amphibians.

codified into an established knowledge body: "after some deep research, there is not much written about it. What is agreed upon is that frogs and toads need to have a balance of calcium, vitamin D3 and carotenoids (Vita A)" (Wolf Usage Diary). Some of the knowledge within comes from the community itself, rather than moving unilaterally downward from scientific domains. In some cases, new knowledge is established by a community effort of research and experimentation with trial and error.

Most facts and all knowledge are entrenched within a socially constructed framework of the values and ethics of a given community, and as chapter three indicates, such discussions are rhetorically shaped by the continued interactions between genre and community. This chapter builds on the claims of those that precede it, describing examples of modes of knowledge production and analyzing their rhetorical and social construction. It begins with a discussion of information construction and the subjective positions that exemplify a socially framed knowledge construct that houses information. Then it moves to examples of discursive knowledge production, first through camaraderie and then through conflict.

Subjective Positions: Perspective Frameworks and the Example of Best Care

The phrase "subjective position" is productive because it emphasizes the production of the subject as a product of his/her relationship to, with, and within larger knowledge fields and social community. The shaping of this construct includes the rhetorical choices that people make and the ways in which they use language and rhetoric. Chapter three demonstrates this by exploring the social and rhetorical influences to genre and its influence on people, and chapter four shows this in its discussion of the

adoption of Standard English (SE) and adaption of scientific rhetorics. The example of the subjective positions embraced at individual and communal levels further situates genric convention and discourse styles within a larger framework of a knowledge community and its construction of knowledge.

Throughout data gathering, many participants discussed the knowledge that others shared with them through forum posts and e-mails. Kees, for example purchased equipment to hatch brine shrimp eggs because baby brine shrimp (BBS) are nutritious food for small animals like newly hatched newt and salamander larvae. Kees not only viewed this as a success, but since then, he has suggested that others use baby brine shrimp to feed their young amphibian larvae (Gere Interview 2). This exemplifies a pattern that other participants described in interviews and that participant observation confirmed: extant knowledge is shared through the community, and each time it succeeds, another member is likely to reproduce it within the forum. The connected knowledge of the community reinforces individual value judgments that effective practice leads to best care for the animal.

Why is this not information, rather than knowledge? Because its focus is not on the fact, but rather the fact as it exists within a larger perspective frame: a cohabitation that results in knowledge. Charles Bazerman explains socially constructed subjective positions when he writes "[b]ecause each individual has a different complex history of relationships and activities in becoming socialized into the typifications of a society, and because each individual on each occasion deploys those typifications out of the dynamics of a local situation, these social types do not have fixed, grounded, and inflexible meanings, shared absolutely and univocally by all participants" (*Constructing Experience*

29). Best care demonstrates a fluid, subjective position frame through which information is given meaning, tailored to individualized experiences and needs.

For example, Adam recounted a perspective shift to his conception of best care that came from his interactions with another member who used coco-fiber as a substrate: a best care practice that differed from Adam's. He explained that "[m]y frogs and toads seemed to thrive after changing the substrate. I guess I was keeping aquatic frogs for so long, I didn't consider substrate for my terrestrial amphibians" (Wolf Interview 2). Adam's previous immersion in the care of aquatic amphibians was a past experience that affected future care of other species. Through reading and discussing others' reported opinions of best practices, he decided to alter the substrate he provided to terrestrial species. The success of this practice is subjectively assessed according to his observation and standard of best care, namely that his anurans "*seemed to thrive*" (emphasis added, Wolf Interview 2). His previous subjective worldview affected his approach, and exposure to another forum member's different perspective of the species' care eventually shifted his world view and the value frame that made that information into the relevant knowledge frame of best care.

The specialized nonacademic herp keeper resembles the naturalist of the Victorian era. *Caudata* and *FrogForum* are largely populated by intelligent people using observation and deduction to problem-solve and determine the best practice for the animals in their care. Just as the Victorian naturalist shared ideas with his[103] community through coffee shops and scientific journals (which began as loosely structured, allowing the novice entry until the field of science developed more rigid boundary structures as

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[103] This pronoun is deliberately gendered as a reflection of those who were allowed access to the knowledge communities referred to.

Bazerman and Myers recount),[104] these specialized herp hobbyists find communities in which to build and share knowledge online. This differs from the professionalized, scientific communities that Bazerman and other theorists of the rhetoric of science, such as Alan Gross, Greg Myers, and Jeanne Fahnestock, have pursued, because the arena is comprised of specialized nonacademic discourse that borrows from many fields as well as experience and observation, rather than from an established and bounded discipline.

The community continually forms knowledge systems that define and redefine the hobby's parameters and its understanding of captive herps and their care. The interactive and international scale of participation through online forums makes such change a rapid and continual process. As they learn about the species in their care, herp hobbyists enter and engage with new perspectives. Siemens explains of such moments that, "[t]o gain one perspective is to leave another. When we experience knowledge in application, we leave theoretical understanding of knowledge" (*Knowing Knowledge* 57). With different groupings of information and the varied knowledge they create, people exchange one behavior for another, changing their practice (as above) and conceptualizing frameworks such as best care with which they approach the hobby. Such frameworks shroud information, redressing it within a swaddle of individual and community values, and they are tested through application and public deliberation and their value is determined at both individual and community levels.

Karl reported a similar perspective shift that affected his knowledge framing, which occurred as he explored different, established methods of aquascaping on his quest for best care. "[o]ne was a [helpful] thread on the 'Walstad method', which *I now use in*

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[104] While this process is alluded to in a number of chapters, it is first addressed in relation to the progression of scientific publications, namely the *Philosophic Transactions of the Royal Society of London* (67), and it is most focused on throughout pages 128-150 of *Shaping Written Knowledge.*

all my aquariums and which *secured good plant growth as well as breeding, as the circumstances for the animals were perfect*. Without [this and …], I would probably have forgotten half the steps to take as well as some nice tricks to ensure a good life for the newts" (emphasis added, Schmidt Interview 1). Karl's report is significant for a number of reasons. Diane Walstad developed a method of aquascaping that emulates the natural environment. Known as either the Natural Planted Tank (NPT) method or the Walstad method, these tanks feature a bottom layer of soil capped in place with sand in order to enable a carbon-rich environment for plants' root growth, which is accompanied by use of natural sunlight, diverse and emergent plant species, and a low stock of fish. The underlying goal is to replicate the natural balance of a wild ecosystem. Such a tank may not even need a filter if the plants grow fast enough to clean the water of a lightly-stocked tank. The alternative to this technique is planted tanks with specialized lighting to provide between two and five watts per gallon (WPG). Fertilizers are added to the water as is carbon dioxide.

High technology, specialized methods are more widespread among aquarists than NPT techniques, and turning away from fertilizers lights and CO2 producers and even filters requires a paradigm shift. One has to abandon a number of value-laden knowledge frames in order to adopt NPT methods. For example, most aquarists keep their tanks away from sunlight, which they fear will produce algae, and instead using costly, high-watt bulbs. Walstad explains that "[i]t is unfortunate that sunlight has often been criticized for promoting algal growth and generating heat. A little sunlight often stimulates plant growth so there is less algae" (*Ecology of the Planted Aquarium* 179).[105]

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[105] Similar differences in the perspectives between NPT and high-tech aquarists can be found through every element of the NPT technique, from substrate to filtration and fertilization. For example, jimmyd of

Karl's report that he applies the Walstad method to "all [his] aquariums" showed a behavioral shift that followed a paradigmatic restructuring. His elaboration that his plants grow well and his species breed readily because "the circumstances for the animals were perfect," suggests that within this community, knowledge is often measured by the functionality of its practical applications (Schmidt Interview 1). Adam and Anne also recounted precise occasions in which they measured the success of a practice by the growth and observable health of their animals: variables that shaped their understandings of best care (Wolf Interview 1; Janes Interview 1). The respect and enthusiasm that Karl brings to the NPT method are part of a knowledge construct through which separate units of information – both experiential (his own) and formally established (Walstad's)[106] – coalesce into his view that NPT is an effective means of best care. Within specialized communities such as these, theoretical knowledge is well-bounded to applied knowledge.

Many conversations revolve – not around *base* care that allows short-term survival – but around *best* care*: a term that indicates value judgment that carries with it an element of subjectivity. As Brown and Duguid explain, "[t]he ends of information, after all, are human ends. The logic of information must ultimately be the logic of humanity. For all information's independence and extent, it is people, in their communities, organizations, and institutions, who ultimately decide what it all means and why it matters" (18). Forum members consider information successful, whether empirically or experientially derived, when the animal survives. Knowledge is more than survival. It is the larger social context through which individuals and communities

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Badman's Tropical Fish Forum titled a post, "Diana Walstad/Natural Method… Really??!!," detailing his points of incredulity about the method.
[106] Diana Walstad, former Technical Advisor to the Aquatic Gardener's Association, has a degree in Microbiology, and her method is largely based on her knowledge of biology and chemistry (Walstad, *Ecology* vi; Walstad, "Diana Walstad: Natural Planted Tanks" n. pag.).

interpret and understand survival. Such a social construction is prerequisite to knowledge formation, an idea that forms the core of work by Thomas Kuhn and the social constructionist rhetoricians whom he influenced, such as James Berlin, Anne Berthoff, and Richard Ohmann.

Participants revealed a repeated concern for the best care of their animals. Adam, for example, recounted a "spirited discussion" during which another forum member persuaded him to begin testing the water quality in his aquatic frog enclosures (Wolf Interview 2). The science behind the practice deserves explanation in order to clarify the division between the known information and its conversion into socially framed knowledge. The nitrogen cycle is a measurable biological and chemical process by which, over time, beneficial bacteria build up in an aquatic tank. This colony of beneficial bacteria breaks down ammonia into the less harmful chemical nitrite, which then converts to the far less harmful chemical nitrate. This process is factually established within scientific domains. Every time it is repeated, organic matter that degrades in dechlorinated water will decompose to ammonia, and given sufficient weeks for beneficial bacteria colony to establish, this will convert ammonia to nitrite and nitrite to nitrate. There will be no variation without introducing new variables.

Some species are so sensitive to ammonia (and in some cases to nitrite or high levels of nitrates) that they will die amid such water conditions. Larval newts and salamanders and neotenous species like axolotls, which have gills, sometimes exhibit "gill melt," a visible sign that ammonia is present as the gills become thin or absent from the gill stalks. However, many aquatic species are not so visibly bothered. The effects of ammonia may not be as easily quantified, and an observer may see nothing.

The subjective experience of an owner may be that the animal appears "fine." However, a deductive inference would suggest that if ammonia is fatal to some species and visibly harmful to some species, it is *likely* to have negative effects on others. Probabilities enter into an individual's assessment of the situation, and the more that people value the lives of their pets, the less likely they are to ignore the nitrogen cycle.[107] The subjective experience of a pet owner might become that ammonia is harmful, and that even when such effects cannot be observed, no animals should be added to a tank with ammonia levels because, by an individual's value judgment, it is not worth the perceived risk. Others might disbelieve or feel ambivalence toward the danger of ammonia. This results in a spectrum of behaviors ranging from extremes of ignoring the cycle to daily testing, with intermediary positions such as testing only newly established tanks or only during visible signs of poor health. In such an example as cycling a tank, vast majorities of forum users voice opinions in favor of cycling, but as a later segment will prove, those who fall too far afield of socially accepted mores and values often leave the forum community. Just as the naturalists began with a heavy reliance on descriptive observational reports through which to understand the world and spread that knowledge to others, so too do herp hobbyists often rely on observed experience to shape knowledge frames when codified experience is lacking.[108]

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[107] There are two common forms of cycling a tank that are themselves immersed in debate. Tanks can be cycled more quickly by introducing live fish, which expedite beneficial bacteria's establishment, often at the expense of the fish's well-being or even life. A fish forum is more likely to advocate fishless cycling than a herp forum community. The former values the life of a fish more than a majority on an amphibian forum would, since some members of the latter might view fish as a food source or tank adornment, rather than the central, focal purpose of the tank. Each knowledge sphere can be dissected across multiple layers, and selected layers have been bisected for the microscope of this project in order to stay focused on the larger task of demonstrating that new media environments facilitate knowledge generation.

[108] Bazerman discusses the development of scientific experimentation, which eventually moved toward hypothesis testing (*Shaping Written Knowledge* 67). This chapter returns to close examination of the role of observation in knowledge making and sharing momentarily.

Information that serves a communally-shared consensus of best care spreads easily among those with closely aligned community values. Each interview participant discussed such moments. Anne located information on Ambystoma mexicanum (axolotl) larvae and stickies of their care that helped her attain what she felt was best care (Janes Interview 1). Both Kees and Gabriella sought information regarding creating a background. Elaborate builds (decorated tank constructions) often feature a simulated hillside or rock face in order to help the animals' enclosure look more natural than a bare glass tank. There are many methods for constructing a fake background, and Kees and Gabriella have researched these through the forums, successfully using others' accounts of experience and knowledge to inspire their own vivarium constructions.

This also indicates that, while not universally held criteria of a shared understanding of best care, Kees and Gabriella value the replication of a realistic, natural environment.[109] Bazerman explains that the information itself is "accountable" to the community framework: "The process of holding the text accountable to these facts serves to shape the discourse. The mechanisms of accountability permeate the creation, reception, and textual form of statements in the collectives holding themselves accountable in this way" (*Shaping Written Knowledge* 61). The community builds knowledge from information, accepting those information units that adhere to the community's values and rejecting those that do not. In the situation of the online forum, those values are not only actively held by individual members, but they also lie in stasis with the network of past, archived threads. The knowledge is formed both *through* the

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[109] As is the case with cycling, herp owners hold diverse value frames regarding the importance of creating naturalistic environments as a measure of best care.

individuals' social construct and *within* the connections that underlie the community. It is both constructed and connected.

Through interviews, members reported individual efforts to *create* information, sometimes forming that information into knowledge for the community. In some instances, these reports involved an individual's deductive leap to a personal discovery of an idea or information that already existed. Kees, for example, modified known information on food items to develop his own approach: "I was writing a blog thread in which I asked people to discuss my methods in raising T. dobrogicus. When discussing a problem regarding which small food items should be useful next to bbs or daphnia, I thought of filtering water of a nearby pond hoping to find some small diopsis and other tiny crustaceans and so I did" (Gere Interview 2). Microscopic food is often required for newly hatched aquatic animals. Some of the more commonly cultured food items are commonly known as baby brine shrimp (BBS), Walter worms, vinegar eels, and daphnia, but not typically diopsis.

Rather than purchase a starter culture of a common food, Kees located and bred a different microscopic food item from a nearby pond. This is not a brand new idea: obviously, someone was the first to collect and culture the now-popular small food items from their native environment. However, Kees arrived at this discovery on his own: independent of another person's previous advice. Within the collective, dominant values of the majority community, members can share information that leads to newly intuited information. Kees recontextualized previously unused species of microorganisms into a new knowledge framework for larval foods.[110] This supports Siemens' assertion that

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[110] Gabriella reported a similar inferred an individualized discovery after reading threads about vivarium constructions with back walls and water features (Adorno Interview 2).

"[w]e do not consume knowledge as a passive entity that remains unchanged as it moves through our world and our work. We dance and court the knowledge of others – in ways the original creators did not intend. We make it ours, and in so doing, diminish the prominence of the originator" (*Knowing Knowledge* 7).

Other knowledge that members generate is less immediately grounded in the information that is readily available on the forum, and instead, it addresses a lack of information within this specialized discourse community. Adam reported a deductive leap to brand new information when he discussed the lack of reliable information on Calyptocephalella gayi, the Chilean helmeted water toad (Obst, Richter, and Jacob "Calyptocephalella" 139). What little information he did find online and through pet stores was sparse and inconsistent. He felt that "the ambient temperature seemed too high. To solve the problem, I found out what part of Chile they live in and learned about the environment and climate. The temperature mentioned on the care sheet was some 20 degrees too hot. Sometimes mysteries are solved through understanding the environment in which they [the species] live" (Wolf Interview 2). The herp hobby is a field dominated by specialized nonacademic writing. Not all realms of the herp hobby have a set canon of established and reliable information that comes from professional or academic arenas despite the heavy influence of scientific knowledge and domains. This is particularly the case when new species enter the pet trade, either because of changing import/export laws or international relations or expansive breeding projects to provide captive bred populations. In many such cases, care sheets might presume a base-line of care that, rather than follow established facts, is founded on best care of a species that is known or

assumed to be similar. This explains why multiple care sheets on a newly emergent pet trade species would feature different information.

Rather than choose a care sheet he found dubious or risk care that he did not believe was best for the animal, Adam pursued new information, locating what was regionally known (climate etc.) and re-contextualizing it for this specialized arena, reframing it as valued knowledge and sharing it with the community so that others could provide what he felt was best care for a species that was new to the pet trade.[111] Even these seemingly individualized moments of knowledge formation are shaped by the community at large. Each involves an initial interaction with the forum and the information it houses or a lack thereof, which is followed by the individual member's endeavor to seek and apply information that is then shared with the community. Once the information is taken up by the community, a knowledge construct is created on both the individual and group levels, as people determine the significance of the information to their animals' lives. This leads to an evaluative process through which members determine best care for their species, as the next section shows. It is this communal framework that shapes both individual and collective subjective positions that become the basis for knowledge.

Here, it is helpful to revisit Stephen Downes' principles of connectivism in order to add depth to the significance of Adam's construction of new knowledge. Downes emphasizes *diversity* as a core component of connectivism, and Adam certainly encountered that through the care-sheets that he found through constructing his personal, virtual learning environment (VLE). This environment was *open*, another prerequisite for connectivism, as he was free to navigate this information as he chose. This VLE was

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[111] The next section addresses best care as an instantiation of framing information as knowledge.

interactive, since Adam was able to share his new knowledge construct through dialogue on the forum community. He was also able to exercise *autonomy* in his pursuit of connected knowledge. Adam negotiated the vast array of information on the internet, exercising individual agency by pursuing avenues of information that suited his needs. When initial investigative pathways proved fruitless, he redirected his learning efforts, researching indigenous climates and reframing them into care sheets for the herping community. Adam's ability to learn autonomously greatly facilitated his ability to construct and share knowledge with his community. Downes even illustrates similar experiences of his own in which he pursued specialized topics that lack established knowledge domains (*Connectivism and Connected Knowledge: Essays* 50).[112] Adam constructed knowledge that now lives as a node within the forum network. Thus, knowledge is both constructed and connected.

Underlying the parameters of these subjective degrees of knowledge are implicit value positions. Gross, who worries about public opinion's effect on political policy, explains that "[a] central concern in public controversies involving science is the clash of two epistemologically incompatible perspectives" (xxv). To enter into any conversation of best practice for a species' care, one must value the survival of that species. In pet stores, for example, many fish are kept in crowded tanks. Over time, this leads to poor water quality as well as competition for space and food, which can lead to illness or death. However, pet stores are unlikely to pursue optimal care, or best practice. One

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[112] Downes characterizes what he calls "Good e-learning practice" as something that may well be separate from pedagogy. He explains Jay Cross' view: "the bulk of learning, even in a corporate environment, is comprised by informal learning. Techniques that work in the classroom are not so likely to work on the web page, primarily because much of what makes a classroom – the scheduling, the lesson plans and direction, the cohort – are not likely to be present online" (Downes *Connectivism and Connective Knowledge: Essays* 47). Adam's experience illustrates this well.

might speculate that this is caused by indifference to the animals' well-being, which may be accurate some of the time.

However, what is more widely accurate is that pet stores are not intended to be long-term care providers. The overcrowded tanks are merely temporary housing because the very nature of the store is that people are meant to come in and purchase the animal, at which point the pet owner (not the store) is responsible for long term care. Rather than as pets, stores treat animals as merchandise, and as such, their display takes priority over their endurance. Similarly, a laboratory views animals as specimens, and so housing is modified accordingly. An animal would be kept without décor (additional variables for the researcher to measure) and often without hiding spots, for example, which would obscure the researcher's ability to observe and would add to cleaning labor. Each environment – the home, the store, and the laboratory – can house the same species, but the surrounding knowledge frameworks through which information filters differ drastically from one scenario to the next.

Variations exist even within each of the above examples. As forum genres can be subdivided, so too can treatment in pet stores, or depending on the research projects involved, laboratories. Treatment in the home also takes a wide range of practices that depend largely on the owners' attitudes toward the animal. A more familiar example of this is the variance in treatment that the same cat might get if it were a show cat or a farm cat, or the variance between a guard dog and a family dog. The person – not the animal – creates these differences. The individuals within any pet-owning community exhibit varying behaviors and knowledge frameworks, and they fall into community subdivisions that parallel these differences. The available information about a species is the same

across the above examples, and yet the difference in behavior and treatment grows from variations in knowledge frames, such as conceptions of best care.

In discussing degrees of autonomy, the previous chapter alludes to Piotr's impatience with low-level autonomy, which he expressed when describing "threads with as-basic-as-possible questions, like 'what kind of substrate' 'what to feed my newt' and in 90% of cases – everything that has 'axolotl' or for worse, 'axie' in its title" (Szott Interview 1). In addition to these different degrees of autonomy, Piotr's comment indicated different perspective frames that exist within the *Caudata* community. Perhaps the cause of their popularity, many people perceive axolotls as cute, and their owners ascribe human characteristics to them more frequently than owners of other newt and salamander species, as the affectionate diminutive "axie" indicates, and as chapter five has touched upon. In a community heavily influenced by science and populated in part by trained scientists and those who emulate their discourse, many view such anthropomorphism as inappropriate or undesirable. As chapter four has mentioned, scientific names are widely used on the forums, and yet Ambystoma mexicanum is more frequently referred to by its common name, axolotl. The perspective framework thereby affects the linguistic choices that people bring to the species they keep.

This illustrates the social and sociological actions of knowledge construction. The different perspective frames within which people approach animal care exist beyond the individual agent. As Peter L. Berger and Thomas Luckmann explain, the surrounding social world predates those who live within it, and it is made substantial only through the human relationship to it. It is in the dynamic between human and society that knowledge is formed: between the constructs of emotive, scientific, commercial, or aesthetic

relationships to herps. These influence the ways in which information is internalized and formulated into knowledge. It is in these value-laden moments that knowledge is constructed. The social community values the species, and so in the absence of empirically quantified information, a value judgment is made. Within the community, some value-influenced knowledge is calmly and rationally debated. As mentioned, many zones of knowledge, such as nutritional balance, are not established by external science domains, and since animals cannot tell people what kinds of food provide a balanced diet or what substrates and temperatures they prefer, humans are left to observable behaviors and signs of health, and subjective experience overlaps the known scientific spheres, culminating in the field of herp husbandry. This is the knowledge that resides within the gaps between the established science and the hobby. Other values are so pervasive and established that perspectives beyond them are disallowed. Those who disagree will have to remain silent or leave the community. The remainder of this chapter examines how knowledge is shared and produced, exploring its formation as a social and rhetorical construct.

Knowledge as Rhetorically Practiced Socialization through Normal Discourse: Examples of Cooperatively and Condemningly Enforced Norms

Knowledge frames are rhetorically practiced socialization, and the remainder of this chapter turns to normal and abnormal discourse as vehicles of knowledge production through examples of cooperatively and condemningly enforced norms. The majority of *Caudata* and *FrogForum's* threads exhibit polite and friendly discussion that generates deliberation and new idea construction and this amiable tone defies many widely spread

assumptions that new media spaces are habitats for those who troll for violent verbal disputes. Such productive conversations fit Richard Rorty's conception of *normal discourse.* Based on Kuhn's conception of normal science, Rorty defines normal discourse as "that which is conducted within an agreed-upon set of conventions about what counts as a relevant contribution, what counts as answering a question, what counts as having a good argument for that answer or a good criticism of it" (320). Kenneth Bruffee discusses such socially constructed knowledge, explaining it as a challenge to universal truths that exist outside of communities ("Social Construction" 776). Such was Kuhn's original purpose: to demonstrate that science is shaped by human variables. This section focuses on demonstrable instances of normal discourse on *Caudata* and explores its facilitation of knowledge construction among forum members.

The site members themselves are aware of the civility and communal consensus that dominate the forum and its normal discourse. Throughout interviews and usage diaries, most participants remarked on the polite tone of the forum and its posts. Some remarked that *Caudata* and *FrogForum* maintain civil deliberation more effectively than other forums they had used. In the past, Adam "found that [one other herp forum] was difficult to moderate and not as organized [as *FrogForum*] from the moderator's standpoint," and he later attributed the high caliber of conversations to the members themselves, explaining that *FrogForum* has a high volume of "well-behaved" members with "much valuable information" (Wolf Interview 3).

Kees also observed that the moderators of *Caudata* facilitate productive and polite conversation and debate, explaining "[m]oderators guard the scientific approach that *Caudata* is offering pretty well. When people get out of line, they're warned properly.

I've witnessed childish debates on other forums which went on and on without any intrusion" (Gere Interview 3). The polite discourse of the community is a product of the rhetorical situations that *Caudata* and *FrogForum* exhibit, which are facilitated by these forums' genric expectations. As discussed earlier in this work, the moderators, the rules, and the enforcement thereof continually shape and are shaped by the individual participants and their collective dynamic. The end result on these two forums are communities that engage in civil discourse a vast majority of the time, and which participants perceive to be more polite and productive than the communities on other forums.

In a sampling of 20 recently active topics in November of 2013, none featured posts with hostile or rude remarks. All remained civil and most featured friendly or cheerful language. There are, of course, exceptions. Throughout the course of participant observation, I witnessed mores of herp keeping that the community took as law. When a member's comments deviate from such communally held law, the member is met with open derision. These tonal differences affect the knowledge of the community in two ways. Amiable threads make and share knowledge by fostering understanding and deliberation among the community, whereas the somewhat rare instance of derision delineates community parameters which must be met in order to sustain communal knowledge. An example of each follows.

Community and camaraderie can form deliberative knowledge production. To illustrate the dynamic among friendly posts, this chapter returns to Rodrigo's thread, "Phase/hybrid- Let's think a little" which extends through 106 posts (79 printed pages), and so reproducing the conversation in its entirety is impractical. Instead, this section

isolates core claims and instances of knowledge construction, marking the community's

response in order to illustrate the use of *pistis* and rhetorical devices to initiate persuasion

and encourage civilly toned deliberation, followed by the knowledge community's

development through modes of argument, such as arguing a definition.

The *pistis* initiate persuasion and facilitate a civil, deliberative tone. Rodrigo's

opening post to this thread is 11 paragraphs long, and it outlines an argument that

Rodrigo raises within the community. Rodrigo's opening post follows:

> Hi,
>
> I've recently been taking part of an argument (that started as a civilized discussion and soon became fouled by personal interests) about hybrids, and to a lesser extent phases, in another forum.
>
> Now, i know this is something that doesn't affect our section of the hobby like it does other sections such as the boas, pythons and geckos.
>
> However, it is a part of our hobby, and i think it is about time we open a discussion about this matter to try to debate, in a civilized fashion (pleaaaaaaaaaaaaase), different aspects of this matter. After all, if we don't think, if we don't contrast information and form our own opinions, we are doomed.
> I would personally like to separate phases from hybrids, since after all they are different processes that have different impacts on our animals. However, they are related, and in some points the link between them is obvious.
>
> Nowadays, in other sections of the hobby we are experiencing a fascinating phenomenon. There is a HUGE movement that promotes selective breeding and that has reached a point where nominals are worthless and phases can be VERY expensive and exclusive. My personal view of this is perhaps a bit radical, but i'll try to bite my tongue and say that as long as the animals are healthy, selective breeding of phases is not necessarily a bad thing. The big, BIG problem is that in our craze to create more and more phases, and to create them fast and earn money, we are loosing the respect to the species.
>
> Spider ball pythons that are, to put it mildly "dumb", enigma Eublepharis that have severe neurological problems, piebald and albino mammals with hearing and vision impediments....these are just examples of what has

become completely acceptable for the hobby. And i ask myself...how on earth did we reach the point in which that is acceptable???? The answer to that is simple...MONEY.

In our neck of the woods, this problems are not inexistent. We have axolotls that have been selected and inbred so much that some animals appear without eyes...others are dwarfs, etc. To a less destructive extent, we have mutations such as polydactily or mild kinks.

In Triturus carnifex, we have the example of the leucistics. Animals that can't be reproduced among themselves because the offspring is not viable (due to lethal genes).

Hybrids are another whole thing, with a much more destructive effect for the species. We have the example of axolotls again, here. They were hybridized with A.tigrinum/mavortium to create new phases (golden albinos). The result of that hybridation is an animal that is neither an axolotl nor a tiger salamander. Now, if these hybrids had been treated as such from the very beginning and people had known what they had in their hands, the problem would be absolutely minimal. Sadly, though, the hybrids have been crossed back and forth with the rest of the captive stock, contaminating blood lines and rendering them invalid as A.mexicanum. We are lying to ourselves when we treat these animals as such, as A.mexicanum. They are not. WE sell them as axolotls, we treat them as axolotls, we call them axolotls...but they are not axolotls. A large percentage of them are hybrid ambystomatids, which is not the same. I ignore the extent of the damage, but i would think it's safe to say that these days, there's no absolute gurantee that most bloodlines are pure. This is for me, a very sad fact.

I dread the day when other species will suffer the same fate.

I consider myself a purist....i like things just as they are in nature because they are mindblowingly fascinating and beautiful just as they are. I won´t go as far as to say that we shouldn´t breed anything that doesn't come from the same location, because at this point it´s impossible. I just would like for people to think, and consider the consequences of our actions, because they DO have consequences, both for the individidual animal (in those cases where the health of the animal is jeopardized) and for the species (loss of genetic integrity) .

I think, it's time to take a look at the mistakes that other sectors have made, and the ones we are still making and at the very least, give it a good thought and see what our morals tells us.

We are accepting some stuff that shouldn't be acceptable, we are losing the respect for what a species is. We are giving more importance to the looks of an animal than to it's health or well-being.

It's not the phases per se that are a problem, generally speaking, it's the 'phase culture' that grows around them that to me, is running very fast towards inmorality.

A very disturbing fact that is becoming apparent in other sectors is that the damage to the genetic integrity of some species has been so vast in the last few years that we are going BACK to the nominals. That means, though, that we are going back to poaching and mass collection, because there´s simply not enough 'wild types' left in the hobby, but there is once again a market for them. This is AWFUL..this is outrageous and goes against the very basics of captive breeding.

Our sector, the caudates, is still quite virgin in these matters, we have a chance to do things differently or at the very least make less mistakes. I think it's vital that we are informed, that we know what's happening and the consequences of what the market has done to the hobby.

Anyway, i just want anyone who reads this to think for themselves, to not just keep following the herd blindly and accepting whatever comes our way. We have a responsability to our animals, to their future generations and to the wild populations. To negate these responsabilities is to loose our north entirely.
We are animals lovers, we are supossed to be fascinated by them, by their uniqueness and their behaviour, not solely by their colors. (Rodrigo post 1)

The opening statement introduces a divide between "civilized argument" and "personal interests," the latter of which Rodrigo depicts pejoratively (par. 2 post 1).[113] The close of his statement's introduction furthers this framework: "After all, if we don't think, if we don't contrast information and form our own opinions, we are doomed" (par. 4 post 1). He prefaces the argument to come with a call for *logos* and reason, and distancing of *pathos:* an admirable goal to which he has difficulty adhering within the course of his opening argument. His use of the scientific community's terminology and his adherence

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[113] While forum writing is cited by post number, those sections that look closely at longer posts also include paragraph number for ease of reference.

to SE (barring typographical errors) cultivate an informed *ethos* that underlies this and every post he follows with. Rodrigo then poses his main argument.[114] While his preface to the argument calls for an abatement of *pathos,* the second half of his post is heavily laden with *pathos.* Rodrigo situates breeding projects within an ethical frame that hybrid breeders and breeders of unhealthy animals fall outside of, in his view, because they "are giving more importance to the looks of the animal than it's health or well-being" (par. 14 post 1). His reference to "phase culture," which he pairs with "immorality" (par 15 post 1) refers to the larger trend in the herp community toward having the newest, the rarest, and the most expensive coloration that has been bred in a given species.[115] The herp-keeping community has subcultures in which different species and different

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[114] A summary of Rodrigo's argument in layperson's terms: Rodrigo's argument is that, while breeding for color variations (called "phases" here) is sometimes similar to hybridization, they differ significantly. The pet trade has an increased trend toward selective breeding for different aesthetically pleasant color variations, which Rodrigo believes is acceptable if the resulting specimens are healthy. However, some pet phases are aligned with genes for neurological problems or other unhealthy traits, and such breeding continues for profit rather than respect for the animal. While this is more common in the reptile keeping community than with newts and salamanders, amphibians are beginning to see this trend. Rodrigo believes that hybrids feature impure genetic lineages, which is particularly problematic, since people may own hybrids without knowing it, and these genes can spread throughout the amphibian keeping community. He feels this is particularly problematic because the natural state of the animal is admirable and needs no alteration. He would like the amphibian community to learn from the mistakes of the reptile community, neither of which should value animals for aesthetic reasons alone. He is concerned about the increasing popularity of new phases, and he worries that the prevalence of hybrids and sick animals will bring a need for wild caught (WC) animals to replenish the breeders' stock with new genetic material. He feels that this defeats the purpose of captive breeding (CB) projects. He urges his readers not to follow popular trends without thinking of the consequences, and to love animals in their natural, genetic states.

[115] As of 2013, Ron Tremper, a breeder so famous that he has had phases of leopard gecko (Eublepharis macularius) named after him, was selling Super Giant phases of leopard geckos for $1,500 (Tremper and Tremper, "Giants/Super Giants" n. pag.). While Rodrigo focuses on leopard geckos because they are pervasive, other breeding projects have since come into vogue. Craig and Lori Stewart sell African fat tailed geckos (Hemitheconyx caudicintus), and their White Out Patternless Oreo phase and Caramel Albino Zulu White Out phase of African fat tails are priced at $4,500 each (Stewart n. pag.). As the phases' names indicate, such projects create trends (as "white out" indicates), but they are usually well-seated in genetics (as the word "patternless" indicates). Caponetto offers a breeder's perspective of the high prices of designer herps on his website as follows: "The most popular reptile species in the pet trade all have high and low priced versions. […] Ball pythons can […] be had for around $19, but the newest and most popular morphs fetch prices in the tens of thousands. It's because of their popularity as a pet that normal specimens are bred in numbers and can be had for cheap… but their popularity also causes demand for higher end specimens amongst breeders and serious hobbyists" ("Crested Gecko Prices" n. pag.).

phases/morphs carry status, just as cell phones, laptops, and clothing can carry social status that increases with rarity or expense.

The second part of his argument against such breeding practices follows a deductive syllogism. Breeding phases/hybrids leads to sick animals. Sick animals lead to a need for new breeding stock. A lack of suitable breeding stock creates demand or new wild caught (WC) specimens. WC specimens defeat the purpose of captive breeding (CB) projects. Therefore, by this logic, breeding phases or hybrids is pointless. Implicit in this chain of logic are core value judgments: (1) WC is bad; (2) CB is good; (3) the purpose of CB is to protect wild populations;[116] (4) animals should be loved for their natural genetic state rather than an altered appearance. This sets the tone of Rodrigo's argument by framing his ethical parameters, and few who enter into this debate deviate from these opening positions.

By pronouncing his value positions explicitly within the thread, Rodrigo defines not only his argument, but also his audience and fellow discussants. While all can participate, people who care to defend the practice of breeding hybrids or phases will also have to defend themselves against an opening premise that their actions are immoral because they produce negative effects for the animal and the herp-keeping community at large. Those who agree with Rodrigo's opening premise develop their ideas over time throughout the course of this verbalized exchange.

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[116] Breeders would list other motives in addition to or in lieu of this. Captive bred animals are better adapted to captivity than their wild caught counterparts, and therefore survive it better than wild-caught specimens. Captive bred pets also have lower rates of parasitism than wild caught generations. In some instances, it is less expensive to sell captive bred animals than wild caught, and the extent to which this is accurate depends on factors such as the animals' country of origin and its relationship to country of import, the cost of housing and caring for the animal, as well as its ease of captive reproduction. In other words, while environmental concerns might seem the most prominent motivator, to those within the hobby, they are only one among many potential motivators for captive breeding projects.

One example of the productive effect that this polite, rhetorically crafted approach has on the knowledge of both the community and the individuals occurs moments later when the thread builds knowledge by arguing definitions. Over the first 33 posts of this thread, members raise additional examples of maladaptive breeding practices and discuss concerns about the pet trade's for-profit model. Prompted by the initial post's focus on "phases" as opposed to "hybrids," an early portion of thread moves toward defining terms. Jay joins the conversation to state that "I also don't believe that the argument should be directed to *phases* so much as *morphs*" (emphasis in the original, Jay in post 3). While Rodrigo used the term "phase" in his title and opening argument to refer to any animal that is selectively bred for a desired appearance, Jay indicates that such a discussion of the animal's morphology (visible characteristics) might also fall under the term "morph" that is used in the pet trade. His post also indicates that both of these terms hobby hold different connotations, prompting Rodrigo to ask for a discussion of their difference, since he had thought their meaning "was the same" (post 4).

Jay explains that he was taught "that color phases are considered by some as morphalities but they do not disfigure or hinder the animals ability to live such as morphalities like Blue Pit Bulls and Tailless Flower Horns,[117] etc.. etc. do. I know lots of people see color phases as morphs but myself as well as some others do not" (Jay in Rodrigo post 5). Rodrigo acknowledges this differentiation, stating, "I think i see the difference that you mean between phase and morph. Kind of like the difference between locality and mutant" (Rodrigo post 6). In order to develop his understanding, Rodrigo re-frames the subtlety by comparing it to a conceptual grid with which he is more familiar:

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[117] Both of these are examples of artificial selection for desired characteristics of pets. The former is a dog and the latter a fish.

natural selection. His reference to locality alludes to the way that a regional population of a species might carry a specific genetic trait after generations in isolation, but this is different from the sudden emergence of a trait through spontaneous genetic mutation.

Terms are being redefined and appropriated within the herp-keeping community. Morphology is the scientific study of appearances, and in this way it has become a specialized and formalized field, but this is not the same as the word's abbreviation and usage to "morph" within the pet trade. Most web sites appear to prefer either "phase" or "morph," but in either case, as seen through Rodrigo's initial confusion, they appear to be used interchangeably quite often. Jay differentiates between the two, and he indicates that he is not alone in his usage of the terms to indicate a difference in the result of the selective breeding project between a healthy animal and a breed whose desired appearance is genetically linked to an illness.

Jay and Rodrigo grapple with the information of terminology in order to incorporate it into their existing knowledge perspectives about breeding. Since this deliberation is public, the knowledge that (a) these terms are in flux amid the community, and (b) among that portion of the community, "morph" refers to selective breeding without maladaptive traits is shared with wider community population of readership. As the second chapter has mentioned, this thread has been viewed 2,792 times since its creation in July of 2010, [118] and so like all conversations, its publicness ensures the spread of ideas beyond the immediate circle of discussants.

Terry Anderson and Heather Kanuka study the negotiation of terminological variations in required forum writing for ongoing professional development. While they find that "[o]verall, most of the information-sharing that occurred online resulted in a

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[118] As of March 3st, 2013.

broadening of the participants' general knowledge base that was in some way useful in their working environments" they observe that terminological "inconsistencies were left unchallenged" (Anderson and Kanuka n. pag.). In this opt-in, specialized community, Rodrigo addresses the question of definition between phase and morph, negotiating their meanings with Jay until both parties reach an understanding. Even a minority right now, some population of herp keepers views these words differently, opening new space for knowledge framing along these lines. As with any terminological progression, either the connotative difference will prove valuable enough to continue and spread throughout the community, or they will lose favor with time, and the words will continue to be interchangeable. Of more rhetorical and linguistic importance is that the emergence of two varied connotations begins within the community and is discussed publicly on the forum. If this new knowledge structure proves valuable, it will spread.

As Dennis Baron explains, the computer and the internet are among many technologies for the written word, and new technologies are prone to extreme depiction for as long as they remain new. Writing itself was once a new technology, as Walter J. Ong reminds his readers, and upon its first spread through ancient Greece, Plato was quick to admonish the dangers writing would inevitably bring (or so he felt) (21). The public, communal act of writing facilitates ideas, their development, and their move toward knowledge. Ong parallels the written word to other technologies, arguing that orality is our species' natural state, whereas writing in any medium requires tools; the computer is merely the newest of communicative tools. Ong argues that writing, more so than orality, creates a physical separation between people and knowledge, ideas and

information, at the same time that it allows us the ability to reflect on such things intellectually: to analyze and understand them (31).[119]

While influenced by the hierarchically held, top-down model of the scientists' realms from which it is borrowed, "morph" becomes a term of its own once shortened. Once it belongs to this new community, the community will decide its use and the parameters thereto, establishing its presence and relevance as knowledge. Additionally, the calm and rational nature of the collaborative discussion is itself, an argument for the terms that validates their advocacy. Particularly before they've become solidified into a certified authority-base, such knowledge frames as terminological understandings show that the human perspectives affect information's transition into knowledge. Just as best care is a subjective frame that affects people's treatment of their animals and conversations with others, the public, communal deliberation of the terminological frames "phase" and "morph" affect people's broader conceptions of selective breeding and selectively bred pets. This is normal discourse when everyone operates within communally held rules and knowledge frames.

Abnormal Discourse: Generative Means of Communal and Individual Knowledge Formation

While this debate remains calm and civil, it is not free of dissenters, without which, it would remain in the realms of James L. Kinneavy's referential discourse, rather than fully engaging in persuasion: a distinction that Wayne Brockriede makes in his

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[119] This is complicated by Berger and Luckmann's assertion that humans' natural state includes tools and culture: that we cannot be assessed without these, our most defining characteristics (47).

definition of argument (5).[120] Rorty terms such moments of community dissensus

abnormal discourse,[121] which he defines as "what happens when someone joins in the

discourse who is ignorant of these conventions or who sets them aside" (Rorty 320).

While normal discourse governs the majority of conversations on *Caudata,* some

conversations delve into abnormal discourse, which can be equally generative for

knowledge production and sharing. If knowledge is information shaped by a value frame

and human perceptions thereof, then dissensus serves a number of functions. As Rorty

writes, "[t]he product of abnormal discourse can be anything from nonsense to

intellectual revolution" (320). In the case of abnormal discourse on *Caudata,* abnormal

discourse can transmit or change existing value frames and enable the discussion of

divergent views, as this section will show. While abnormal discourse can alter a

dissenter's views, more importantly, its presence in a public setting reminds both

discussants and silent observers (a far broader audience) that some perspectives lie

outside of the specific community's shared paradigms. Just as normal discourse generates

and spreads knowledge through public deliberation, so too does abnormal discourse.

Even the choice to challenge or reject the majority paradigm furthers individual

knowledge that abnormal discourse invites.

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[120] Wayne Brockriede reviews core definition of argument based on its presence as a debate between parties. Brockriede provides six criteria that must be present (but not too much or little) for there to be argument: (1) "an inferential leap," (2) "a perceived rationale to support that leap," (3) "a choice among two or more competing claims," (4) "a regulation of uncertainty," (5) "a willingness to risk confrontation," (6) "a frame of reference shared optimally," (6-8). This defining set of criteria indicates the influence of Stephen Toulmin's distinction between analytic arguments and substantial arguments (125). Robert L. Scott indicates that the Brockriede's work is not proven to be an adaptation of Toulmin's argumentation models, but whether deliberate or coincidental, the relationship between the two theorists' corpuses is noticeable (13). Brockreide's criteria are revisited later in this chapter.

[121] While I admire Kuhn's and Rorty's work, the choice of the word "abnormal" troubles me because of its negative connotations. The word "abnormal" implies a negative value judgment, and since abnormal discourse produces "anything from nonsense to revolution," as Rorty phrases it, I find myself wishing for a neutral word.

On the 34th post of "Phase/hybrid," one member enters the conversation to challenge premises that underlie much of the interpretive knowledge frame outlined above. As a private caudate breeder who breeds phases as well as wild-types, Michael defends his profession, opening with sarcasm, moving through polite discussion, and then discussing other matters: "I'm having trouble figuring out what I like the best out of leucistic Cynops cyanurus, leucistic ribbed newts, emerald green eyed axolotls, and leucistic green fluorescent protein axolotls. I guess it's a toss up between the emerald eyed axolotls and the leucistic gfp [green fluorescent protein] axolotls. Both are important research tools and neat as heck for pets" (Michael, in Rodrigo post 34). Not only does Michael's sarcastic tone deviate from the preceding politeness that surrounds, but his remarks also present dissent from the majority knowledge paradigm that Rodrigo establishes regarding breeding.

Like Rodrigo, Michael asserts his *ethos* through field-specific terminology. He refers to leucistic and GFP breeding patterns, the former of which, a mostly white specimen with less (not no) pigmentation, is widely accepted in the hobby. The latter, however, is more contested because it involves genetic modification, altering a species' genes to incorporate proteins that make jellyfish glow, which results in a glowing animal (MacLachlan n. pag.). Michael equates the two in order to dismiss such debates. Rodrigo rebukes Michael's comment by writing, "[w]ith all due respect, Michael, and i don't wish to stir the discussion into the personal, but what was the point of your post? I can't shake the feeling it actually sounded like advertisement?"[122] (Rodrigo post 35). Rodrigo is familiar with Michael's role within the community as a well reputed newt and

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[122] This reinforces chapter three's findings regarding *Caudata's* attitudes about sponsorship and the *ethos* that self-sponsorship establishes.

salamander breeder. As previous chapters have shown, this influences Rodrigo's

perception of both Michael's *ethos* and his credibility as they are perceived by Rodrigo

and among the community as a whole.

After this, Rodrigo resumes his previous post pattern by providing more examples

of unhealthy breeding and expressing disapproval thereof. Thus, the conversation

continues until Michael quotes Rodrigo and replies to his challenge:

> Why is it when somebody says something like 'With all do respect' it
> doesn't come off sounding respectful? / I was trying to say that their is
> plenty of room in the hobby for everybody. I think as long as people
> accurately describe what they are trading and selling it's all good. If you
> don't go in for that kind of thing ignore it. I had a stand[123] next to a guy at
> a show that had a scaleless bearded dragon.[124] He had to use skin lotion on
> it. It wouldn't be my choice but I respected his choice to work with them. I
> am impressed with some of the variety that has cropped up in salamanders
> and have chosen to work with some of the oddball stuff. Out of the
> animals I listed as some of the types that cropped up in salamanders I only
> am currently selling one type. I think gfp axolotls are great and am thrilled
> that I was able to introduce them to pet keepers in the U.S. (Michael in
> Rodrigo post 39)

Michael acknowledges offense without escalating. He then challenges Rodrigo's

breeding paradigm that morality affects breeding practices and the community should

judge accordingly. Michael's counterargument is essentially "live and let live," in support

of which, he raises an extreme example of a specialized breeding project with potentially

deleterious effects: scalelessness. Rather than locate a more widely accepted example of a

breeding project,[125] he deliberately chooses an example of a controversial breeding

practice. He acknowledges his disapproval, stating, "it wouldn't be my choice," in order

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[123] "a stand […] at a show" refers to a merchant stall or exhibit at a reptile exposition show. Breeders and
buyers from throughout a region attend such shows to look at and purchase herps.
[124] Scaleless reptiles are comparable to furless mammals, as both are prone to skin infections and
conditions.
[125] Albinism, for example, is a commonly accepted breeding practice among pet species.

to build the argument that it is a choice that a breeder is allowed to make: "I respected his choice to work with" scaleless bearded dragons (Michael in Rodrigo post 39).

Rodrigo responds politely, stating:

> The 'with all due respect' part was genuine, i assure you. / I see your point now, but i didn't see it in your previous post. It was just an aesthetical judgement of some aberrants in a praise like tone, with no link to the discussion. / I personally think that breeding scaleless reptiles is a slap in the face of biology...and i fear it's going to become a lot more common in the future. In the case of snakes it raises a problem that i don't think people realise...snakes have a scale covering the eye...but if you breed a scaleless snake, there is nothing to protect the eye! And who pays the consequences...the poor animal... (post 40)

Rodrigo's open ensures that the *argument* continues without progressing into a *fight*: a distinction that Daniel J. O'Keefe makes in his conception of argumentation (5). Within his discussion, Rodrigo's linguistic choices reinforce his moral stance. He hedges these judgments with a more heavy reliance on first person than his opening post featured. This is a tactic that ensures the continuation of polite conversation by allowing difference of opinions to be just that – highly personalized perspectives.

Michael replies:

> Most of the health issues from breeding for color or morph in this thread are about snakes and lizards. It looks like we are using examples from reptiles because inbreeding problems are few and far between in amphibians. Most line bred amphibians are as healthy as wild type amphibians. Most of the health issues in salamanders come from poor husbandry. It's fine to say that you don't like morphs or line breeding amphibians for specific traits. It's a bit of stretch to imply these line bred amphibians are weak because line bred snakes have a lot of stargazers.[126] I do understand that their are some genetic issues with flavist Triturus. It's also true that their are egg viability issues with most Triturus. (in Rodrigo post 47)

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[126] This refers to ball pythons with neurological problems that will often stare upwards or flail around. Such staring in humans is sometimes linked to seizure activity: an epileptic stare.

With this post, the sarcasm is gone. Michael and Rodrigo have located equal footing on which to stand. Michael accepts the premise of maladaptive genetic links to phase traits, but he challenges the frequency of such linkage. Michael redirects the conversation to a new claim that poor health results from *in*breeding rather than as an automatic result of *all* breeding for desired phases. As a result, the conversation turns toward a new direction: whether the correlation between neurological ailments and breeding for specific phases has been thoroughly, reliably, and scientifically proven. Both Michael's tone and viewpoint provide a moment of abnormal discourse as Michael challenges the foundation of Rodrigo's premise that selective breeding (even for maladaptive traits) is morally wrong and should be discouraged. While others in the world share this view, others in this forum are unlikely to, and others on this thread certainly do not.

In their study of moments of discord, Anderson and Kanuka find that forum participants sometimes construct "new knowledge […] as a synthesis of contradictions resulting from social interchange," but that these are rare (n. pag.). In this conversation, neither Michael nor Rodrigo change his mind, nor does either arrive at a new knowledge frame for breeding. However, from this example, one cannot know with certainty how this thread's thousands of readers receive these competing perspectives, whether they echo the stance with which they already agree or internalize a new or altered knowledge frame. One interview participant wrote of a similar moment of debate on whether it is ethical to cull[127] weaker salamanders (which reproduce hundreds of offspring at a time) and/or use them as food items for cannibalistic adults. Of this experience, he explained that "nobody changed their opinion, but most debaters respected each other's visions in

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[127] To remove undesirable genetic stock from the breeding pool, e.g. to euthanize a fish with a spinal deformity before it reaches reproductive age and passes that genetic trait to further offspring.

the end […] I've learned that some methods which I find ethical others find unethical" (Gere Interview 3). Learning that one's worldview is not the world is significant personal knowledge to possess. Through productive and constructive dialogue, forum members assemble, reassemble, and model their subjective frames for situating knowledge for the community, so that even those readers who do not join the conversation can construct knowledge.

Dissonance in contexts and terms underlies much abnormal discourse, including the "Phase/hybrid" thread. Once Rodrigo and Michael move away from their debate, Pete calmly and rationally introduces a new premise, that for the purpose of scientific research it is acceptable to deliberately breed maladaptations. This challenges Rodrigo's initial assumption that breeding for specific characteristics is bad because it can lead to poor health, since scientists in a laboratory may need to reproduce poor genetic health in order to study it. Pete ensures a polite tone through partial consensus, and he shares the thread's communal censure of breeding animals in poor health. The communal knowledge frame is reinforced, unified in its disapproval, but it has also integrated a new element: that breeding is situated in context.

The conversation turns toward two highly context-contingent perspective frames surrounding breeding that affect people's interpretive response: feeder animals and laboratory animals. Michael raises the example of feeder animals, such as mice, which are not bred for their genetic health, since their longevity is not desired. Michael takes the conversation back out of the laboratory – a domain with which few of the forum members have experience – and he resituates it within the arena of the herp hobby. Since

most reptiles and amphibians eat live foods, many herp hobbyists have bred food items[128] or purchase them from those who do. While the participants who opted into this study all placed high value on the species they keep and their well-being,[129] none regarded live food cultures with the same esteem as their pets. Few herp hobbyists value the cricket with the same respect as the frog that eats it. After all, by definition, a feeder animal's function is to die.

Michael raises a second context-contingent knowledge frame when he discusses the distinction between breeding selected traits for scientific research as opposed to the pet trade. He focuses on the perspective-contingent nature of the social construct of desirability: "I wouldn't call it an *undesirable* trait if it is being selectively bred for. Axolotl breeders have selectively bred animals to make many of these traits. Heart lethal is a desirable trait for somebody that is using it for research. Many of these axolotl lines are 'desirable' as research tools. Some make good pets and some don't" (Michael in Rodrigo post 53). Michael's point is that desire is a subjective construct that affects individuals' experiences of breeding based on individual, situational knowledge frames, such as whether animals are "research tools" or "pets." The preceding example of GFP specimens suits the conversation well, since GFP axolotls were first bred for research laboratories and have since been bred for the pet trade. While few have objected to the former breeding project, some have contested the presence of GFP fish and amphibians in private homes.[130]

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[128] All participants mentioned breeding caudates, which requires live food items. Two explicitly mentioned raising food cultures (Szott Interview 1; Gere Interview 2). Because such microscopic food items are difficult to procure, breeders generally culture them at home.

[129] See "Opting-in Online" regarding participants' self-reported feelings of loving their pets.

[130] GFP was initially (and still is) used in laboratories to trace genetic expression and transmission (MacLachlan n. pag.). It has since been re-appropriated by the pet trade to create glowing pet fish, frogs, and salamanders. The first such pet, the glofish, is a genetically modified GFP zebra danio that is the first

Furthermore, this raises competing terminological knowledge frames about "inbreeding," which is defined as "the interbreeding of closely related individuals esp. to preserve and fix desirable characters of and to eliminate unfavorable characters from a stock" (357). For a geneticist or a breeder,[131] inbreeding is not inherently negative. Its resulting gene transmission is either desired or not. However, Kenneth J. Gergen summarizes such moments of social construction, explaining that "[w]hat we take to be experience of the world does not in itself dictate the terms by which the world is understood" (Gergen 267). This is one such occurrence. The common usage of inbreeding is pejorative, and other forum members enter the conversation with this disparate knowledge construct, which makes sharing new knowledge across perspectives incredibly challenging.

While dominated by pet owners, *Caudata* also has scientists and related professionals in its community and the diverse knowledge frameworks feature distinct ethical perspectives that underlie the differing positions in the debate. This challenges Rodrigo's absolute ethics of herp breeding. When he returns to the conversation, Michael is no longer a voice of opposition: instead he provides information and resources on genetic databases to which members might turn for further information (Michael in Rodrigo post 66). Michael acts within established discourse norms, deviating on only one point: that (in)breeding[132] for selected traits is permissible, particularly under specific, context-contingent situations. While his perspective meets reluctance and opposition because it falls outside of the normal values of the community, this moment of abnormal

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and only living animal to be patented. This has caused a great deal of controversy among fish and herp hobbyists.

[131] Caponetto explains the breeder's view of selective breeding for desirable characteristics, which (he feels all too often) is commonly known as "inbreeding" ("Crested Geckos & Inbreeding" n. pag.).

[132] Because of the connotations surrounding these terms, I have chosen to include both.

discourse invites a discussion of different views that results in a slightly more situationally-aware knowledge frame by which value judgments are applied to (in)breeding projects.

Socially Enforced Mores: The Abnormal Discourse of Species Mixing

Abnormal discourse that grows from incompatible knowledge frames also manifests amid the forum's discourse, and this section explores a moment of abnormal discourse and its ability to change and transmit value systems throughout the community. Extreme cases of basic care or abuse are rarely the subject of debate on forums. Few animals would survive over an hour in a freezer, a flagrant dismissal of even basic care, and few forum members would engage such a conversation that flagrantly denies agreed upon basic care needs. Best care, however, is frequently debated, and its discussion is influenced by individual and communal perspective frames. As chapter four indicates, empirical knowledge exists within socially constructed paradigms, and as discussed, Gross explores spaces where different epistemological frames lead to dissensus (xxv). Some outsiders come to the forum with different epistemological perspectives that hold different values on the care and longevity of animals. This leads to debates, often between established community members that have internalized the community's values and those who do not share those values, often newer members. Because these debates deviate from the accepted norms of the community, they are often more emotionally loaded than the majority of forum conversations, which remain grounded in rationality.

This project investigates four institutions: the herp hobby, the online forum about the herp hobby, *Caudata,* and *FrogForum*, each of which creates a somewhat distinct

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community. As Berger and Luckmann posit, "[i]nstitutions also, by the very fact of their existence, control human conduct by setting up predefined patterns of conduct" (55). While this project has already discussed genric, discursive and educational "patterns of conduct," these exist within the broader framework of *Caudata's* ethical constructs. The preceding chapter segment examines how civil deliberation and normal discourse produce knowledge, but the community also holds ethical positions that are absolute. In such situations, the community urges people to agree or else leave, and these moments feature rhetorical approaches and community dynamics that differ from those of the preceding example. This section examines some of the value-influenced mores that create knowledge on *Caudata*. One example of dogma within the herp-keeping community[133] that is most prevalent on *Caudata* is the widespread disapproval of housing different species of herps in the same enclosure. While common claims against mixing are well founded in established, scientific facts, as this section will review, they do not address the underlying difference in worldview between the members who debate them. They *assume* a standard of care, and without spanning across diverse understandings of what this care is, discussions often fail to communicate in terms and examples that address a newcomer's desires or previous experiences, which would make the anti-mixing argument more persuasive.

This study's participants are aware that such moments of contention exist within an otherwise amiable discourse group, acknowledging these exceptions to the friendly dynamic. Anne explained that "[g]enerally it [the forum] is very fair, though you do get the occasional user who is less tolerant and may respond a little too aggressively" (Janes Interview 3). Kees' remarks paralleled this, adding that moderators help sustain

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[133] Communities might sometimes have different tenets, or weight the same tenets differently.

appropriate tone to the discourse: "most of them [debates] are solved in a respectful matter, but some members debate unreasonably. They are using childish remarks and get offended when other people try to ask them to be reasonable. Luckily moderators are doing a good job on *Caudata*" (Gere, Interview 3). As a moderator on one of the forums, Adam explained his role as peace keeper, stating that "I think for the most part, we are a friendly group and able to handle disputes courteously. If I find serious disagreement, I will PM [private message] the person and resolve the issue in private" (Wolf, Interview 3). This disagreement represents a phenomenon that Adam alluded to when he explained that, as a moderator, he views civil disagreement "as a learning experience," and only directly intervenes "if information is not correct, then it is my duty as a moderator to set the record straight and cite sources as needed" (Wolf Usage Diary). When members challenge a forum's dogma of herp keeping, they are not well received, and moderators intervene, both to keep the peace and to represent and recount the perspectives that the majority of the community accepts. Such polite moments of disagreement in which one member expresses a value frame that falls far afield of the forum's communal values might make few changes to the community discourse, or, as was the case with Michael's abnormal discourse in the preceding section, small changes to the community's knowledge perspective.

Rare though such moments of hostility are, participants acknowledged them. Views that deviate greatly from forum norms are more likely to escalate to hostility than those that conform, and such deviations from these forums' widely spread courtesies are noticeable. Brown and Duguid explain that social interactions involve continual "negotiations" that only become explicitly acknowledged in situations of failure in which

the self-awareness of negotiation: "is usually a sign that implicit negotiation has broken down or that there is a tear in the social fabric" (48-9). That participants remarked upon these sparse moments of intense dispute indicates that such intense disputes occupy a position of deviation from the communally-held, subjective positions, that is, shared dogmas. Just as excessive posting is reprimanded, and FredLikesNewts was publicly rebuked for his deviations from the forum's widely practiced SE (an event referenced in chapter three), those who defy or challenge the system's tenets are openly corrected, and these moments of abnormal discourse can change or transmit knowledge frames through the example they form for the community. Species mixing is a strong example of such abnormal discourse.

While the community allows room to debate many approaches and opinions on best care, species mixing is a clear and recurring example of a value-laden issue that is founded on a communal tenet: do not mix species. This position is held so strongly and so widely that it has its own stickie titled "Species Mixing Disasters," and a search of "species mixing" in *Caudata's* archives produces 500 saved results since October of 2005. This is a recurring topic that the dominant voice of the forum community feels very strongly about.

This emotive position, however, can limit the community's ability to understand the perspectives of the dogma's non-adherents, which often limits the efficacy of the community's efforts to persuade the individual to follow the given tenet by narrowing the participant audience to those who already agree. This phenomenon might colloquially be referred to as "preaching to the choir." A chorus of members rises to repeat the claims that underlie a dogmatic tenet, often failing to persuade the OP to change behavior

because these verses rarely try to acknowledge the OP's perspective, which deviates from the community's accepted parameters of operation. This is because the community's adherents consider species mixing arguments closer to "nonsense" than to "intellectual revolution," the two ends of an abnormal discourse spectrum that Rorty presents (320). Such threads more often move away from rational argument and toward fight as O'Keefe delineates the two, and they fail as arguments by Brockriede's definition thereof.

Brockriede's six criteria for argument include an "inferential leap" and options between "competing claims," and an element of "uncertainty" (6-7). By one interpretive glance, these criteria are met; however, closer contextual understanding of collective forum values reveals that the inferential leap does not exist within the community, because dogmatic positions such as "do not mix species" are often taken as blanket fact of normal discourse, which also means that many within the community are unlikely to perceive any alternate claims as valid. For those who believe firmly in the tenet, the matter is settled with certainty, and there is no room for argumentation. Even within this failure of deliberative argumentation and discussion through abnormal discourse, knowledge is shaped and transmitted.

While "Species Mixing Disasters" fails as an argument (or presents a weak example of an argument at best), the discord it creates fosters opportunity for knowledge formation through exposure to multiple viewpoints and explicit statements of the community's value positions. Siemens asserts that pluralism prevents "echo": "We can build closed spaces where we dialogue with others who share our viewpoints… and we are no longer forced to think critically as we casually encounter contrasting views. […] We simply echo our beliefs to each other" (*Knowing Knowledge* 77). This section reveals

that some discussants do "echo," that they close themselves to the experience of others'

views, but that, overall, the diversity of individuals and experiences on *Caudata* forces

many to engage with new and alternative perspectives that encourage critical thought of

larger perspective frames.

The following outlines the basic argument against species mixing exhibited in

"Species Mixing Disasters" and the numerous threads in which new members are

discouraged from attempting to mix species. While numerous rhetorical approaches to

persuasion arise in these frequent threads, the following claims pervade the most:

1. *Predation*: Size dimorphism among opportunistic feeders leads to pets that become prey. Many amphibians will eat anything that will fit in their mouths, and the larger of two species is likely to eat the other. Additionally, if this food item is too large, it is possible for both animals to die as the larger chokes on the smaller.
2. *Environmental Incompatibility*: Not all species of amphibians require the same environmental conditions. Some prefer cool temperatures and others warm; some prefer high volumes of water while terrestrial or arboreal species might drown or suffer for lack of climbing space, etc. It is likely that among mixed species, one species' environmental condition is not being met.
3. *Territoriality*: Many amphibians compete for space and are likely to fight with other species, causing stress, injury, or death.
4. *Toxicity*: Many amphibians excrete toxins from their skins. Other species, particularly those from other regions are unlikely to have immunities to unfamiliar toxins, particularly in the closed environment of a tank. One toxic species may kill another non-/toxic species.
5. *Disease Spread*: Animals from different regions of the globe have different tolerances for bacteria, parasite loads, and other infections, that might often be carried safely in one species with natural immunities but not another whose species has never been exposed.

This list is logical and rational, without inaccuracies, and none of it can be easily

dismissed with a separate body of established, professional information. However, the

debate recurs, not because both sides are balanced,[134] but because of divergent

enthymemes that are influenced by experiences, value systems, and observations. The

information is perceived and processed differently as individuals incorporate the

community knowledge into individual knowledge frameworks.

For example, in most pet stores, one is likely to see the available newt species

housed together or with frogs. It is easy to observe this phenomenon and infer that this is

acceptable housing. Such a conclusion is particularly likely if the observer is unaware of

potential dangers, the species care needs, and/or the frequent indifference of pet stores to

the long-term wellbeing of their animals.[135] Another possibility is that one has seen a

friend or family member keep mixed species together or else located such an example on

a website. One can easily watch an animal live for one year under such conditions and

assume that the species mixing succeeded, particularly if one does not know that the life

span of Ambystoma mexicanum, for example, is up to 20 years in good captive care

(Clare "Axolotl Care Sheet" n. pag.).[136] The argument, therefore, proceeds with some

iteration of: "I have seen species mixed, and therefore it can be done."

There are numerous other reasons that one could speculate between differences in

views on whether or not to mix species, but more important than what the differences are

is how they are rhetorically communicated throughout repeated threads such as cheese's

"I Need a Definitive Answer!" and Bunnygirl's "Tiger Salamander with Frog." These

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[134] There may be times where an experienced keeper can address all of these variables in a suitably large enclosure. For example, different species of Dendrobates (poison dart frogs) of approximately the same size are sometimes housed successfully in a single enclosure. However, expert hobbyists do not instigate threads in favor of species mixing, perhaps because they do not want to advocate an action that would be very risky for a novice hobbyist and the animals in question.

[135] As mentioned, pet-stores are only intended as short-term housing until a pet owner purchases the animal.

[136] According to John Clare's "Axolotl Care Sheet," "Axolotls have been known to live past 20 years, but it is unusual to find an individual older than 10 years" (n. pag.). Many herps have a gap between average life span and possible life span because quality of care varies greatly across different owners.

represent two common variations to the debate. These Original Posters (OP) wish to mix species, but the tone with which they approach the subject differs. In each thread, the OP is sternly deterred by the community members who rotate through the above, outlined claims, and in each thread, moderators become involved to help with such deterrence and keep the peace. I have observed newer members are more likely to instigate such conflicts than established forum members. This is because, as Berger and Luckmann explain, "it is more likely that one will deviate from programs set up for one by others than from programs that one has helped establish oneself" (62).[137] Longstanding forum members have contributed to and reinforced extant mores.

cheese and Bunnygirl did not contribute many posts to the forum, and they did not remain for long after their disagreements. While these threads are years old, the OP's only have nine and 19 posts respectively, indicating that they chose not to remain within the *Caudata* community for long. With nine posts, cheese only continued posting to the forum for seven days after the start of this thread, remaining a reader on the forum for only three months after this species mixing post. With 19 posts, Bunnygirl continued writing posts for one year and eight days after she began this thread, and her account remained active[138] for two years and seven months after her species mixing post. It is also notable that cheese has negative reputation points and Bunnygirl has one reputation point, indicating that cheese provided advice that the community deemed poor, while Bunnygirl learned enough from the community to advise someone well enough that a member added to her reputation: a conclusion reinforced by her continued presence on the forum

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[137] See Table of Frequency of Species Mixing Claims.
[138] The forum measures account activity based on members logging in. This means that, while Bunnygirl stopped posting about one year after creating the account, she continued to log onto the forum, presumably to read others' posts, since she no longer contributed to the conversations.

for over two years. Ultimately, those like cheese who cannot share the values of the community leave fairly quickly.

The answer to the question of whether or not participants make and share knowledge through writing on *Caudata* lies in the distinction between basic care and best care. As discussed, basic care might only be enough to avoid killing the animal, and its success is measured by the absence of death. Best care, however, might feature degrees of subjective opinion that depend on the owner's interpretations of the animal's behaviors, appearance, and longevity. These two threads reveal perspective differences between the OP and those who reply to the thread, showing a value difference within the larger herp-owning community that differentiates the OPs as people who own herps, as opposed to herp hobbyists. While some may enter the hobby as owners and eventually become hobbyists, these threads reveal the tensions between such categorizations and the perspectives that accompany them, which lead to different knowledge frames. Anderson and Kanuka observed that such moments of conflict initiate discomfort: "To remove this state of discomfort [brought on by new information], new information is either assimilated in a distorted manner to fit with the existing belief system or ignored. […] the relative anonymity and asynchronous nature of online conversation makes it much easier to ignore conflicting information in online discussions than in conversational language" (Anderson and Kanuka n. pag.). While a conversation that adamantly defends the community's tenets acculturates readers to the value systems of the community, it may meet indifference from the very forum members at whom it is directed. When such members cannot internalize the new communal knowledge of a tenet and integrate it into their individual, extant knowledge frames, their time on the forum is quite limited.

Different Approaches in Abnormal Discourse: Tone and the Role of Observation

While their memberships on the forum are short-lived, cheese's and Bunnygirl's experience of the communally shared knowledge construct of species mixing are different, namely in their tonal approaches, as well as their relationships to the role of observation in their formation of knowledge constructs. As Berger and Luckmann describe it, pluralism effects normativization because adhering to a social norm is not a struggle if there is no alternative. In this way, cultural experience and expectation are relative (146). The result of this is an appearance of homogeneity within the community on certain core values, on which dissenters either stay silent, or frequently outnumbered, become hostile in the face of a chorus of dismissal at their stance. Species mixing exemplifies such scenarios because it recurs often and because its dynamic falls so repeatedly into a pattern by which established members concerned for best care (by a working, communal definition) try to educate and sometimes chide or deride a newly arrived OP who expresses differing views of best care from the shared knowledge of the community majority. In other words, the majority of the forum members reiterate the normal discourse of the community to a new member who insists upon an abnormal discourse.

cheese's and Bunnygirl's threads illustrate two dominant approaches to OP's tones. The former opens with an exclamation point, indicating the somewhat hostile and exclamatory nature of many of cheese's posts in this thread. The latter has a question mark showing that Bunnygirl has more openness to feedback than cheese, even when other users' suggestions defy her hopes. The opening posts also reveal tonal and

attitudinal differences between the two. The opening post for "I Need a Definitive

Answer!" reads as follows:

> I am planning on starting a Japanese FBN [fire bellied newt][139] tank. I know about the fish that can be mixed with them. I would just like to know how to go anuran, and (probably not) reptilian wise. Before I get a bunch of "stick to the rules" types, I know that it's "Amphibian 101" to not mix. However, I have seen so many more community FBN success stories than failures. And, about 90-95% of the failures are to mixing them with FBT's [fire bellied toad[140]] which I would never run the risk of doing. I want kind answers, please. (cheese post 1)

By comparison, the opening post for "Tiger Salamander with Frog?" is shorter, more

polite, and more inquisitive: "Hello, / I was just wonderign if anyone had ever kept their

tiger with any species of arboreal frogs. Assuming that they have the same habitat, and

requirements,a nd foos items this seems like it would work out great. one is terrestrial and

one arboreal. / Thanks!" (Bunnygirl post 1). Additionally, both members' deviations from

communal norms are visible through their lack of SE, as both cheese and Bunnygirl use

initialisms to refer to species types throughout their threads, and Bunnygirl's post

features errors: discursive practices discouraged by forum rules and the community. This

reveals their new initiate status into the online forum community they have not yet

learned the genric and rhetorical conventions of the forum.

Both OPs indicate awareness of basic care within even the opening post. cheese's

comment about "Amphibian 101" opens the thread with an immediate declaration of both

awareness of and intention to dismiss the dominant views of the community (cheese post

1). Bunnygirl acknowledges that habitat needs matter. The fact that she is considering

species mixing shows that she is not yet socialized to the dominant views of the

community, but that she starts with an awareness of some of the variables (like habitat)

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[139] Cynops pyrrhogaster.
[140] Bombina orientalis.

that underlie such views (post 1). Her tone, however, defers more openly to the experience of the forum, displaying willingness to learn from those with experience. While both new members defy the same conventions, the tones of their deviations differ, and so their eventual shifts to adhere to the normal discourse and its values diverge: a progression that this section follows.

In *Constructing Experience,* Bazerman writes "we are likely also to understand our position with our interlocutors structurally in terms of our social relationships, roles, powers, and authority, obligations and allowable ranges of freedom, and the other social variables by which we define ourselves and our actions in relation to others" (12). While the herp hobby is not an established academic sphere with built in academic structures, the knowledge itself inserts a power dynamic through normal discourse modes, established within the community. Furthermore, while all members are allowed to contribute, as chapter three indicates, online forums feature power systems that privilege the ideas of administrators, moderators, and even long-standing members with established reputations over newcomers. At each level, these power structures provide boundaries around the spaces that normal discourse inhabits.

The authors of these opening posts appear aware of the "allowable ranges of freedom" amid social interactions on the forum; cheese demarcates this awareness so defensively that his post opens offensively, challenging "Amphibian 101": the knowledge of the community in which he engages, which indicates a comfort with or inclination to defy authority. Bunnygirl's perception of her relationship to the online forum dynamic leads her to defer to the authority of established community members, which indicates more deference to authority than cheese has. The tonal differences between these two

writers stem, in part, from their understanding of and relationship to the larger herp-keeping community and the subgroup of it that participates on *Caudata*. Such differences affect their subsequent interactions throughout the threads, one example of which is their approaches to the concept of observation and its relationship to knowledge production.

Observation has always influenced our relationships to knowledge and the known world. Aristotle's first taxonomies of living things formed from observable shared characteristics, and observation remained the dominant means of knowing the world until Enlightenment philosophers like Renee Descartes shifted the paradigm by adding the human ability to reason as an essential component to shape scientific methods. In the twentieth century, as we came to know the world through increasingly specialized equipment and advanced theoretical frameworks, we moved toward increasingly specific credentials and educational tracts, and the naturalist of the Victorian era lost a place amid the known scientific community. The popularization of the internet gave the self-developed expertise of the naturalist a new home amid the voices of trained, specialized experts.

Building on Siemens' and Downes' visions of connectivism, Brown and Duguid explain today's knowledge economy as "ecologies of knowledge" that are divided into an overlapping grid work; individuals focus on their node of the grid, but none is complete without the contributions of others (165). This is the premise of connectivism. Amid increasingly specialized and proliferating information structures built into increasingly connected, digital structures, knowledge exists within the community network. It is the domain not only of the certified experts, but of the independent learners who access and share and contribute to the grid of information. Kuhn's ab-/normal science provides a

frame through which to understand such paradigm shifts in knowledge domains. Aristotle's taxonomies were the best knowledge of their time, and as human perspectives changed, so too did knowledge about taxonomies.

As technologies changed to allow the genetic sequencing of species, taxonomies changed. Each taxonomy was the most accurate that humans could know in a particular era. The same can be said of the herp hobby and its continued reliance on connected knowledge, observation, and experiential learning. If or when the hobby becomes an established, scientific domain, then scientific testing of previously observationally verified phenomenon will confirm some tenets and disprove others, redefining the hobby's knowledge. Until then, the boundaries and the knowledge perspectives within the hobby are a direct result of the community and its interactions: its connectedness as well as the relationships between individuals and their communities.

As contemporary naturalists, many herp owners rely on observation in order to care for their animals. As mentioned, best care is often determined by interpreting observed behaviors and visible indications of an animal's health. As participant observation and interview data indicate, advanced hobbyists are often high-functioning, independent learners who have developed degrees of skill and expertise through self-instruction and experience. Such autonomy defines connectivism in part as this chapter's introduction explains, and so while their individual knowledge is socially constructed, such expert hobbyists also occupy an active place in the connected knowledge of the forum community. Advanced hobbyists often combine observation with scientific measurement and widely available assessment tools, such as the previously mentioned water testing kits, which identify such things as pH and levels of ammonia, nitrite, and

nitrate. This is further situated within the read knowledge from the scientific community and the experiences of others in the community, as the "Phase/hybrid" thread indicates, along with processes of acculturation and assimilation that chapter three describes, as chapter three asserts. Herp hobbyists learn the field both through their deliberative efforts to do so and through the incidental learning that their desire to belong within the forum community facilitates.

If they lack the knowledge frame to rely on test kits, published research, and past experience, as well as lacking the accompanying awareness of the connected, social setting that would indicate what will or will not be tolerated or accepted, newer members like cheese and Bunnygirl rely heavily on observation for their conclusions. They state as much without any awareness of the extent of their deviations from norms. If they do not filter their observations through credibility assessments, problems arise. Both of the species mixing sample threads rely on observation. cheese *uses* the observations of others to reinforce a stance to which he is (initially) committed, and Bunnygirl *asks for* the observations of others, acknowledging that these could affect her stance. The next reading shows that, while the former is of limited value to knowledge production, the latter is significant, and both affect the OP only as much as the community is relevant and valued in his/her life.

Defending the desire to mix species, an action of which he knows the community disapproves, cheese writes, "I have seen so many more community[141] FBN [fire bellied newt] success stories than failures" (post 1). Roy counters this by asserting that he has seen "hardly any successful mixing stories," which is echoed by Lasher, who speaks for the *Caudata* community by declaring, "[w]e seem to see the reverse" of success stories

[141] By "community," cheese refers to a mixed species enclosure that includes C. pyrrhogaster.

(in cheese post 3; post 4). J takes a more moderate approach when he retorts "Ive heard a few amphibian mixing success stories, but never any anura [frog and toad] caudate [newt and salamander] success stories (with exception of a few fbn [fire bellied newt] fbt [fire bellied toad] stories" (in cheese post 6).

Each posted on the same day, these rapid-fired rebuttals restate the observation "no, I haven't seen it" as a counter to cheese's original, "yes, I have seen it." This tactic does not persuade cheese, who repeats the opening observation, committing an *ad populum* fallacy in doing so: "[o]h and by the way, there are a plethora of results I found on google searches related to 'firebelly newt community, 'mixing with fbn's,' etc" (cheese post 7). This reply reveals a *Caudata* member who values information through search engines above the specialized, nonacademic approach of this forum community, since he rebuts this communal expertise with general search results. This contrasts with the "Google it" phenomenon discussed in relation to learner autonomy. There, the community expects people to use general search engines to locate basic information, which this member has done. However, in this case, the dominant results on an internet search are sites that encourage a practice with which the forum community disagrees.

This results from differences between communities of people who have owned herps and herp hobbyists. The forum community encourages online searches as research practice when the information generally available online aligns with their community's knowledge frameworks. A search enquiring about what crested geckos eat or how to cycle a tank will produce as unified an answer across results as if one were to search for the name of the 39th president of the United States. Such easily searched and difficult to contest information might be considered part of the social stock of knowledge:

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information that one needs to know to survive in a given community (Berger and Luckmann 43).[142] However, other information is more deeply entrenched inside of value structures. The human relationship to this information and its relevance to the community make it knowledge, and in this example, the knowledge of the online forum community and the knowledge of the website that cheese initially found through his online search are discordant. Because of this difference in knowledge structures, the online forum disapproves of this particular use of an internet search as the primary mode of research.

Here, the basic information cheese has located challenges the community's tenets, and so it is quickly dismissed by Nathan's reply: "Just because many cases of species mixing are present upon doing a google search, does not make it a success or the proper thing to do" (Nathan in cheese post 8). The conversation quickly turns toward credibility once cheese reveals that his pro-mixing information comes from online searches, and Roy censures that, "[a] lot of mixing stories on the internet forget to tell they are mixed for two weeks (and do no post when they are split or some are dying)" (Roy in cheese post 10). Having been openly rebuked by six members and perhaps having agreed that not all information is equal, cheese acquiesces to the majority, "[a]lright, I've done a little more research. I think I'll live with just the newts" (cheese post 9). The dominance of the community norms within this thread persuades cheese toward a change in attitude that is prerequisite to continued involvement with this community.

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[142] Berger and Luckmann explain that the relevance of the social stock of knowledge is culturally situated, and they give the example of one needing to know that, when a car breaks down, s/he must call a mechanic. Stock knowledge is basic, fundamentally, widespread, and culturally situated. They explain that "a large part of the social stock of knowledge consists of **recipes for the mastery of routine problems**. Typically, I have little interest in going beyond this pragmatically necessary knowledge as long as the problems can indeed be mastered thereby" (emphasis in the original 43). In relationship to the herp hobby, such frequent and basic bodies of information as how to cycle a tank and how to fridge a salamander are part of that unique social stock of knowledge. Once one has this basic information, s/he does not *need* to fully understand the chemistry or microorganismal biology that undergirds the process of the nitrogen cycle, for example.

While, by the end, cheese does acknowledge a perspective shift against species mixing, it is with resignation, having decided to "live with just the newts" (post 9). This unenthusiastic response does not indicate with certainty whether cheese has internalized the new information and accompanying communal knowledge framework against species mixing. However, it indicates neither indifference to the community's judgment nor to the well-being of the animal, offering a small perspective shift toward the dominant knowledge structure of the community. Furthermore, it is clear that cheese now understands the extent to which the tenet against mixing is ingrained within the community. Whether persuaded to agree in full is uncertain, but it is clear that cheese understands that continued interaction within this community requires that he not challenge this core precept. The abnormal discourse initiates a norming process through which he begins to assimilate the community's dominant norms. This demonstrates a core principle of social constructionism, that "[t]he degree to which given form of understanding prevails or is sustained across time is not fundamentally dependent on the empirical validity of the perspective in question, but on the vicissitudes of social process (e.g. communication, negotiation, conflict, rhetoric)" (Gergen 268). cheese entered the conversation already knowing "amphibian 101"; what took time and exposure to learn, what he did not know at first, was the commitment that this social group brings to its anti-mixing knowledge frame.

The thread ends with a moderator's intervention, wherein Jan welcomes cheese as a newcomer before commenting on appropriate forum tone: a comment that is followed by a repeat of the opening greeting and well wishes. [143] None of the five posts that cheese

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[143] Jan writes, "No one is trying to be rude. But as you suggest, you are just learning. Considering that, you may want to tone down your approach and presentation. […] shouting "I need a definitive answer!" is no

wrote during the subsequent week of posting before leaving the forum exhibits this tone

or mentions using Google as a main source of information. Instead, on two threads,

cheese mentions research through the forum's archives and stickies, and the words

"sorry," "thanks," and "please" appear a combined five times across two threads; the

third post ends with "if that helps" (cheese "I Have a Really Stupid Question"; cheese

"Phase One of JFBN[144] Tank, What Next?"; heather "Plankton" post 2). This indicates

that, at the very least, cheese has learned that the community will accept neither a hostile

tone nor generalized internet browsing as a sole source of information, accepted without

critical thought. cheese has become socialized into the community's mores of language

use and tonal approach. Because the less regularly reinforced concepts are, the "less

likely they will be to retain the accent of reality" (Berger and Luckmann 155),[145] the

ability to internalize them depends on the presence of alternative social cultures of herp

husbandry that cheese encounters outside of the forum. cheese's socialization is only one

element of the effect, though. There is a wider process through which members like

cheese serve as cautionary tales of the social ramifications of behaving outside of the

mores, tenets, and stated rules of the forums. cheese's abnormal discourse invites a

process of public reprimand that creates knowledge on two levels beyond cheese's

individual developments. Witnesses learn which tenets are held and how firmly, and they

learn what rhetorical behaviors the community will and will not accept.

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way to win friends and influence people. / You will find a great deal of help and willingness on the forum –
please try being a little more collegial and you will find pleasant responses" (post 11).
[144] Two species of fire bellied newts are commonly available in the United States. Japanese fire bellied
newts (JFBN), Cynops pyrrhogaster, and Chinese fire bellied newts, Cynops orientalis.
[145] Berger and Luckmann situate this reinforcement as "face-to-face confirmations" while presenting the
example of a man who leaves his home community and therefore, while retaining some aspects of former
socialization, loses others for lack of social reinforcement. Since this book was written in 1966, they could
not have intended a "face-to-face" to carry the connotations of offline interaction as contrasted with online.

Bunnygirl's thread also broaches the role of observation for the forum and its newcomers. Instead of a series of back and forth yes-I-can, no-you-can't responses, Bunnygirl's thread, which opens more politely as a genuine query about the species, moves directly into exact, first-person experiences that mark the failures of species mixing. After being told not to mix, Bunnygirl explains that "I understand that many people are opposed to mixing species, I am not if it has been well researched, ETC" (post 4). She wants to be responsible, and she wants specific and supported information. When this is followed by a post explaining that she should agree with the no-mixing perspective that has been posted by experienced members with far more reputation points[146] than she has (post 5), Bunnygirl remains calm, noting that "many people [are] deadest against mixing, even if it can be done properly" (post 6). She is right. Bunnygirl has seen enough on the forum to know that its dogma prohibits mixing. However, as cheese's post indicates, most comments repeat the tenet without lengthy discussion of the information or knowledge structures that create the precept. Therefore, Bunnygirl remains unconvinced.

In response to this request for specifics beyond the bare doctrine of the forum, Johnny writes a very detailed, thirteen paragraph response with exact species and enclosure details and eventual (unpleasant) outcomes from four scenarios that he himself witnessed, thereby moving the conversation away from repetition of the codified rule and toward specific examples as Bunnygirl desires (post 7). Even more than that, he addresses Bunnygirl's question about whether research exists on the matter, closing his post with: "However, this is just my experience with the subject. I have been unable to

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[146] See chapter three for discussion of this posted reply and the significance of reputation points to credibility.

ever find hard data with valid, verifiable sources to back up what myself and others have

experienced, either for or against this subject" (emphasis in the original, post 7). Johnny's

comment indicates the lack of top-down, professionally researched information and

knowledge on the question of species mixing that has been discussed in previous

chapters. A scientific laboratory would not mix species unless a necessary step toward

hypothesis testing; mixing species would add variables that interrupt the progression of

formal science and its endeavor to test one variable at a time. Most significant is that,

because of Bunnygirl'scalm approach and her ability to verbalize her desire for specific

details, the thread moves beyond the call and response of yesses and nos that were

present in cheese's thread. The precept of no species mixing is still firmly enforced, but

this is done with more specific support and varied approaches to the core claim.

Bunnygirl addresses Johnny's response directly, and few blanket statements

against mixing occur after she replies to Johnny's post with gratitude.[147] Bunnygirl

engages with the forum with respect and acknowledgement of communal efforts to

address the specific concerns and needs that her original post raised. Like cheese's,

Bunnygirl's thread transmits the normal discourse to a community of readers beyond the

actual discussants, as they learn by example that species mixing is disapproved of. Unlike

cheese's, Bunnygirl's rhetorical choices more closely align to the expected courteous

tone and SE, and this adherence to normal discourse makes her deviation (a pro-mixing

query) more generative to both herself and the community. The responses she receives

are far more polite and specific than those responses that cheese received. As a result,

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[147] Bunnygirl writes, "Thank you very much, That is the kind of stuff I want to see. Thank you for backing up your statement. I have asked several questions similar to this on other forums and everyone just replies with "Don't mix species." , but you have given real data that these combos would not work out. […]Thank you very much!" (post 8).

while it remains uncertain whether cheese has internalized the anti-mixing tenet, it is clear that Bunnygirl has. This aligns with Gergen's summation of social construction, that "forms of negotiated understanding are of critical significance in social life, as they are integrally connected with many other activities in which people engage" (268). Even while longstanding *Caudata* members would see pro-mixing arguments as irrational, their rebuke is generative for its ability to change the minds of individuals and transmit extant, normativized values to a broader audience of readers.

Both cheese and Bunnygirl modify their rhetorical approaches after the forum's social dynamic indicates that the community will not accept their initial resistance to forum tenets. This supports Bazerman's discussion that, while often covered up after the fact, much knowledge results from points of contention. Knowledge wins through majority consensus that becomes the foundation of a given discipline (*Shaping Written Knowledge* 108-9). On this community forum, the species mixing debate is won by those who oppose the practice. Other social, scientific, and commercial communities do not share the combination of values and information sets and situational conceptions of the animals that would deter them from species mixing as *Caudata* manifests.

Knowledge is not only socially constructed, but also connectively constructed, living within the networked links and archived threads that brought (and continue to bring) members to align with the anti-mixing tenet. Knowledge that species mixing is bad exists by the community and in the community, and the more important the community is to the individuals involved, the more likely that they will align with its discernible perspectives, making that knowledge their own. Members like cheese and Bunnygirl, who leave the forum after being chastised, cause concern. As Bazerman explains, "[t]he

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individual must not only identify with the community as a whole, but must see that his

[*sic*] own contribution to the group endeavor will raise his own standing within the

community, allowing him to contribute more fully" (*Shaping Written Knowledge* 139). If

they are not given a chance to participate, if they are mistreated for their competing

values, even with the best of intentions, then they will never want to (let alone succeed at)

joining the community.

Conclusion: Knowledge Construction in the Spaces between Approved Domains

Rorty summarizes his position by writing that "I have argued that the desire for a

theory of knowledge is a desire for constraint – a desire to find 'foundations' to which

one might cling, frameworks beyond which one must not stray, objects which impose

themselves, representations which cannot be gainsaid" (315). In so writing, he challenges

epistemologies for their endeavors to bind the world within immutable guidelines. Rather

than present a theory of knowledge that is immutable, this chapter follows theories of

knowledge that are themselves predicated in mutability – connectivism and social

construction – both of which operate compatibly in new media environments that

emphasize User Generated Content (UGC). As Brown and Duguid explain, "[i]t is not

shared stories or shared information so much as shared interpretation that binds people

together" (106). This is where knowledge lies. The conceptions of best care, breeding

practices, and species mixing illustrate scenarios through which information is framed

within the perspectives of the individual and the community in order to become

knowledge.

The herp community shares existing knowledge that it creates anew because there is no extant science that does this. In order to learn the discourse and extant knowledge within this user-generated knowledge community, learners must demonstrate autonomy, since in the absence of credentialed authorities and schooled degree programs, people will not successfully learn the discipline of the hobby except through their individual efforts. This challenges widespread conceptions of top-down models of expertise, credibility, and learning. The creation and dissemination of herp husbandry occurs through rhetorically shaped, community processes that begin the moment one enters the forum environment. In an ongoing process, people learn the conventions, rules, and expectations of the community, as well as its rhetorical influences and components, and their ability to socialize into the communal culture affects their ability to learn and engage with the communal and dialogic knowledge production.

Active agents in this knowledge production and transmission, normal and abnormal discourse underlie processes through which members challenge dominant views. As this section shows, some members receive some challenges with courtesy, allowing for deliberative debate and the public discussion of dissensus. Other members have little patience for deliberative dissensus. Often, the difference lies in how ingrained and firmly-held the value position is within the community. While this section shows that abnormal discourse is more likely to change knowledge frames when couched within the normal rhetorical style of courtesy and conventions of SE (as was the case with Michael, and to a lesser extent, Bunnygirl), even a mixed or failed attempt to enforce the community's normal discourse transmits shared value systems and knowledge frames within which information is hung because of the publicness of forum interactions.

This is the operation of social construction in an online sphere, but it happens concurrently with connectivism, and ultimately, it is a concept of socially produced, shared knowledge throughout a connected network. Siemens explains that connectivism is compatible with other theories, stating that "[n]ew epistemological and ontological theories […] do not wash away previous definitions of knowledge, but instead serve as the fertile top of multiple soil layers" (*Knowing Knowledge* 3). In the forum environment, amid social construction, connectivism is a byproduct. Both the individual and the community are social constructs, as is the knowledge they coalesce to create. In other words, while the individual and the community both create knowledge through perspectives, this collected knowledge can be viewed from outside as connectivist.

This bifurcated view of parallel knowledge construction is productive because, particularly in a specialized academic discourse, the network's knowledge facilitates learning as well as the individual's knowledge production. Siemens explains this:

> When we stop seeing knowledge as an entity that is possessed within a person and start to cast it as a function of elements distributed across a system, we notice a dramatic impact on the education process: the educator becomes a supporter (not the center), the content is not as critical as the connections, learners find value in their aggregated perspectives, learners become content creators, and learning is continuous, exploratory, and sustained (not controlled or filtered by only one agent). (*Knowing Knowledge* 44)

The connectivism of knowledge amid the social environment facilitates and enables knowledge for the individuals within it. While connectivist theorists devote substantial time to defending their theory's compatibility with social constructionism, it is important that constructionism itself allows room for connectivism, and that the acceptance of one is not an automatic rejection of the other. Bazerman writes that:

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> To persuade someone of something you must show them what you have found. That is, an event in nature is not an empirical fact with scientific meaning until it is seen, identified, and labeled as having a particular meaning. Moreover, although it may be a fact to the person who first locates it, it is not a fact to other researchers until they have been satisfied that the event has occurred. Only by making the fact communal can one claim discovery of that fact for oneself and reap the rewards of it. (*Shaping Written Knowledge* 139-40)

Again, the subject of study herein is a hobby that, while influenced by established scientific domains on multiple levels, lacks a governing body of credentialed researchers devoted to testing observation in order to dis/prove information. Even so, what is comparable to established science is the communal endeavor to develop, locate, and explore the most accurate information available to the community as it currently operates within prevailing paradigms and with the tools available to it. While this process occurs differently in different established, scientific and nonacademic domains, and while scientific information continually moves into the hobby domain, the basic progression of reaching understandings by "identif[ying], and label[ing events with] a particular meaning" (Bazerman, *Shaping Written Knowledge* 139) remains unchanged. The hobby insists on the best information it can obtain, often through cross-referencing individuals' experiential observations (as shown through Johnny's account of species mixing disasters). The community will reach consensus if experiences align. Knowledge is a communal product.

The communal component of social constructionism easily adapts to connectivism in new media environments, by which the community knowledge resides within the online environment itself. The medium of the online forum facilitates knowledge making and sharing through interactive, public performances that encourage learning and the dissemination of value structures that frame units of learned information

into a communal knowledge system. Knowledge is made in the gaps between established

scientific domains and the specialized hobby.

CHAPTER SEVEN

Conclusions: The Implications of Opting-in

Introduction

  This project has pursued answers to two questions: (1) *How do participants use public writing to generate and share new knowledge through the community of the open, online forum?* (2) *In what ways does the medium of the online forum, including its public sphere and/or community dynamic, support or hinder the knowledge making process?* The answers are located in the spaces between traditional zones: between popular and professional, ignorant and expert, academic and nonacademic. This work recontextualizes forum learning and knowledge production as self-directed activities, examining their existence outside of classrooms and occupational spaces. Ultimately, this project finds that through specialized nonacademic writing, herp hobbyists create and share new knowledge through interactive, asynchronous communication, building a field around their special interest where none has yet been formally established. This work shows that motivated individuals have a profound ability to self-instruct and create knowledge, independent of the structures of classrooms and certification tracts.

Limitations

  Throughout the second chapter, "Methods: Lines of Inquiry," a series of limitations are addressed as they were relevant to the methodology that underlies this project. Those that interact most directly with this project's design and implementation merit further discussion at this time. For example, there were logistical complications

with linguistic and technological barriers throughout the course of data gathering. I had deliberately included some phrasal verbs in order to ensure that prompts were easy to understand and that participants felt I was approachable if questions arose. One nonnative English speaker had difficulty translating many of these colloquial verbs, and so we discussed their meanings over e-mails. The second practical impediment to data collection was the availability of technology in the home. One participant had two home computers, but only her son's computer had Microsoft Word: the format into which the interview tools were saved and sent. Once I realized this impediment, I began pasting the research tools into the body of the e-mails that I sent to this participant so that she could compose her responses directly into e-mail. While such logistical problems arose, they were overcome fairly easily, and did not affect the data gathered for this project.

Another limitation arose when implementing research tools. I had originally hoped that the entirety of each data set (e.g. all responses to Interview 1) would influence the design of later data collection tools. However, without monetary incentives, participants' return of the completed collection tools was staggered. I quickly realized that, if I waited for each unit of data, I risked losing the interest of the most punctual participants while waiting for completed interviews from those participants who lagged behind. As a result, I set myself a limit of one week after the first participant returned a document, and in this time, I refined the next interview tool and awaited additional returns before sending the next data gathering tool to those who had returned that which preceded. I was still able to design each tool based on responses from the one before it, but these were responses from some – not all – of the participants.

The main limitation of this research's design is one that the methods section addresses at length. The project does not represent generalizable populations of forum users. This project features detailed analysis of the experiences, attitudes, and opinions of the six participants who self-selected into it. This small number was probably influenced by the lack of grant funding with which to reward participation. However, I had deliberately chose to study a narrow, purposive pool of participants from two specialized forums through layers of qualitative data that would provide depth rather than breadth. I chose this in order to develop a focused and specific understanding of how some people perform learning and literacy tasks. The in-depth understanding of six participants' independent learning, and knowledge making comes at the expense of understanding how the majority of people perform online learning and knowledge making tasks. Future research can pursue more generalizable results for online learning and knowledge making, and these will bring additional meaning to the specific findings indicated herein.

Another complication of this project's design was its inclusion of usage diaries. While deliberately implemented as a measure of forum users' practices, the participants studied herein do not all engage with the forums under study regularly. While a valuable finding, the reality that many members only write on the forum sporadically, often as needs arise or work schedules allow for extra leisure time, meant that usage diaries were difficult to synthesize meaningfully. Therefore, the data they provided was incorporated in much the same way as the interviews were: to support and explain observed phenomena and direct interpretations thereof. Had I realized that usage would be so sporadic when I designed the project, I may instead have supplemented interviews with a short writing prompt: one that asked for a guided reflection of peoples' general behaviors

on the forums and their attitudes toward forum writing over the course of their experience, rather than requesting a daily log that detailed dates and times of use accompanied by exact activities of that day. Such a written response might have captured more of the overall use that the participants make of the forums than the exact use (or lack thereof during a busy week) that the usage diary attained.

Implications and Future Research Trajectories

One implication of this work is that, while public writing is often discussed in relationship to activism, it is also used to form learning communities. This project's research supports previous findings by Jinghui Wang et al., Rita Kop and Hélène Fournier, François Blin, Navaporn Snodin, and Jerome Eneau and Christine Develotte, all of whom explain that the writing publically facilitates learner autonomy. Many of these studies also corroborate Ruti Gafni and Nitza Geri's finding that publicness drives people to work hard to perform as well as their peers. Furthermore, how well a writing community performs depends on the forum's rules and the greater, external discourse communities from which the forum draws. In the case of *Caudata* and *FrogForum,* the rules are strict and enforced, favoring correctness and Standard English (SE), and the communities that most influence rhetorical style are scientific.

This means that *Caudata* and *FrogForum* house a public writing situation that is shared by few other forums, many of which have looser English usage rules and lack the influence of formal, scientific discourse. Other communities develop common features and rhetorical influences, but these differ based on the forum's rules and influences. This suggests that further research on public writing that is not activism-oriented can help

scholars understand, not only the ways that rhetorical styles are developed among specific communities, but also how and why people learn. Furthermore, the research mentioned above represents the disciplines of language instruction and communication, rather than rhetoric and composition. This indicates the need for a rhetorical understanding of public writing that moves beyond activism. Public writing scholarship can expand toward notions of publicness that are not synonymized with citizen activism and social action.

Additionally, collaborative learning theories like Kenneth Bruffee's have placed the public exchange of ideas among peers along its foundation ("Collaborative Learning" 642). Collaborative learning assumes effective idea development and exchange among peers, the result of which may be influenced by additional variables that are characteristic of learner autonomy, such as motivation, engagement, extant degrees of autonomy, community, publicness and metacognition. Future research could explore this intersection between the publicness that supports autonomous learning and the publicness that facilitates collaborative learning. Additional projects might include works that theorize the intersect between collaborative and autonomous learning. Such research can refine both modes of learning, and it can help instructors across disciplines effectively implement collaboration and independence in their course design.

This project demonstrates that motivated individuals can self-instruct, learning the information that they feel most relevant to their lives in as much depth as they feel they need. This finding suggests that the current model of degree requirements and paths toward certification and accreditation undervalue the extant knowledge that autonomous learners have. Adam is 60 years old, and his experience working for a zoo – a position for

which he qualified because of experiential and self-taught knowledge – provided an opportunity that might not have been available in today's job market. Positions increasingly rely on knowledge that is authorized through established degree programs. Even the academic sphere exemplifies this. Amid a glut of applicants with Ph.D.s, many community colleges have begun to require doctorates for applications to tenure-track positions that were previously held by instructors with M.A.s.

Many industrial jobs – positions that were held previously by citizens without higher education – have left the United States, making higher education essential to economic advancement in a job market that increasingly requires specialized training and skills and has fewer and fewer opportunities for people without formal education and training. This project's demonstration of the success of learner autonomy suggests that colleges could increase measures to evaluate independent knowledge, such as life-credit or placement tests that measure and reward individuals' extant knowledge. This would increase retention since people could move through college in four years or less. Of course, since people exhibit different degrees of learner autonomy, it is most likely that such measures would most benefit those with strong educational upbringings that supported the skills that enable learner autonomy. Those in poorly funded school districts who most need affordable higher education to improve their economic circumstances are least likely to benefit from programs that accept independent learning credit.

Another program to acknowledge the information and skills gained autonomously would be an increase in employers' entrance exams. Every year, articles in publications like *Forbes, Time,* and *The Chronicle of Higher Education,* employers and educators declare that many college graduates are un-hirable because they lack the skills that

workplaces require (Yang n. pag.; White n. pag.; Fischer n. pag.). While such articles'

present different views of the cause, the problem is widely agreed upon. Perhaps, rather

than more formal, classroom-based education, life experience provides an answer. Many

articles point toward internships as a solution, establishing the desirability of learning a

field through direct experience (Yang n. pag. Fischer n. pag.). Another oft-proposed

solution is to increase the availability of companies' training programs (White n. pag).

Such measures could be supplemented by testing knowledge and/or skills to evaluate

candidates' job preparedness. This solution would not only provide employers with data

on applicants' qualifications, but it would reward those individuals whose self-instruction

provides relevant knowledge and skills, even in the absence of formal certification.[148]

However, the above assertions are very different from an unwavering

endorsement of all online learning in all contexts. The fifth chapter asserts that successful

models of independent learning can help instructors implement online tools effectively in

classroom environments. Such assertions differ from endorsements of the currently

increasing movement toward online courses. Instead, this project's findings support prior

claims that such programs are problematic. As the third and fourth chapters show, forum

members develop much of their genric and rhetorical style incidentally through exposure

to the forum and a desire to belong within the larger community. The community

dynamic of a classroom differs from the environment on *Caudata* and *FrogForum,* and

the skills developed therein must be measurable, rather than an incidental progression

over years. Furthermore, the population studied herein has self-selected from among

strong and skilled autonomous learners that occupy the forums: a very different learning

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[148] This is not a denial of the benefits of liberal arts education. Instead, this is an acknowledgement that not everyone is ready for such an education at 18, and not everyone can afford it. Additional paths toward employment would benefit individuals as well as the nation.

environment than the diverse demographics one encounters in required general education courses.

Another problem is that, as Philip Benson has explained, online learning is more difficult than face to face instruction ("What's New in Autonomy" 17). Not all entering students are digitally literate. This is tremendously different from public forums, the populations of which have already self-selected for computer literacy. Such self-selection in online spaces has also been found by Erika Polson, who challenges Marc Prensky's conception of the digital native. Polson explains that the majority of online discourse is dominated by a global middle class: a demographic that does not represent the wide array of students who attend the United States' diverse institutions include (145-9). Many people, particularly those from underprivileged backgrounds (whose homes and high schools and parental support do not have resources to ensure digital fluency) have difficulty adapting to online learning environments. The national push toward online learning will easily leave such learners behind if it is not pursued critically and with more care. Future research should work toward metacognitively designed pedagogical and administrative practices through which online learning can be considered and developed.

Another of this project's implications is that it reveals the limitations of traditional rhetorical and cultural conceptions of non-/academic writing and of expertise. The disciplines of rhetoric and composition will benefit from further exploration of non-/academic writing in order to create new classifications of writing that move beyond academic, professional, and technical writing. Such expansion could help rhetoricians understand how and why and to what ends people communicate, particularly in online environments that are still relatively new and constantly changing.

Specialized nonacademic writing presents new opportunities for such expansion, particularly regarding expertise as it is understood and taught in rhetoric and composition courses. Within the special interest of the herp hobby, the dichotomy between best and basic care shows that individual communities distinguish their own classifications of expertise, delineating between those within the community who share communal values and demonstrate mastery of specialized knowledge, and those on the margins or outside of the hobby. This reinforces theories of expertise as situational, despite the sometimes rigid bounds within which credibility is framed. If expertise is situational, and if expertise can emerge from self-instruction, particularly in domains that lack certified experts, then the traditionally held notion of the expert should be revisited and further theorized. This is not to say that academic disciplines should remove the platform on which the trained expert stands when s/he writes for peer-reviewed publications. Instead, specialized nonacademic experts could occupy a space alongside such traditional experts, and our articles and textbooks could introduce such expertise as alternatives that might be appropriate in situations outside of the academy. Research on how and why situational expertise develops within a given community could explain individuals' reception of and reaction to expertise.

For a student writing about the care and maintenance of amphibians in the home, many of the threads on *Caudata* or *FrogForum* would hold valuable information, much of which cannot be located elsewhere in English, and yet students often reach college with firmly held absolute rules that prevent them from critically considering such potential sources. Every semester, students tell me that they have previously learned that online sources ending in .gov or .org are reliable, and that online sources ending in .com

or .net are unacceptable, and that User Generated Content (UGC) is never an acceptable resource. When I teach, I discuss these myths of credibility with my students, and like many instructors with whom I have spoken, I strive to help my students develop a more critically aware and rhetorically situated understanding of source credibility in which exceptions to each of the above myths abound. A next step would be for scholarship and textbooks to theorize and advocate the spread of such situational source evaluation, not as a replacement for, but as an addition to traditionally-held academic values of credibility.

Like the above suggestions, this project's implications for knowledge making challenge traditional paradigm manifestations. While the previous chapter devotes much of its discussion to knowledge sharing through ab-/normal discourse, it also reveals that brand new knowledge can enter into the herp keeping community through people with independent and experiential learning. Adam was able to create an appropriate care sheet where there had been none, and this suggests that specialized nonacademic discourse communities can establish new knowledge, particularly amid specialized nonacademic fields.

Conclusion

The first chapter begins with an anecdote of a friend with Hashimoto's disease who has gone to great measures to become informed about her illness and its treatment. The chapter did so, not only to establish that people are capable of independent learning and knowledge sharing, but because this is a common experience that I have witnessed time and again among the eclectic groups of people whom I have been fortunate to befriend: a web designer, web developer, and information technology specialists, with

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varying educational backgrounds, none of which were in the computer sciences; a high school graduate who, between lived experience and leisure reading can recount detailed histories of New York city, including different neighborhoods' changing demographics across centuries; a high school dropout who was among the best chess players in the town we lived in. I have met far too many people who fall within the gaps of expertise and learning to itemize each without drafting a second book-length project that turned toward creative non-fiction to show what this project asserts through scholarship: that many people know far more than that for which they are formally given credit.

On a broad scale, this project is an argument to increase the respect and cultural valuation of the nontraditional: nontraditional expertise, nontraditional learning, and nontraditional knowledge domains. This is not to say that all arenas are on equal footing at all times, but that situations exist in which experience exceeds traditional categorization. There is much to be learned in and from such situations, and there is room for new pedagogical and scholarly efforts that reassess past assumptions. From its initial design amid my own pursuits as a rhetorician and herp hobbyist, this project has straddled space between arenas, finding meaningful ties and connections between the two realms. While many significant implications are detailed above, these are unified by the challenge that each presents to conventional classification systems, many of which pit concepts in opposition – a series of strophes and antistrophes that often pervade current thought. This work revels in the existence of multiple pathways to becoming educated and informed.

GLOSSARY
Terms, Species, and Acronyms of the Herp Hobby

African fat tailed gecko, n. See Hemitheconyx caudinctus.

Agalychnis callidryas, n. South American frog commonly captive bred for the pet trade, also known as the red eyed tree frog.

Ambystoma mavortium (A. mavortium), n. Barred tiger salamander, indigenous to the northwestern regions of North America.

Ambystoma mexicanum (A. mexicanum), n. Axolotl, indigenous to Mexico. Commonly bred for the pet trade in a number of morphs, and commonly used for laboratory research.

Ambystoma tigrinum (A. tigrinum), n. Tiger Salamander, indigenous to the United States.

Ambystomatids, n. A genus of salamander.

Albinism, n. Albinism is the state of being albino, i.e. absence of melanin, or pigmentation in the skin.

Anura, n. The taxonomic order of frogs and toads

Aquascape, n. An aquascape is a planted aquarium that is designed to be aesthetically pleasing.

Axolotl (Axie), n. See Ambystoma mexicanum.

Baby brine shrimp (BBS), n. A small, salt-water shrimp that can be bred and fed to aquatic animals. Those who have kept sea monkeys will recognize these shrimp on sight.

Barred tiger salamander, n. See Ambystoma mavortium.

Bombina orientalis, n. Fire bellied toad. Commonly sold in the pet trade.

Captive bred (CB), adj. An animal that has been bred in captivity.

Care sheet, n. A care sheet is a document that lists basic care and maintenance needs of a species.

Caudata, n. The taxonomic order of newts and salamanders, which may sometimes be referred to as "caudates." This is also the name of an online forum. This is a New World term that replaces the older terminology, Urodela, which is still used in Old World countries.

Chinese Fire Bellied Newt (CBFN), n. See Cynops orientalis.

Coco-fiber, n. A substrate made of pulped coconut husk that is preferred for herps requiring high humidity because of its ability to retain moisture without being as prone to bacterial growth as other substrates.

Crested gecko, n. See Rhacodactylus ciliates.

Cull, v. To remove undesirable genetic stock from the breeding pool, e.g. to euthanize a fish with a spinal deformity while before it reaches reproductive age and passes that genetic trait to further offspring.

Cycle, v. To move a tank through the natural process of the nitrogen cycle. The nitrogen cycle is a measurable biological and chemical process by which, over time, beneficial bacteria build up in an aquatic tank. This colony of beneficial bacteria breaks down ammonia into the less harmful chemical nitrite, which then converts to the far less harmful chemical nitrate.

Cynops cyanurus, n. A species of Chinese fire bellied newt that is uncommon in the pet trade. Easily confused with other fire-bellied newts in the Cynops genus.

Cynops orientalis, n. A species of Chinese fire bellied newt that is common in the pet trade. While captive bred specimens exist, most are wild caught imports. Easily confused with other fire-bellied newts in the Cynops genus.

Cynops pyrrhogaster, n. A species of Japanese fire bellied newt that is common in the et trade. While captive bred specimens exist, most are wild caught imports. Easily confused with other fire-bellied newts in the Cynops genus.

Daphnia, n. Aquatic microorganism used to feed small or larval aquatic fish and amphibians.

Dendrobate, n. The genus to which poison dart frogs belong, many of which are captive bred for the pet trade. In the family Dendrobatidae.

Diopsis, n. Small flies, used as feeder items for small amphibians.

Diurnal, adj. Awake in the day time. Opposite of nocturnal.

Dust, v. To coat a feeder item in prepared vitamin and/or calcium supplements in order to relay vitamins to reptiles and amphibians upon ingestion.

Enigma mutation, n. A specific patterning morph that leopard geckos can be bred to display. Enigma patterned leopard geckos are frequently observed (but not scientifically proven) to have a higher rate of neurological disorder than other leopard geckos.

Eublepharis macularius, n. Leopard gecko, indigenous to the Indian subcontinent. All are captive bred at this point, and they are bred in a variety of morphs.

Fire bellied toad (FBT), n. See Bombina orientalis.

Fire bellied newt (FBN), n. A general term to refer to Cynops cyanurus, C. pyrrhogaster and/or C. orientalis, either to deliberately include all three species, or because the exact species is uncertain or unknown.

Fridge, v. To put an aquatic salamander that prefers cool water temperatures (as low as 40 degrees Fahrenheit) into a refrigerator to help improve health. For example, fridging can help a salamander fight potentially lethal fungal infections that frequently occur at temperatures above 74 degrees Fahrenheit (Twahn n. pag).

Green fluorescent protein (GFP), adj. Green fluorescent protein is used as an adjective to describe a species that has been genetically modified to carry altered genes that use the proteins that make jellyfish glow, thus, the species glows. GFP was initially (and still is) used in laboratories to trace genetic expression and transmission (MacLachlan n. pag.). It has since been re-appropriated by the pet trade to create glowing pet fish, frogs, and salamanders. The first such pet, the glofish, is a genetically modified GFP zebra danio that is the first and only living animal to be patented. This has caused a great deal of controversy among fish and herp hobbyists.

Gut load, v. To feed a food item, such as an insect, a nutritious diet shortly before feeding a reptile or amphibian, in order to relay vitamins to reptiles and amphibians.

Hemitheconyx caudinctus, n. African fat-tailed gecko, indigenous to the Indian subcontinent. Commonly captive bred and sold on the pet trade in a variety of morphs.

Herp, n. Reptile or amphibian, as in herpetology, the study of reptiles and amphibians.

Herpetology, n. The study of reptiles and amphibians. Many people who keep reptiles and/or amphibians refer to their animals as herps.

Inbreed, v. mating related animals in order to obtain desired traits.

Japanese fire bellied newt (JFBN), n. See Cynops pyrrhogaster.

Jungle mutation, n. A specific patterning morph that ball pythons can be bred to display. Jungle patterned ball pythons are frequently observed (but not scientifically proven) to have a higher rate of neurological disorder than other ball pythons.

Leopard gecko, n. See Eublepharis macularius.

Leucistic, adj. A mostly white specimen with less (not no) pigmentation. These do not have the red eyes that are characteristic of albinos.

Morelia, n. A genus of python.

Morph, n. A deliberately bred appearance characteristic, such as a coloration or pattern. Jay believes that this word is differentiated from the word "phase" by its usage to describe characteristics that are linked to maladaptive genetic traits, such as neurological conditions (in Rodrigo post 5). This word is probably an abbreviation of the word morphology, which is the study of physical appearances.

Morelia, n. A genus of python.

Mutation, n. A mutation is a genetic irregularity; when a captive bred animal exhibits a mutation that a breeder finds desirable, such as a unique coloration, the breeder will select the mutated animal to breed.

Natural planted tank (NPT), n. See Walstad method.

Neoteny, n. The state of retaining juvenile features into adulthood. For example, A. mexicanum is a salamander that remains aquatic and retains its gills in adulthood. Neotenous, adj.

Nocturnal, adj. Awake at night, as opposed to diurnal.

Pattern reduction trait, n. Pattern reduction traits are genes that carry a reduction in the animal's naturally occurring coloration pattern. For example, a snake species that, in the wild, has horizontal stripes, might feature mottled patches, blurred bands, or no discernible stripes at all if it carries a pattern reduction gene.

Phase, n. A deliberately bred appearance characteristic, such as a coloration or pattern. Jay believes that this word is differentiated from the word "morph" by its usage to describe characteristics that are not linked to maladaptive genetic traits, such as neurological conditions (in Rodrigo post 5).

Piebald, adj. A piebald pattern is one in which the animal exhibits irregular patches of color.

Red eyed tree frog (RETF), n. See Agalychnis callidryas.

Rhacodactylus ciliates, n. Crested gecko, native to Madagascar. A commonly captive bred gecko in the pet trade that is bred in a number of morphs.

Sp., n. A scientifically accepted abbreviation for "species," frequently used to allude to many species within the same taxonomic Genus. For example, Amnystma sp. Refers to all Ambystomatids in general, used either because all Ambystoma sp. are included or because exact sp. is unknown.

Spider mutation, n. A specific patterning morph that ball pythons can be bred to display. Spider patterned ball pythons are frequently observed (but not scientifically proven) to have a higher rate of neurological disorder than other ball pythons.

Stargazing, v. This refers to neurological problems that have been observed in reptiles with specific pattern variants, such as the jungle or spider patterning of pythons or the enigma variant of leopard geckos, some of which spin in circles or freeze into an epileptic stare when stressed. Stargazer, n.

Terrarium, n. A terrarium is an enclosure with living plants and no animals.

Tiger salamander, n. See Ambystoma tigrinum.

Vinegar eel, n. An almost-microscopic flatworm that naturally occurs in apple cider vinegar that can be bred as a food culture for very small fish or amphibian larvae.

Vivarium, n. A vivarium is an enclosure with living plants that it includes animals

Walstad method, n. A technique of keeping aquatic tanks with aquatic plants using soil and sunlight, replicating the natural environment, in order to ensure adequate carbon for good plant growth. This method began with Diana Walstad, and it is an alternative to fertilizers, CO2 producers, and expensive, high-wattage lights. Also known as a Natural Planted Tank (NPT).

Walter worm, n. An almost-microscopic worm that can be cultured on oatmeal and yeast as food for very small fish or amphibian larvae.

Watts per gallon (WPG), n. A rough measurement of the amount of light that a planted aquarium receives, taken by dividing the total number of watts that a lightbulb provides by the number of gallons that the tank holds. While this measurement is commonly used, and alternative measurement tools do not exist, this measurement is imprecise. It does not factor such things as the depth of a tank, which would affect how much light reaches plants.

Wild caught (WC), adj. An animal that has been taken from the wild for the pet trade or individual use.

APPENDIX 1

Interview Tools and Usage Diary Prompts

Name

Interview #1:

1.   How old are you?

2.   Are you male or female?

3.   What is your profession?

4.   What is the highest level of school you have completed or the highest degree you have received?
- Less than high school degree
- High school degree or equivalent (e.g., GED)
- Some college but no degree
- Associate degree
- Bachelor degree
- Graduate degree

5.   Tell me about when you started keeping amphibians and why.

6.   What species do you have right now?[149]

7.   Would you call yourself a beginner/novice amphibian hobbyist, an intermediate hobbyist, advanced hobbyist, expert hobbyist, a paid professional, or other? Why?

8.   What drew you to *Caudata* or *FrogForum*?[150] Why did you first use the site?

9.   How did you become a moderator on *Caudata* or *FrogForum*?

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[149] I modified the first six questions slightly for each participant in order to rephrase or remove data that I gathered from the user profile, i.e. if occupation was stated, I asked "how do you like being a paralegal" rather than "what is your occupation." This way, I found out if participants' profile information was accurate while learning more about them.
[150] This was tailored to reflect the forum(s) to which individual participants belonged.

10.   What kinds of questions do you answer on the forum? What threads catch your eye?

11.   When do you trust that someone's post has reliable information? Why?

12.   Give me an example of a time when the information that you got on the forum was helpful. Was it a question that was answered? A thread that helped? A linked care sheet? How and why did it help you?

13.   Do you think that you learn new things from reading and participating in forum threads?

14.   What other online mediums/platforms do you write on? (i.e., Blogs, social media, video sharing sites, photo sharing sites, wikis, etc.)

15.   Where else (other than this forum) do you have conversations about amphibians and their care? (i.e. other websites, stores, friends, family, etc.)

16.   Give me a specific example of something that you learned on a forum that you did not already know.

17.   Do you think that you could have learned that thing through another resource, such as another website, a face-to-face conversation, a magazine, a journal, or a book? If not, why not? If so, explain what was different or helpful about the forum.

Comments.
What else would you like to add? Feel free to clarify your answers, or note additional thoughts or feelings or opinions.

Name

Interview #2:
1. Are there any forum members that you feel closer to than others? Why?

2. Please list the other forums that you participate in. Which one is your favorite, and why?

3. Discuss a time when reading someone else's post helped you figure something out for yourself.

4. Discuss a time when writing a post helped you figure something out for yourself.

5. Would you be likely to join a forum that you had to pay to use? Why or why not?

6. Anyone, ranging from novice to expert, can write in a forum. Do you ever worry about the reliability of information on this forum?

7. How do you decide which information to trust?

8. Discuss a time when you applied a practice, technique etc. that you read about in a post or stickie. What was it, why did you try it, and how did the experience work out for you?

9. Is *Caudata* or *FrogForum*? easy to use? How does its ease of use compare to the other forums that you use, or have used in the past?

10. How do you feel about the community on *Caudata* or *Frogforum*?

11. How does the community dynamic help or hinder your information gathering and sharing? Can you think of any specific examples?

12. Do you have friends on the forum?

13. Do you have personal friends who share your interest? (By personal friends, I mean friends who were not met through an amphibian-themed arena like an amphibian organization or friends met through a forum.)

14. Forums are an interactive discussion, whereas care sheets, magazines, etc. are not interactive reading, since readers cannot respond to them. What percent of your time

spent reading about *[frogs/caudates]* would you guess is spent on interactive mediums like forums.

15. How old were you when you got into *[frogs* or *caudates]*[151] and who got you into them?

16. What external variables surround you when you write on the forum? (External variables include things like music, children, the hum of a filter, the table you sit at, etc.)

17. Tell me about a time when you had trouble finding the information that you wanted.

18. What kind of writing do you do in the average week? (Grocery lists, professional reports, school essays, memos, e-mails, etc.)

19. How long do you spend composing a forum post. Do you edit or revise? Can you tell me what that process looks like for you?

20. How does this process differ from the way that you write outside of forums?

21. How do you feel about forum posts being public? What do you do when you write in public that differs from other kinds of writing? What do you do that is the same?

22. If forums membership required payment, would you have paid? Why/not?

23. How do you feel your [*existing* or *lack of*][152] formal training in the sciences affects your ability to understand or write posts on amphibian topics?

24. With what subjects do you feel more advanced with book learning (formal or vocational education or training) than experience?

25. With what subjects do you feel more advanced with experience than book learning?

26. How do you feel about text-speak or slang use on the forum?

27. Think of a time when you added to or removed from a person's reputation points. Why did you make that decision?

28. Why do you use forums? I.e. Seeking information, socialization, self-expression, etc.

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[151] This was tailored to reflect the pets each member kept.
[152] This was tailored to reflect participants' stated degree of certified expertise.

Comments: *What else would you like to add? Feel free to clarify your answers, or note additional thoughts or feelings or opinions.*

Name

Interview #3:

1.   Which of these factors help you know when to trust information? (Check all that apply.)
  ➢   The information matches knowledge I already have.
  ➢   I do research to verify information.
  ➢   I remember who has given reliable information in the past.
  ➢   I trust people that other friends or forum members have recommended.
  ➢   Members' reputation points affect my decision.
  ➢   Other _____.

2.   Give me an example of a debate or controversial issue that you have seen on *Caudata* or *FrogForum*?

3.   Did you participate in the debate?

4.   Did you learn something new from the debate?

5.   Did later action result from the debate? (I.e., You changed your opinion or practice, or someone else mentioned changing theirs.)

6.   How would you describe the disagreements that come up on this forum?

7.   Which of the following do you edit and/or revise in your posts? (Mark all that apply):
  ➢ Content
  ➢ Flow
  ➢ Formality
  ➢ Grammar
  ➢ Punctuation
  ➢ Spelling
  ➢ Style
  ➢ Tone
  ➢ Vocabulary Use
  ➢ Wording

8.   How often do you edit/revise your posts before you finalize them?
  ➢ Always
  ➢ Usually
  ➢ Sometimes
  ➢ Not Often

> ➢ Never
> ➢ Not Applicable

9.   Tell me about a post that you significantly rewrote and why you rewrote it.

10.   Tell me about a time when you stopped yourself from writing a post, and why.

11.   How do you decide whether to read a post?

12.   How does *Caudata* or *FrogForum* differ from other online resources? (Differences could be things like tone, community, content, etc.)

13.   What is one forum post that you are proud of writing, and why are you proud of it? (Feel free to provide a link to the thread.)

14.   Have you ever linked material from *Caudata* or *FrogForum* to another website or person, in order to pass along information? (Check all that apply.)
> ➢ Yes, I have sent links to forum threads.
> ➢ Yes, I have sent links to a stickie
> ➢ Yes, I have sent links to an article on the multi-interest sites, such as *caudataculture* or the US caudate registry
> ➢ Yes, I have sent links to an article on the specialist sites, such as the cryptobranchid interest group (http://www.caudata.org/cig/) or axolotls (http://www.axolotl.org/)
> ➢ No.

15.   How much fairness or un/bias does *Caudata* or *FrogForum* have? How does this compare to other forums or other sources of amphibian information?

16.   What do you like about the design/usability of the forum?

17.   What do you dislike about the design/usability of the forum?

18.   What writing do you do in your weekly routine? (Check all that apply -- This list includes the types of writing that you have mentioned in a previous interview, along with types of writing that other people have given.)
> ➢ Grocery lists or "to do" lists
> ➢ Reports for work
> ➢ Creative writing (professionally or for self)
> ➢ College or scholarly essays/papers

- ➢ Lesson Plans
- ➢ Professional e-mail
- ➢ Personal e-mail
- ➢ Blogs
- ➢ Social media updates/comments
- ➢ Forum writing
- ➢ Other: _____

19.   What similarities, if any, do you notice between your style of writing on forums and other writing in your life? (Please explain.)

20.   What differences, if any, do you notice between your style of writing on forums and other writing in your life? (Please explain.)

21.   Most forums have a username, post count, reputation points, join date and/or status listing, nationality. Which of these is important to you when you read someone's posts, and why?

Comments: *What else would you like to add? Feel free to clarify your answers, or note additional thoughts or feelings or opinions.*

Name:
Directions for Usage Diaries:

A usage diary is a notebook or .doc file in which you comment on and reflect on your forum writing. Let me know if you would like for me to provide a hardcopy notebook diary for you to use, rather than a word file. Your writings will be confidential, and you can express yourself in any style that feels comfortable. Your answers can shape an understanding of how people perceive forum writing. If you have any questions, comments, or concerns, please contact Jennifer Lee at jennifer_lee@my.uri.edu.

*Your usage diary can contain notes, memos, free-writes or any writing style that suits you. It will not be graded or corrected. Instead, the diary will shape an understanding of how people perceive forum writing. I will ask you to use this diary for **up to two weeks**. If this is a busy week, and you would like to begin next week, that is fine; just let me know.*

<div align="center">

Write in Today's Forum use details

</div>

Date: Time you logged on: Time you logged off:
Name of forum:
Why did you come to this forum today:
What did you do today? (e.g. replied to post, agreed with comment, asked question, read stickie, etc.)

<div align="center">

Today's Forum Summary, Reflection, and Discussion

</div>

*The most important part of the usage diary is your opinion. After describing your activities, please **reflect** on your posts. You can write down any thoughts or opinions that you have. In particular, please feel free to discuss:*

>*The benefits or disadvantages of your forum experience for each day*
>*Anything that you have learned, as well as what helped/hindered this learning*
>*The role of other forum users*
>*Threads that stand out, and why they stand out*

Begin Your Forum Summary, Reflection, and Discussion Here (write as much as you need to)➔

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TABLES

Table 1: Table of Species Mixing Claims

Table showing presence and frequency of claims against species mixing that long standing community members raised in opposition to OP's desire to mix.

	"I Need a Definitive Answer!"	"Tiger Salamander with Frog?"	Combined frequency of claim's recurrence
Predation	2	8	10
Environmental needs	2	1	3
Territoriality	0	2	2
Toxicity	0	1	1
Disease contagion	1	0	1
Observed failure	1	5	6
Observed success	2	0	2
General allusion to best care	2	0	2
General allusion to problems	1	0	1
Total claims against species mixing in the thread	11	17	0