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Writing Complexity, One Stability at a Time: Teaching Writing as a Complex System

This article uses systems and complexity theory to illustrate key characteristics of writing as a complex system. This illustration reveals how writing works on multiple levels of scale, and adds to the body of theoretical knowledge that can be taught within the discipline of writing studies. In so doing, it shows how a complex systems writing pedagogy can benefit both researchers and students.

The influence of complex systems theory has grown considerably in the sciences over the past several decades and shows no signs of fading away. Nobel Laureate and systems theorist Ilya Prigogine, along with Isabelle Stengers, go so far as to write that they “believe that we are actually at the beginning of a new scientific era” (7). The impact of this work extends far beyond scientific disciplines, as well. David Blakesley and Thomas Rickert argue that the study of systems and complexity theory “promise[s] to challenge and transform great swaths of our received knowledge concerning rhetoric, culture, social organization, and composition” (822). For rhetoric and composition scholars, then, complexity is an exciting new development,

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with important ramifications to be sorted through, and with continuously unfolding potential to transform the way we study and teach writing in all contexts.

Thinking of writing in terms of complexity theory reveals its radical interconnectivity at multiple levels of scale. Foregrounding this interconnectivity shows us the expansiveness of what is involved in how we write and what we write with and shows us how diverse assemblages of writing circulate and interact in a multitude of cultural, social, technological, disciplinary, and material networks. Foregrounding interconnectivity also allows us to better theorize the way seemingly dissimilar textual realms are in fact thoroughly connected, which can reveal heretofore unnoticed

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relations among elements within a single text, as well as unnoticed relations between various texts in those aforementioned diverse networks.

There are also, however, substantial pitfalls entailed by these new developments in complexity and systems theory. That a system is impressively complex and thoroughly interconnected means that it is also dauntingly complex and unpredictably interconnected. One of the implications of complexity in the world around us is that we can't account for the unexpected, the random, and the unseen contextual forces always lurking in the background. As systems and complexity theorists Stephen J. Guastello and Larry S. Liebovitch explain, in a paradigm where “nonlinear dynamics and complexity” rule, change itself is an opaque phenomenon (1). Complexity theory thus upends stable ground we may use for the creation of knowledge and, especially, for the possibility of predicting further events reliably.

What that means is that the same breadth and depth we discover by theorizing complexity and so dissolving the limits of texts and of writing also make texts and writing potentially irreducible, unpredictable, and, perhaps, unteachable. If writing itself is characterized by complexity, and if complexity makes prediction difficult, then teaching writing—how to devise predictable strategies for affecting an audience, for example—becomes a difficult if not impossible task. As Barbara Couture succinctly sums it up: “If little about writing is predictable, what lessons can teachers give?” (21). Complexity is exciting, but it is also ostensibly daunting for the teacher who is to grasp its tenets and use them to invigorate writing instruction.

With the introduction of complexity into writing studies comes the question: can we actually work with the complexity of writing in a way that helps us as theorists, as practitioners, and as teachers? This article provides one answer to this question and in so doing articulates a version of the complexity of writing that encourages—not hinders—its teaching. While there are significant thorny issues that arise when one thinks of writing in terms of complexity and systems, this article argues that thinking in these terms can actually give us a way to *better understand* writing and can provide important new insights into how writing works, how we (and our students) understand it, and how we might harness systems theory as a way to illuminate for students the complex and often hidden functioning of texts. Embracing the complexity of writing in this way as well answers Douglas Downs and Elizabeth Wardle's call to teach "*about writing*" in such a way that solidifies writing studies as a "discipline with content knowledge to which students should be introduced" (553; see also Downs; Read and Michaud).¹

To develop this idea, this article first theorizes and explains complexity in writing, both in terms of scholarship on systems theory and in terms of the work in our field(s) that has already explored several aspects of this complexity—as has, for example, much scholarship within the movement known as *postprocess*. More than exploring writing as a complex phenomenon, this article explores the premise that writing functions as a *complex system*. This is an important distinction, and mapping out the ramifications involves drawing on complex systems theory itself to highlight several minute yet significant foundational characteristics of such a proposed "writing system." This approach allows a recognition of and emphasis on the expansive universe of writing, but as well it allows us to zoom in very closely on intricate complexities within static texts—something that many approaches to writing complexity do not. Within these circumscribed writing spaces we can find even more universes of relations (often unnoticed), and we can do this without becoming overwhelmed by the complex environments in which texts exist.

Following this articulation of writing as a system, the article turns to the issue of writing pedagogy and illustrates how writing's systemic characteristics give us a way to teach it both as complex *and* in terms of graspable "linear" relations. This work further develops many postprocess theorists' articulations of how one might go about teaching writing—even

while it seems unteachable precisely because of its complexity. However, while focusing on linear relations in writing is specifically eschewed by many postprocess theorists, complexity theory highlights a way to overcome the tension between complexity and simplicity and to effectively teach complexity by tracking it through a series of linear stabilities. This approach does not forestall postprocess attempts to liberate writing from reductive classroom approaches, nor does it blunt writing's "disruptive potential," as many postprocess adherents fear (Dobrin, Rice, and Vastola, "Introduction" 14). On the contrary, this approach provides a viable way to reveal a fuller complexity of writing—a writing that both transcends reductive objectification and stands as an object of study in its own right.

This discussion of pedagogy is further expanded via an example of a specific application of this approach in the writing classroom, in which students are asked to take seriously the notion that writing functions as a system. Such an approach reveals nuanced views of different "levels" of writing, from a single writing genre, down to one particular text, down to individual paragraphs, and to the words in a sentence—or, scaling in the other direction, to levels that extend across several genres, and to material and cultural realms ostensibly beyond language. Thinking in terms of different levels of scale allows students not only to recognize the breadth of writing but, significantly, also allows them to zoom in on texts to reveal the complexities of how writing works both in their own work and in the writing of others.

The Problem of Complexity in Writing Pedagogy

Within a text, there are nearly infinite contextual variations that affect the choices we make when we write, in terms of how we phrase things, how we revise, how we edit, and so on. The complexity of these contextual factors exceeds relatively basic categories such as *audience*, *purpose*, *genre*, or even *context* itself.

While rhetoric and composition scholars have devised several useful and robust ways to work with these and similar terms, creating complex and adaptable pedagogies to help students learn and transfer specific writing skills to a variety of situations, writing itself still often seems to exceed (and escape) our grasp. As Sidney I. Dobrin argues, because writing "endlessly fluctuates" as a system, we cannot "fully account for" it, a situation

exacerbated by many of the more traditional approaches to writing that he argues are “conscious retreat[s] . . . away from complexity” (143, 171–73). Indeed, at times it does feel that the multitude of elements involved in any writing decision exceed our capacity to satisfactorily account for them. As a quick example: when a person writes, he or she must choose relevant support, arguments, and quotations, as well as account for a myriad of stylistic, grammatical, and other choices. Once the writer makes the first of these choices, though, the effects ripple throughout the text, impacting other choices and creating new contexts with new choices that feed back upon the first. In each new decision there are innumerable factors the writer must consider, yet it would seem that even if the writer makes informed and thoughtful decisions, he or she cannot fully account for all of these cascading interconnected effects.

Bonnie Lenore Kyburz makes a similar point in discussing the ramifications of chaos and complexity theory for composition pedagogy. As she writes, one implication of complexity theory is that “the number of influences [in writing] is potentially infinite and therefore indescribable and uncertain” (510). Blakesley and Rickert go so far as to suggest that the “possibility of writing” itself may be hopelessly indeterminate or, as they put it, “an absurdity” (829).

Concerns about the difficulty of grasping the complexity of writing in pedagogy are common in postprocess theories of writing. In general, while postprocess does not completely proscribe writing pedagogy, the postprocess emphasis on complexity highlights concerns about those pedagogies that treat writing as unproblematically reducible to a series of linear and static lessons. If, because of its complexity, writing is more like “hermeneutic guessing” (as Thomas Kent famously refers to it [*Paralogic* 43]), this suggests a significant problem for standard classroom approaches. As Dobrin, J. A. Rice, and Michael Vastola put it, complexity demands a “reconfiguration of writing theory away from subjectivity, away from the idea that autonomous agents produce and circulate writing,” and away from the idea that writing is “bound by the canons, grammars, and rhetorics of pedagogy that have been naturalized as the methods through which writing is learned and performed” (17). On this view, writing is too big, too complex, and too expansive to be confined to traditional lessons, as it does not exist in one context, nor can it even be defined as single subjects (or students)

writing.² Following this line of thinking to one possible conclusion, Dobrin, Rice, and Vastola argue that we need to “rethink writing as a teachable object” and so “move postpedagogy” (17).

These questions about writing and writing pedagogy have sparked several other efforts within postprocess to adapt to the demands of complexity. Lee-Ann M. Kastman Breuch argues that we should challenge “process” conceptions of writing as a “thing” that can be “skillfully practiced and conquered” (127), and instead treat writing as a complex, indeterminate, and interactive endeavor. For some, expanding our vision of what writing is also means expanding where we look for student writing: Raúl Sánchez, for instance, argues that teachers should be attentive to writing *outside* the classroom as well as within it (189).

Complexity, in short, would seem to undermine what many postprocess theorists see as “static” approaches to writing instruction. While there are different specific answers suggested to remedy such seemingly reductive approaches, what is common to these postprocess answers is that they all attempt to expand our conception of writing, which in its infinite complexity seems too big to contain in any single lessons at all.³

Approaching Complexity, One Stability at a Time

On first glance, it would seem that complexity and simplicity are mutually exclusive. However, if we look more closely at complexity and systems theory

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itself, we find approaches to complexity that make what might seem a “reductive” or “static” pedagogy to be in fact one part of a fruitful approach to teaching complexity. Looking to complex systems theory for insights into writing pedagogy also furthers Kyburz’s argument that complexity theory itself “supports the urgency of post-process theories and addresses the ‘problems’ many are today associating with a potentially reductive process pedagogy” (510). This is because complexity theory shows that the reductive nature of our pedagogical approaches is not the problem; rather, considered as a starting point, reductiveness is actually the solution.

Specifically, in the systems theory principle of *self-organization*, we can see a way to comprehend and engage with systems productively—as I phrase it, *one stability at a time*. What this means is that despite systems’

seemingly unpredictable and vertiginous interconnection with a wide range of chaotic elements, they also have a remarkable tendency toward *provisional stability* that is attained via a reduction of complexity. This is what systems theorist Stuart Kauffman calls “order for free” in a system (71–92). N. Katherine Hayles, building from social systems theorist Niklas Luhmann, explains that such order is achieved in a process she calls “making the cut,” which entails a limiting of complexity by establishing boundaries around a specific section of the system (“Making” 137). Within this bounded and frozen section there is an order that organizes the complexity of the system.

Crucially, when we observe systems, *we make this cut*, and so reduce complexity in a way that allows us to perceive a bounded order in a system. System order thus can only be observed by our own making of the cut. A variety of complex systems are observed and comprehended in this way: A living organism itself (a biological system) is unceasingly complex but nevertheless is reduced in our observation and comprehension to a discrete body with defined borders, within which ordered processes occur that sustain that body as “living.” A functioning society (a social system) has a high degree of complexity but still is bounded in our observation and comprehension by sociopolitical, physical, juridical, and other boundaries that, within them, sustain order and stability for (at least a significant portion of) the members of that society. Life and societies are stable—and we see them as such—but this stability hides the way that both are really unstable, as all complex systems are, constantly evolving and spilling over any preconceived borders we may attribute to them. Stability reveals the order in a system, but it does so by hiding its disorder and eliding complexity.

Thus, when we observe and when we comprehend complexity, we make a cut that reduces the scope of our apprehension of complexity. We see the stability that emerges from the complexity as a frozen snapshot of a situation. By making a series of cuts, we can build and expand our understanding of complexity. In this way, we avoid being overwhelmed and instead view the granular levels of a system one stability at a time. As Hayles puts it, in making a cut we “reduc[e] the unfathomable complexity of undifferentiated reality into something [we] can understand” (“Making” 160).

Writing Is a Complex System

It is no exaggeration, nor is it a metaphor, to say that writing can be considered a complex system. This is precisely the promise of systems theory:

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to map out the ways that different complex phenomena cohere as self-sustaining entities within a similarly complex environment. And surely, writing is complex, has interacting elements, and coheres in contexts that also are vastly complex.

Considering writing as a complex system is very much in line with the spirit of systems theory. Having begun as an interdisciplinary endeavor, the field is predicated on the premise that systems principles travel across disciplinary lines, spanning “hard” and “soft” sciences and the humanities as well (Toffler xvii).⁴ Prigogine and Stengers go as far as to suggest “human creativity and innovation” abide by similar principles as “physics or chemistry” (71). As well, according to systems theorist Manuel De Landa, even among what would seem to be very different types of complex systems there are basic ordering principles that affect the way the elements in those systems behave. This organization is similar even among systems that involve seemingly disparate kinds of elements, including systems of genetic materials, geologic formations, and social classes (“Geology”; *Philosophy* 12).

When we theorize writing in this way, we can see a single text, for example, as an instantiation of self-organization in the larger complex system of writing. In other words, writing is self-organized, as are other systems, but we only perceive this order by freezing the writing system in a stable configuration: in this case, by making the cut in our observations and drawing boundaries to define a static text. As such a self-organized moment, a text exists as a stability that is constantly being negotiated—neither messily indeterminate nor in an unpredictable flux, a text is, in fact, perceived as stable in a “cut” that is a contingently frozen snapshot of our apprehension of writing.

That texts are self-organized is not a new observation. In the 1970s Peter Elbow famously described writing as a kind of organic growth wherein, as he puts it,

[t]he words come together into one pile and interact with each other in that mess; then they come apart into small piles according to some emerging pattern. . . . Then together again into a big pile where everything interacts and bounces off everything else till a different pattern emerges. . . . And so forth

and so on till it's "over"—till a pattern or configuration is attained that pleases you or that "it was trying to get to." (24–25)

That writing gets to what "it was trying to get to" essentially captures the idea of order creation via self-organization that is a foundational property of systems. Elbow's suggestion that writing takes on an agency all its own, however, is productively complicated by Hayles's point that any agency of a writing system (or of any system) is enmeshed with the agency of the observer; *we* in part determine what coheres in (and into) a text, and so any stability in writing, just as in any material or rhetorical system, is one that is *negotiated*.⁵

In thinking of writing as a system it is also important to understand how writing organizes on *many different* levels of scale—writing is in fact a multiscale set of stabilities, forming and re-forming. This kind of deep complexity on multiple levels is difficult to get a handle on, and this is another place where a complex systems approach to writing can be useful, since systems theory has explored in considerable depth the way a variety of complex systems function on several levels at once. Think of our bodies, for instance: as mentioned earlier, our body itself can be considered a complex system, as an ordered collection of processes and elements generating a discrete and circumscribed whole: "you" are a system. However, each one of your cells *also* is its *own* complex system, having its own ordered collection of processes and elements that sustain it as a discrete and circumscribed unit. Each "you" system is thus composed of many "cell" systems. This can be extended, too, in other ways—there are systems within your body that encompass multiple cells, such as your brain (itself a complex system). As well, "you" are also a *part* of several *larger* systems, such as the one that constitutes your society. Gilles Deleuze and Félix Guattari describe this multiplicity of systems in terms of a plant "rhizome": "The wisdom of the plants," they write, is that "even when they have roots, there is always an outside where they form a rhizome with something else—with the wind, an animal, human beings . . . etc." (11). In this example, a plant itself is a system/rhizome, but it also exists as *part* of another system that includes, for example, the wind. That same plant is also part of another system that includes the animals in the ecosystem. This can be "cut" many different ways, as there is never just one "complete" rhizome (or one system), but rather an infinite number of them, each existing at a different level of scale, and each connected in different ways.

In writing, there are several levels of scale that can be considered individually or grouped together. As mentioned, a portion of a writing system can be frozen as a “text,” which in itself constitutes a system with interacting components. We can also reduce further, looking at more and more localized sets of elements on smaller levels of scale—paragraphs and even sentences can cohere as self-organized at different levels of scale. Some levels transcend any single location within a text: the manifestation of ethos in writing, for example, or the pattern of word choices throughout a text. Some levels transcend the bounds of texts altogether, such as networks of cultural norms or in the material environment of writing. No matter which level we choose, once we establish the first level in our observation—the first stability—we can look at a specific grouping and find traceable relationships: the way that cultural norms affect an author’s ethos, for example. The levels and combinations that exist in a writing system, as in any complex system, are endless.

When we choose which aspect of a system we look at, we *make a cut*. We know that a plant-roots-animal system or a writing system composed of culture-ethos is itself a partial selection, but nevertheless to apprehend it and to map it we must make that cut, freezing it in our observations and drawing boundaries around *those chosen* parts only. As with any system, every time we examine such a selection, we look at it as a coherent and stabilized whole, even though it is in fact always shifting in response to exigencies in the environment. Such a cut is a *stability* in the midst of complexity, and it is a way for us to closely observe the complexity within that cut. We can do this one stability at a time, each time observing the interconnections and intricacies within that cut, and then moving on to the next cut and observing, and so on, building our understanding and appreciation of the complexity of the system—plant or text.

Properties of Complex Systems: Interconnectivity

The complex organization of a system is sponsored by its *interconnectivity* at multiple levels of scale, as seemingly dissimilar realms in a system are in fact thoroughly connected, and these myriad relations contribute to its emergent order. In terms of writing, interconnectivity means thinking of the ways writing works in, through, and on a diversity of environments, objects, discourses, materials, ideologies, cultures, technologies, genres, and so on. This is what we have come to call the “ecology of composition.” Within this

ecology, even the smallest spaces can contain tremendous complexity in the form of discursive elements that can travel, combine with other rhetorical or material elements, and have significant effects, even beyond what we may be immediately aware of. In this sense, what we write in and out of the classroom circulates throughout various interconnected systems and can at any time lead to something transformative. A letter to an editor, a Facebook post, a student-produced video, or even a small portion of any of these can circulate, collaborate with other elements, and have significant consequences in the text itself or in the wider public rhetorical landscape. Such “malleable” circulating texts, as Rebecca Dingo refers to them (146), come in a variety of shapes and sizes, and because of their wide circulation, texts both large and small can have transformative impacts on the world.⁶

Properties of Complex Systems: Compensatory Reorganization

Although systems exhibit order within our “cuts,” these organized frozen snapshots elide the way a system is always on the move. Because it is so interconnected, every time there is any change either in the system itself or in the larger contextual environment, every element in the system must adapt and re-form. Biological systems theorists Humberto R. Maturana and Francisco J. Varela characterize this reorganization as a system’s “compensation of perturbations” (79), but more generally, the process could be described as *compensatory reorganization*.

That writing functions on several levels of scale at once means that there is a dizzying amount of complexity in these compensatory shifts. To take a basic example: while writing is organized on the smaller level of individual word choice (as when tone or grammar is consistent), this smaller level is directly affected by changes on a larger level (such as when the genre changes). This is apparent when we consider the way a writer in a scientific genre decides to use words like “subject” or “participant,” instead of “24-year-old mother of three”—here we see genre exerting considerable influence on the level of the word choice.

Genre, though, is not the only level that has an influence on word choice: technology, for example, constrains this choice as well, as when word choice is determined by the 140-character limit of a Twitter message, or by the physical constraints of writing on a tiny smartphone. This effect is not limited to these levels, nor is it only top-down. Each level constrains

and enables all of the others, in differing ways: word choices push on and alter genre constraints, reshaping what is possible in a genre; genre itself constrains and enables (and is constrained and enabled by) technology; culture affects ideology (and vice versa); topic interrelates with audience, and so on. This spiraling out of complexity begins to get at the breadth and intricacy of writing as an entire system. What is important here, though, is the recognition that with any change on any one of the levels, all of the other levels are subject to change (even if they don't *always* change). In order to view such changes, we need to make multiple cuts in our observation of the system.

Making the Cut, Pedagogically

While there has been much written—and justifiably so—about the benefits of systems' complexity, systems theory itself stipulates that by actually *limiting* this complexity, temporarily, we create stabilities that enable us to deal with the complexity of the system. Emphasizing stability allows us to understand systems as *epistemic*, as stable frameworks that are the basis of our understanding and interacting with a complex world.

In other words, this approach sees writing as infinitely multiple, but in starting with a stable cut it gives us—and our students—a way “in” to that multiplicity. This is akin to what Cary Wolfe calls “openness from closure” (xxi): we first draw boundaries around one aspect of complexity, and then,

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by adding more bounded dimensions one at a time, we are able to see more of the exponential possible compensatory effects circulating in a writing system.

Even if, as postprocess theorists remind us, these effects are not completely predictable, because the effects exist as part of a system, they obey similar principles of correspondence. Systems theorist Gregory Bateson calls this idea *stochasticity*: while changes in a system will manifest differently because of unpredictable contextual factors, systems do organize in similar ways—there is randomness, he writes, but “certain outcomes of the random are allowed to endure” (214). What this means is that we can never know completely how a system will behave, but we

can find basic homologous relations among different levels. Within contingently frozen contexts (stabilities), the “guessing” that Kent argues is such a central feature of writing becomes not so much random guessing as *educated* guessing.

A complex systems writing pedagogy (as both a complex writing-pedagogy and a complex-writing pedagogy) is indeed capacious—and disruptive—since the number of cuts we make and dimensions we look to is not predetermined. Such an infinity of choices means that correspondences will be found between the most unpredictable of elements, and by tracking these over several stabilities, students can learn to better understand correspondences and homologies in writing systems. As Kyburz writes: “Self-organization makes potentially equivalent variables of all variables; thus, students, teachers, contexts, ideologies, and much more all carry equal potential to contribute to the creation of meaningful texts, meaningful theories, pedagogies, and changes to the orientation of the system. That’s progressive. That’s promising” (510).

Putting This Approach into Practice: Exploring Writing Complexity in the Classroom

The following example of this complex systems approach to writing illustrates its value, as well as how to actually discuss the concept of complexity in the writing classroom (see also the appendix to this article).⁷ To explicate these principles in such a class, one can use any example of writing; here I examine the first chapter of Sharon Crowley and Debra Hawhee’s *Ancient Rhetoric for Contemporary Students*, a textbook used often in introductory rhetoric and composition classrooms.

Looking at this text in terms of its systemic qualities reveals interesting compensatory relationships among the rhetorical elements, and also illustrates some of the specific relations between different levels of scale in and outside of the text. Such an approach highlights that all writing “works” (produces rhetorical effects) on both larger and smaller scales, although we cannot look at all of these levels of scale at once. This is important to students both in apprehending the writing of others, as they can track compensatory effects by comparing two frozen stabilities in others’ writing, as well as in producing their own texts, as they can now view writing and revising as activities performed on multiple levels. In asking students to move back and forth between levels of scale of the text, the approach

moves via *zooming-in* and *zooming-out* to different stabilities.⁸ There is no end to the number of times one can zoom in or out; the point is to explore and inhabit in a substantive way one level of scale at a time. To use Kent's terms, this approach does theorize static *codifiable* or *generalizable* aspects of writing (Introduction 1), but what is codifiable is the existence and the basic nature of the relations among contingent stabilities, and not the rhetorical elements that constitute those stabilities. The specific composition of the stability with which a student begins her investigation of writing's complexity may well differ each time.

In this example, in looking at Crowley and Hawhee's first chapter we can begin with an overarching perspective—a wide-angle zoom—on the broader points the authors are making. For example, early on in the chapter the authors include this sentence: "We do believe that rhetoric is among the best ways available to us for rectifying power inequities among citizens" (6). A bit later, they write: "Ancient rhetoricians were aware that language is a powerful force for moving people to action" (23). Taken together, these statements depict two of the authors' guiding principles, on two different levels of scale: on an extremely broad level, the authors argue here that language (and rhetoric) can move people to action. A bit more specifically, they assert that rhetoric can rectify power inequities.

These two statements constitute overarching points made in the chapter—something that a wide-angle perspective can highlight. Thinking in terms of complexity, however, we can look to ways these larger points are reflected on other levels of scale as well; in other words, we can see these points in relation with elements on other levels. For example, zooming in even further on the writing, we find a definition of a specific rhetorical concept, the commonplace: "The distinguishing characteristic of a commonplace," Crowley and Hawhee write, "is that it is commonly believed by members of a community. . . . Some commonplaces are so thoroughly embedded in a community's assumptions about how the world works that they are seldom examined rhetorically" (20–21). In and of itself this statement tells a reader that commonplaces are often invisible, a point that is useful to understand on its own. As we will see in a moment, this point also complements the previous overarching statement about power inequities, and the relation between the two affects rhetorical elements in the text on much smaller levels of scale.

Looking at a slightly more zoomed-in level we find this statement, which illustrates Crowley and Hawhee's belief about a *particular* set of commonplaces about power:

We believe that in contemporary American culture people who enjoy high socioeconomic status have more power than those who have fewer resources and less access to others in power. We also hold that men have more power than women and that white people have more power than people of color (and yes, we are aware that there are exceptions to all of these generalizations). (6)

These linked commonplaces about power inequity stand on their own but also combine with the definition of a commonplace highlighted above to imply that power relations—as commonplaces—are invisible, or in Crowley and Hawhee's words, are “seldom examined rhetorically.” Next, *combining* this point with the authors' broad statement that rhetoric is able to “rectify power inequities,” the point takes on a new significance: that is, in the relation between the overarching point and the zoomed-in point, the premise emerges that rhetoric is a force that can interrupt the invisibility of these particular power dynamics.

Once we have established this premise we can make a new cut, zooming in much further on the text and examining how seemingly tiny language choices in this case exist in relation with the broader points. For example, Crowley and Hawhee's choice of gender pronouns *could* be considered a minor stylistic choice. Looking through the lens of complexity and the compensatory organization that characterizes it, however, shows how such a rhetorical detail in an ostensibly random passage can reveal the homologous relations between the levels of the text. When using this example in class, students might be asked to look *only* at the pronoun usage in this (seemingly random) passage:

Our chances of misunderstanding spoken language are also decreased by the fact that we can see and hear the person who is speaking and we can interact with her, as well. Thus we can support our interpretation of the meanings of her words with our interpretations of her facial and bodily gestures and the loudness and pitch of her voice. (26)

This passage is like many others in the chapter and in the book, and at first glance we might not be able to read its association with the passages previously quoted. But if we consider the relation between the word choice

in the passage and those broader points about language, rhetoric, ideologies, commonplaces, power, and gender, in particular, we can better see the connections between levels and consider that *the authors' use of gender pronouns* draws attention to a dominant, uncontested cultural commonplace that reflects a particular power inequity.

By making and comparing different cuts—by zooming in and out to different levels—first examining them one at a time and then looking at the way they relate, we reveal how the writing works independently at each level and works in relation to form a complex text.

In considering the relation between these multiple levels, we can see this use of pronouns as a specific rhetorical strategy to call into question the dominance of that commonplace.

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Hawhee's specific points about language moving people to action, about commonplaces being invisible, and about the capacity of language to rectify power inequities are each made at one level but make distinct impacts on other levels, a process that results in homologous persuasive structures that echo on multiple levels of scale throughout the text.

In this case, the even more overarching level of the English grammar system that requires a gendered choice of pronoun necessarily shapes word choices in the writing (on a more zoomed-in level of scale). Looking at the relations between multiple levels allows us to see these choices in Crowley and Hawhee's text working in relation with the commonplaces deployed in that same text (on yet another level of scale) to manifest a particular rhetorical effect. De Landa refers to such downward shaping relations—here, the grammar system shaping the pronoun choices—as the work of a “sorting device” exerting “selection pressure” to help organize the system (*Thousand* 60–61, 172). The pressure exerted by this mechanism causes rhetorical elements to *sediment* (to use De Landa's terminology again) in a coherent order that, in relation with elements on another level (the commonplaces), makes a contribution to the text's meaning. In terms of systems theory principles, the grammar rule, in relation with the pronoun choices, works together with the commonplace previously mentioned to create what would be called an emergent order in the text.

To be clear, this is not to say that pronouns will always reflect the commonplaces of the larger text—alternation of gendered pronouns is a common practice in certain discourses and doesn't always explicitly relate to other aspects of the writing in the way that it does in Crowley and Hawhee's text. Nor will there always be a clear predictability of rhetorical effects flowing in any one direction in the writing. But, this is to say that always, in all writing in genres both quotidian and unusual, *there will be relations between levels*. These relations are the basis for the order we perceive in a complex writing system.

A complex writing system, in fact, has homologous relations that extend in all directions, with effects that travel downward and upward to myriad levels of scale—including to those levels that exceed the text. For instance, the gendered pronoun selection in the previous example is also in relation with cultural commonplaces about gender roles that are the result of broader material and historical conditions: Crowley and Hawhee's choice to use *she* or *he* as a default pronoun, in this sense, is both "sorted" by and helps "sort" a diversity of cultural and material levels that exceed their text.

The point of this approach is not to get students to look for predictable effects or the same pattern of influence every time. Rather, this approach keeps some elements stable in order to see how other elements change. Finding these compensatory relations enables students to grasp how and why writing can work differently in different contexts. This approach also provides students with a method for rereading their own texts, as it allows them to think more specifically about the connections between each level of their own writing. Every choice involved in writing both within and outside of the text—from the pronouns selected, to the commonplaces deployed, to the technology used—can be examined and mapped one level at a time. This mapping builds a comprehensive understanding of how each writing choice can resonate on other levels of scale.

Elaborating this idea, a student in a previous class in which we examined the complexity of writing in this way wrote an essay *on* this approach.⁹ As that student, Ashley Dolce, wrote:

Because there are no easy answers when it comes to writing, some people try to create formulas to make sense of the puzzling situation essays (and other genres) corner us in. Struggling writers, like me, search to create a set of criteria that make up a good essay. These writing formulas typically consist of a specific

type of structure, diction (or word choice), and manner of presenting evidence in a paper. . . . Because of this variation that occurs within and between genres, rather than creating formulas for writing, a better approach is to have a set of guidelines for how to approach the particular writing situation. Essentially, I think of it as a formula for creating a formula. (57–60)

Dolce’s finding “guidelines” that constitute a “formula for a formula” effectively articulates an approach *that can adapt depending on the situation*. As she emphasizes, this approach, and those adaptations, won’t be completely predictable. But by becoming familiar with the ways various writing stabilities change in compensatory relation with changing contexts, students *will* be able to know what kinds of changes to look for and how to look for them. To go back to Bateson’s terminology, students will be able to observe similar principles of system organization, or *stochastic* homologies, and so better understand the complex contours of the future dynamic writing situations they are faced with.

Using this approach, students can take any one element—something like ethos, for example—and first examine how it works in a frozen context

By using this approach to track writing through a series of limited stabilities, students can better perceive how specific elements on one level of scale shift compensatorily to changes on other levels—that is, they can better track how writing changes, one stability at a time.

—a diary entry, for instance. Then, they would track how ethos functions when one aspect of the context changes. They might choose social class as the shifting contextual dynamic to examine: in doing this they would compare the ethos constructed in diary entries across two social classes. Looking at these frozen and circumscribed contexts would provide students the stable ground from which to better understand the relation between these elements. Building slowly in this way would allow them to trace

other cultural, material, or textual and rhetorical changes, but to do so one aspect at a time. By using this approach to track writing through a series of limited stabilities, students can better perceive how specific elements on one level of scale shift compensatorily to changes on other levels—that is, they can better track how writing changes, one stability at a time.

Writing Studies and Complexity

Dobrin, Rice, and Vastola argue that attempts to introduce stability to writing instruction—even attempts to contain it within a classroom—are in

effect attempts to “placate postprocess and inculcate it into the disciplinary narrative,” and so to render its “disruptive potential impotent” and its “theoretical difference quiescent” (14). Despite an initial focus on stability, disruptive potential is precisely what an approach grounded in complex systems theory has. There are significant gains to be made by establishing this methodology to confront writing in its very complexity. Such an approach does not inculcate or assimilate writing into a specific disciplinary narrative from which it cannot escape, but rather establishes a theoretical *and* practical ground from which to proceed. In this formulation, writing complexity is envisioned as content to be taught. Teaching students to better understand such content would complement attempts to establish “writing about writing” curriculums, which as Read and Michaud explain, endeavor to “teach generalized rhetorical strategies for meeting new and complex writing situations” (454).

Conceiving writing complexity as teachable content also provides an important answer to a common critique of writing teachers teaching students to write in different disciplines. The reasoning of this critique usually holds that writing in other disciplines can be taught more effectively by faculty in those disciplines, rather than by members of English, rhetoric, or writing departments. Indeed, it is important to recognize the expertise of scholars and teachers in those other disciplines. But as the approach delineated in this article shows, this critique undersells the widely applicable theoretical knowledge that writing teachers in particular can provide. If we are looking for a *disciplinary* stability from which we can begin to understand, and thus teach, the complexity of writing, something akin to “writing studies” would seem well positioned as such a stability.

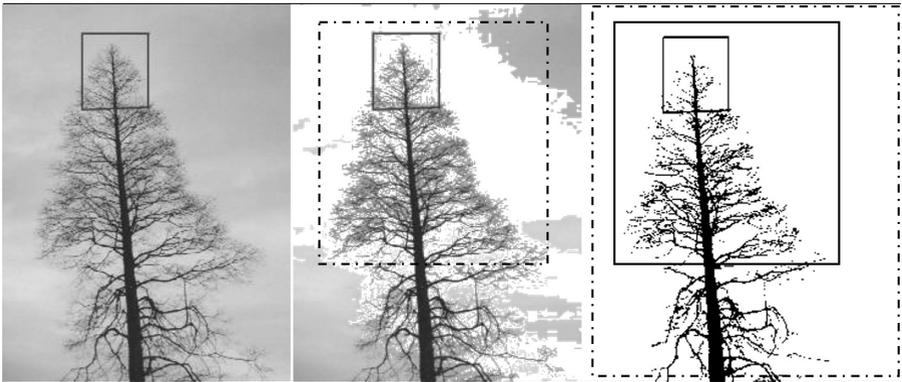
Even taught within its own discipline, a complex systems approach to writing nevertheless entails that we view writing as always connected to other disciplines *already*, since writing’s complexity means that it is never an endeavor detached from other disciplinary ecologies, nor does it draw from a body of knowledge isolated from the rest of the world. Thus, a complex systems writing pedagogy would develop skills *taught* in writing studies that would be *applicable* in a wide variety of seemingly disparate other disciplines.

Tracking the ways stable elements in writing evolve when they travel to new contexts allows us to better understand the ways writing works, since we can adapt writing to new contexts more effectively if we know

how to more robustly track stabilities and compensatory changes from one context to another. This knowledge also allows us to expand our view of how nontraditional writing elements function differently in traditional writing contexts, which opens up new possibilities for re-visioning how eclectic material and discursive elements can be repurposed and fit together to create new forms of writing; this is complex systems writing as a study of the remix.

In all of this, a complex systems writing pedagogy emphasizes the disruption and randomness that are crucial aspects of complexity, but by using the systems principles articulated here it confronts this complexity in manageable—yet still unpredictable—ways. Such an approach may begin with the mundane, with the static, and with the linear, but considering where it can go from there, it ends up being far from quiescent.

Appendix: The Complexity in/of Writing (In-Class Handout)



Point 1: Every text “works” (produces rhetorical effects) on both larger and smaller scales

But you can't look at all of these scales at once. This is why we must focus *one-at-a-time* at each perspective. Look at a text from a distance, then look up close; zoom out, then zoom in.

Take this example from chapter 1 of Crowley and Hawhee's *Ancient Rhetoric for Contemporary Students*:

- Places where the authors reveal (some of) their overarching points:
 - “We do believe that rhetoric is among the best ways available to us for rectifying power inequities among citizens” (6).
 - “Ancient rhetoricians were aware that language is a powerful force for moving people to action” (23).
 - “The distinguishing characteristic of a commonplace is that it is commonly believed by members of a community. . . . Some commonplaces are so thoroughly embedded in a community’s assumptions about how the world works that they are seldom examined rhetorically” (20–21).
 - “We believe that in contemporary American culture people who enjoy high socioeconomic status have more power than those who have fewer resources and less access to others in power. We also hold that men have more power than women and that white people have more power than people of color (and yes, we are aware that there are exceptions to all of these generalizations)” (6).

Using these overarching points, we can zoom in on the text, and at the way seemingly tiny language choices reflect these major overarching points. Crowley and Hawhee’s alternation of the gender of pronouns they use, for example, *could* be considered a minor stylistic choice. For example, look (only) at the pronoun usage in this passage:

- “Our chances of misunderstanding spoken language are also decreased by the fact that we can see and hear the person who is speaking and we can interact with her, as well. Thus we can support our interpretation of the meanings of her words with our interpretations of her facial and bodily gestures and the loudness and pitch of her voice” (26).

While the main point of the passage may seem to be irrelevant to the overarching points mentioned above, by considering those broader points about language, rhetoric, ideologies, commonplaces, power, and gender, we can better see the connections between levels and consider *the authors’ use of gender pronouns* as an intentional use of language to draw attention to a dominant, uncontested commonplace, and perhaps to call its dominance into question.

Point 2: Writing (and your writing) happens at all levels of scale

But what does it mean to “write at all levels of scale”? Tracking how the ideas in a text are interconnected can be overwhelming, and one can’t write at all levels at once. You *can*, though, *work your way out* from basic ideas to more elaborate developments of those ideas, and also work your way out to the connections between your ideas.

What is important is the zooming in and out—the moving from the overarching

I.	Introduction	
II.	Main Point	
	a.	_____
	b.	_____
	i.	_____
	ii.	_____
	1.	_____
	2.	_____
	iii.	_____
	1.	_____
	2.	_____
II.	Main Point	
	c.	_____
	i.	_____
	ii.	_____
	1.	_____
	2.	_____
	iii.	_____
	1.	_____
	2.	_____
III.		
	a.	_____
	b.	_____
	i.	_____
	ii.	_____
	1.	_____
	2.	_____
	iii.	_____
	1.	_____
	2.	_____
II.	Main Point	
	c.	_____
	i.	_____
	ii.	_____
	1.	_____
	2.	_____
	iii.	_____
	1.	_____
	2.	_____
II.	Main Point	
I.	Conclusion	

point(s) to the specific detail, to the elaboration of that detail, and then back again to those larger points.

So: Read and revise your work from a broad perspective: What do the overarching ideas convey to the audience on a holistic level? Does the structure and organization of ideas make sense?

And: Read and revise the work from a narrower perspective: How might some of the individual words you choose be interpreted by your audience? What is the cumulative effect of your smaller rhetorical choices, such as pronoun selection, verb tense, etc.?

Even simple sentences can give rise to vastly complex ideas—look at tiny word choices when you critique the work of others, just as you should be looking at these choices in your own writing. As an example of such a critique, take this ad for one particular ebook accessory:

- “Now that you **own** the Kindle book, you can add the professional narration for \$12.99 to switch between reading and listening without losing your place . . .” [emphasis added]

That sentence led to this person’s critique of the ad:

- “There’s a whole bunch of things you’re allowed to do with books that you own: sell them, give them away, lend them out—stuff you can’t do

with your ebooks, by and large. Why not? Because ebook sellers characterize the transaction that you undertake when you plunk down your money as a ‘**license**’ and not as a sale. . . . But everyone knows that’s a [scam]. Buying books is what we do. **Owning books is what we do**” [(Doctorow; emphasis added)]

In other words, thinking of the word choice here of “own” leads to a vast array of critical points: Do we “own” ebooks? What does it mean to own a book? What does ownership consist of? But also, we can take this same approach to the *critic’s* prose: what does it mean, for instance, to say “Owning books is what we do”?

You can always expand from basic points, practically to infinity. And this is how to build complexity in writing: *start simply, and build out from there*. Every choice you make should be examined, and the alternatives explored. Then, zoom out to the larger issues: every substantive point should be considered as potentially connected to every other point—and *if the connections can be made, make them!*

This is complexity in/of writing.

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Notes

1. For more on the relationship between the rise of complexity theory and the disciplinary change from “composition” to “writing studies,” as well as an exploration of the pedagogical implications of this change, see Yood.
2. There is a great deal of scholarship that explores extensively this thorny interrelation of writing, pedagogy, and student agency. For example, see Cooper; Geisler; Kershbaum; Lundberg and Gunn; Miller; and Sharp-Hoskins.
3. There are a wide variety of writing pedagogies that endeavor to account for or incorporate the postprocess emphasis on complexity and expansiveness. Paul Prior and Jody Shipka’s articulation of Cultural-Historical Activity Theory (CHAT), for example, focuses on “the dispersed, fluid chains of places, times, people, and artifacts that come to be tied together in trajectories of literate action.” Matthew Heard, as well, asserts we should explicitly teach the way writing contexts evolve “moment-by-moment” (285), and Byron Hawk points out that we should consider in our writing pedagogies the “embodied enactions” of texts and “innumerable objects at various levels of scale.” (77). On an even broader scale, John Trimbur argues that the entire “‘social turn’ of the 1980s” entailed an expansion of writing pedagogy beyond textual considerations (109).
4. For more on the interdisciplinary spirit of early systems theory, illustrated in particular at the foundational Macy Conferences on Cybernetics of the late 1940s and early 1950s, see Hayles (*How*).
5. For more on rhetorical agency in systems rhetoric, see Jung. For more on “rhetoric systems,” and on our power (or lack thereof) to create or alter stabilities within them, see Mays.
6. See, for example, Nathaniel A. Rivers and Ryan P. Weber’s call to attend to the way change can be “advocated . . . through multiple mundane and monumental texts” (187); Nancy Welch’s call to pay attention to writing both “from above” and “from below” (480); Angela M. Haas’s emphasis on the importance of “nonhierarchical” content from a wide range of cultural sources (87–90); and Jenny Rice’s “publics approach,” which “demands that we pay attention to the nonofficial spaces . . . [such as] letters to newspapers, blogs, informal

conversations that happen in public spaces, talk radio calls, [and] online message boards” (14–15; 19).

7. This appendix is a handout I use in the classroom, in which I lay out the basic components of the complex systems approach to writing pedagogy. The handout highlights the example I explain in this article, along with a different example taken from another genre entirely: the popular culture website *BoingBoing*.

8. The notion of the “zoom” is an important conceptual tool in several genres of analysis. Walter Benjamin writes that in film, zooming in lets us “expan[d]” a “space” to focus on the “hidden details of familiar objects” (236). Jacqueline Jones Royster and Gesa E. Kirsch refer to a similar notion (which they attribute to Clifford Geertz) of “tacking in and tacking out,” which, they write, allows them to “focus closely” on what exists in the moment and to highlight “broa[d] strokes and deep impressions” of a phenomenon or discourse (72). In the context of rhetoric and writing pedagogy, Daniel Anderson asks students to periodically zoom in to “explore items and details” in a rhetorical situation and to zoom out to help them “understand contexts and relationships” (5–7).

9. The essay was originally for class but later ended up in the departmentally published journal on writing. The quotation here is taken from the published version

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