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Writing in Ecological Microcosms: A Pedagogical Field Map for Re-thinking Process

Introduction: Why Ecological Theory?

Although the current age of composition studies has come to be called "post-process," in a phrase that marks the theoretical turn our scholarship has taken toward issues of power and society, most composition instruction is still heavily indebted to the expressivist and cognitivist leaps taken in the 1970s and 80s: specifically, as has become a commonplace in post-process scholarship, process pedagogy still reigns in the vast majority of college writing classrooms. But process pedagogy, if persistent, is far from perfect. Students' revision behaviors, as all classroom teachers know, often fail to deliver the high-quality writing or the substantive, "global," revisions we want and/or expect in college courses; as Flower and Hayes, et al. note, when students do revise globally, the draft may get worse (1986; see also, Faigley and Witte, 1981; Lindemann, 1987).

The metaphor of ecology that this article proposes is not a quick fix to the many practical shortcomings of process—indeed, as with most post-process thinkers, I maintain many practical elements of process pedagogy even as I suggest ways to rethink, critique, and improve it. But particularly in a hypertextual age, the metaphor of ecology may provide us a way to concretely add dimensionality to a process often (mis-)understood as linear. Further, the metaphor incorporates some of the suggestions of post-process theory to the extent as they can help us critique the power positions we necessarily represent whether we do so with or without disclosure and interrogation. An ecological metaphor—not mine originally, but far from exhausted in composition studies—can weave familiar process mechanisms with elements of social constructivism and a "post-process" critique of the power structures that determine "quality" in academic writing, particularly, as I present it here, tailored to students for whom those power structures are most foreign and impenetrable, and from whom the trust of one's own learning and communicating habits (as well as one's peers) may be most fleeting. I believe that a holistic, ecological theory, if practically applied in classroom pedagogy, can render writing more accessible—indeed, more respectful—to students at open

access institutions and can profitably illuminate the often mystified world of academic and professional discourse.

Obviously, the above description of open-access students as those most unfamiliar with the powers that govern academic discourse is overgeneralized. But it is perhaps more fair than texts like Richardson, Fisk, and Okun's *Literacy in the Open-Access College*, which, in keeping with the experiences and opinions of many classroom teachers, depicts open-access students as immature, uncurious and grade-oriented, and, particularly in reading and writing, poorly prepared for college-level work (38–40). While I have experienced my own frustrations with poorly prepared students, my experience at institutions with open or low entrance requirements suggests that this ill-preparation is often particularly in terms of work habits, study skills, and general faith in the worth of their education. Many open-access students, furthermore, are much more involved with work and family obligations outside of school than are students in more traditional settings. Open-access institutions serve a wide range of students, but we may describe those less frequently found in traditional academic environments in three ways: a) students with poor high school grades or standardized test scores, aware of their measured shortcomings and fearful of trusting themselves or their peers to generate knowledge, language, or critique, b) first generation college students who may have weak, nonexistent, or simply unskilled support networks outside the university, and c) returning students who may feel that they have forgotten the "code" of academic-speak, if they ever knew it well in the first place. Understanding our students where they are (or where they have been) shows us that many of the assumptions of social-constructivist, expressivist, and cognitivist pedagogy that undergird the process model—the value of peer review, the desire and ability to revise to an evaluation rubric—fit even more uneasily at the open-access school than at more exclusive, traditional institutions, in part because of the very ecological issues of their lives that this pedagogy attempts to address.

Problems with Process

The problems with process may begin with a flawed student definition unfortunately enforced by even well-intentioned process-oriented professors. Theorists and teachers generally agree that "revision," at least in broad terms, refers to students' abilities to re-think, re-write, and improve their papers on a variety of "global" levels of content and structure, regardless of, or at least postponing, editing and proofreading—revision, thus, is imaginative, generative work, at least as much as is prewriting ("invention" or "brainstorming"). As Nancy Sommers and others have demonstrated, however, when we determine that revision has failed, in many cases it is because students have focused primarily or even exclusively on editing skills and the surface changes they dictate (386–87). Flower and Hayes, et al. have

identified a tendency of many students to see revision as a set of "rule governed actions for proofreading and correcting," rather than something more akin to the processes of invention and drafting, which inhibits both the substance of students' revisions and, ultimately, the quality of their writing (16). Richardson et al. observe that open-access students seem even more sensitive to rule-following than traditional students, rendering the intellectual energies of global revision more strange, more difficult, or simply less valued in the open access classroom, perhaps regardless of our preaching to the contrary.

At the same time, most experienced writers offer accounts of their writing/revision habits that differ entirely from this notion of rule governance and generally lack attention to external hierarchy, describing writing as organic, creative, and even spontaneous (see, for example, Sommers 1980; Faigley and Witte 1981; Murray 1978). Despite being an unquestionably disciplined act, writing cannot always be produced methodically and systematically, even according to a writing "process" theorized as generative and recursive but usually taught in temporal sequence. Arguably belying the "recursive" caveat that has become *pro forma* in descriptions of the writing process, textbooks still generally outline the writing process in a linear fashion: brainstorming, outlining, drafting, revising, (repeat as necessary), editing.[1] Each of these stages is clearly defined, and with the notable exception of revision, fairly easily explained, modeled, assigned, and evaluated with concrete techniques like "listing," "mapping," *et cetera*.[2] While professional writers understand the entire process as creative—spending late revisions, for instance, working out questions that their first several drafts raised—students do not typically create their own processes organically (Sommers 380). Coming at writing as something unnatural, mechanical, then being taught that imagination and thought inform the brainstorming stage—and taught, overtly or covertly, that the other stages are concerned with production alone, or that production is not imaginative—students either elide the space between "drafting" and "editing" or model their attempts to "revise" after one or the other, usually the latter (see, for example, Sommers 1980; Perl 1979;

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1. John Langan's *College Writing Skills,* for instance, breaks "Part One: Essay Writing" into four ordinal "steps": beginning with a thesis; supporting the thesis; organizing evidence; and revising and editing sentences. Though Langan does insist that "revising is as much a stage in the writing process as prewriting, outlining, and doing the first draft," and though the last section of Part One identifies the "Four Bases for Revising Essays," students who have read through the "four steps" of essay production learn in this section that the bases "can" be used to revise an essay, not subtly reinforcing their notion that revision is an option only to be exercised after the end product—their desired goal—has failed (34, 139).

2. Textbook explanations of prewriting reveal numerous practical techniques that teachers can easily present, assign, and (arguably) evaluate. Langan, for instance, offers samples and activities to promote freewriting, questioning, listing, diagramming, and preparing a scratch outline; Minkoff & Melamed give student examples of brainstorming, freewriting, "issue trees," and peer critiquing.

Zellermeyer and Cohen 1996). With this set-up as foundation, teachers' attempts to define the last "stage" of the process, "revision," in such a way that it produces global changes, do not resonate meaningfully with students. To us, revision assumes imaginative work continuing throughout the entire process, but our students' practicing the steps of the process often means they have stopped imaginatively and generatively thinking as early, even, as the brainstorming stage. Revision fails, simply, because they can't re-think something they haven't been actively and continuously thinking about in the first place.

If the students' definitions of revision are simply wrong, why do so many textbooks fail to persuade them to change, or expand, their definitions? Professional writers often see their texts as taking on lives of their own, their revision characterized not merely by recursiveness but by the vitality of a text itself, growing—or demanding to grow—into its best self. This organic model of writing necessitates a view of a larger, vital world from which, and into which, the text is born. In the hierarchical system of the academy, however, student writers may perceive sets of rules and measures of quality as inherent to the hierarchy, learnable only with respect to the hierarchy, and susceptible to the mysterious whims of the hierarchy. With this attitude toward the fundamental features of the writing process, students persist in writing to please teachers and get grades (or failing to, or refusing to), rather than opening themselves up to the transformative potential of education (and, arguably, revision itself), that is, becoming capable writers and truly "educated" persons by becoming steeped in the larger and richer world they inhabit. Education and writing alike, in this best sense, integrate the individual into the world and its systems rather than isolate the individual from those persistently mysterious, invisible systems, providing "education" as an artificial (and separate) monolith with arbitrary rules and measurements.

In composition, the push to process pedagogy—amidst the social constructivist structures of peer review—emphasizes that writing to be shared or evaluated is something external, rather than something intrinsic, and this is indeed a responsible turn. I do not propose that we return to an expressivist pedagogy that links writing back to the self to the exclusion of its social function. But I think it has become too easy for students to see writing as a practice separable from the writer and dictated only by the institution. The resultant isolation is perhaps especially pronounced for the open access student. It is little wonder that students who have been long exposed to the social codes and hierarchies that determine the quality of writing—students who read, students with strong high school preparation—do well in freshman composition classes. It is even less wonder that those who have come late to college, those who come without a clear sense of collegiate success, or those who enroll without strong academic or professional backgrounds in written communication—students who make up a large part of the clientele of an open access college—struggle in those same classes.

My application of an ecological theory of composition, inspired by the work of Marilyn Cooper and Margaret Syverson, attempts to extend our notions of writing to include a network of potentially contributing forces and to demonstrate how this ecological framework may be used to rethink the process model and this alienating relation students may have to structures of instruction and of quality. Instead of teaching them steps to follow, easily misinterpreted and mispracticed as a strict linearity, I strive to illustrate the ways in which their lives already intersect with their work. Ecological theory makes possible a connection between our familiar "process model" and this more generative and organic understanding of writing. Ecological theory invites

> "must re-draw the maps of the communication world"

us to think in practical terms about students themselves as writers in their own ecological microcosms with different factors influencing them when they are engaging in presumably imaginative stages of writing and in the more technical ones. Not only must we consider students' assumptions, thought processes, and skill levels, but the even less frequently considered material differences in their lives and ours: our respective social support systems that enhance or inhibit our writing, the technological tools to which we have access and the savvy with which we use them, the variously fragmented natures of our attention spans and the demands thereon, the time we have to devote to generating ideas and text, self-discipline, and elements of our respective physical work environments. An ecological revision model must consider these visible and invisible elements of the act of writing. Furthermore, it must re-draw the maps of the communication world in such a way that students can appreciate the ways in which they are already deeply integrated into it.

The goals of the ecologically aware composition classroom, like those of the social-constructivist one, are both process- and product-oriented, ranging from students' intellectual development and critical thinking skills to their ability to research and recognize differences in discourse communities and disciplinary paradigms, their improved proficiency in the codes of grammar, syntax, and style, and their ability to participate in a community united by its communication practices. Perhaps most unconventionally, our goals are also environmental: students should become conscious of themselves as writers and thinkers and increasingly able to manipulate their interior and exterior ecologies—their individual ecological microcosms—to improve the quality of their participation in the larger macrocosm(s) of written communication. Our collective understanding of "writing" must be broad enough for us to pursue these diverse goals simultaneously. Modifying the ecological model presented by Syverson, we can profitably imagine an individual writing proj-

ect as a philosophical and intellectual nexus—a single utterance that contains a multitude of opinions, ideas, and decisions. As the sample assignment sequence below illustrates, we can design our classrooms to encourage students to be conscious of the complexities within their own inhabited matrices and to see writing as simultaneously enriching and drawing on them.

An Ecological Theory of Composition

Marilyn Cooper's "The Ecology of Writing" uses the natural model of ecosystemic interdependence as an alternative to process models generally, if mistakenly, understood to be linear. Cooper claims that writing depends on the sociobiological notion of a dynamic dialectic between organism and environment (368). Like the dialectic nature of communication espoused by the social constructivists, writing in Cooper's schema never happens in a vacuum. But Cooper's system goes beyond a dialectical relationship between speaker and auditor (or writer and audience) to include the myriad other connections between a written utterance and the environment(s) that (perhaps unwittingly) collaborated to produce it. Margaret Syverson's *The Wealth of Reality: An Ecology of Composition,* published more than ten years later, picks up on Cooper's work and begins to apply it to professional and academic writing environments. Syverson similarly defines ecology as "a set of interrelated and interdependent complex systems [or] interactions of . . . component parts" (3, 4), including environmental factors from pens and paper to instructional technology and classroom management (3, 5). She also identifies the ecological significance of intangible elements like theoretical frames, language, the paradigms of various academic disciplines, and students' expectations, whether accurate or not, and experiences with all these elements (5).[3]

According to Syverson, an ecology of writing can be described according to four main attributes: distribution, emergence, embodiment, and enaction. Each of these attributes can be further subdivided by social, spatial, psychological, temporal and physical considerations. Distribution includes the collaboration of elements of the physical environment and others' ideas with the writer's thoughts and actions; emergence deals with prescribed

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3. Though maybe surprising to compositionists, this does not demonstrate a radical departure from new directions in academic thinking; rather, systems theory already has been effectively applied to other disciplines in the humanities and social sciences: Keith Warren and Cynthia Franklin, for instance, argue that systems theory, or a study of "nonlinear dynamics" aids social work by "seek[ing] to understand systems that change in ways that are not amenable to the linear cause and effect models familiar to social scientists" (358). Understanding that social interactions are dynamic systems, or "system[s] that change . . . over time" (358), they strive to map the changes in a predictable and diagnostic way. Similarly, we can see the writing process as a nonlinear dynamic system, and attempt to understand it as a system of interdependent influences so that we can more completely study it for any predictive characteristics and more effectively teach it to student writers.

models or standards that influence writers; embodiment involves reading and writing as physical acts; and enaction describes the way that knowledge is "brought forth," and that written utterances themselves are complex "ecosystems." On the surface, these four attributes do not seem any easier to apply to revision problems in meaningful, practical ways than the general metaphor of ecosystem. If, however, we associate students' writing environments with Syverson's "distribution," the authorial personality with "embodiment," elements of the writing process with "emergence," and the "final" product submitted for evaluation with "enaction," we can more closely attend to revision as it has been defined by most current composition theorists, consider ecological theory *vis a vis* the behaviors that make up the writing process and examine possible contributors to writing success that have been thus far neglected (see Fig. 1).

Distribution: writing/revision environment(s) and occasion(s)

Syverson defines "distribution" as "processes . . . both divided and shared among agents and structures in the environment" (7). In Syverson's work, this refers to the exchange of ideas and the way that ideas arise from numerous sources among which they are distributed, so we may also profitably consider as ecological elements formal and informal peer group interaction; the sources of students' information sets about particular topics; the cognitive work and idea-synthesis used to prepare for writing, including all prewriting strategies; and time management. Various familiar prewriting strategies may be employed in the service of a newly refined ecological prewriting consciousness, what we will call in the following assignment sequence "mining the distributed environment."

At the same time, in her study of a student collaborative writing project, Syverson divides "distribution" to include three additional components: the physical environment in which her chosen study group composes (in this case a dorm room, described down to its decorations); their social preferences (here, for face-to-face groupwork rather than meeting over the telephone); and the decisions to compose on a computer. When I advise my students to be cognizant of their "distributed" realities, I add to this list other circumstances that may surround their writing or revising, especially the presence of anything that might direct their attention away from the project: television, music, other people's presence. While we do recognize that individuals differ in their comfort and ability to work with noise, clutter, fatigue, we tend to write off these details as insignificant matters of student preference, but in so doing, we may be ignoring a consistent predictive factor that students may not be individually equipped to monitor or change. Further, for practical or pedagogical reasons, we seldom manipulate our classrooms for this factor—allowing or encouraging some to work in isolation, others with music, some aloud, *et cetera.*

(Psychological) Embodiment: the authorial personality

In one of her more unusual departures from existing composition theory, Syverson proposes that materially central elements of the author (from where they live to their bilateral symmetry) can affect writing and thinking.[4] "Embodiment," she says, is the interaction of the body with the environment, texts, and others, "dependent on and reflective of physical experience" (12). The students in her study, for instance, experienced fatigue, complained of headaches, shared folk wisdom about health and illness, and critiqued one another's typing speed while drafting. Furthermore, students exhibit arguably constant personality traits that both govern their behaviors and attitudes and distinguish them from other people. Jensen and DiTiberio's *Personality and the Teaching of Composition* tailors a personality model specifically to composition practices, usefully outlining the writing processes and obstacles for the sixteen general personality types identified by the Myers-Briggs Personality Type Indicator, and offering us a language for discussing some factors of students' embodied psychologies. Psychological embodiment may also be interconnected with the other ecological categories—for instance, distributed environmental elements may differently affect introverts, who are more internally-focused, than extraverts, whose energy is more comfortably focused on the exterior world. Differences in concentration, cognition, susceptibility to physical stimuli may all directly affect a student's writing comfort or success.

As with distribution, this dimension has fairly obvious ramifications for prewriting but may also inform revision. Students' awareness of their bodies' participation in the writing process can in fact authorize and encourage them to control what factors they may to improve their writing experience; teachers may experimentally manipulate the physical environment of their classrooms to illustrate benefits and drawbacks. Furthermore, some psychological orientations, such as that described by the T/F distinction, may influence students' basic attitudes toward the expectations of process writing: a T (thinking) type may be less inclined to consider the opinions of others, while the F (feeling) type is more sensitive to pleasing an audience. This may also shape students' attitudes toward forms to which they are purportedly trying to adapt their writing (see "emergence," below). As with any application of a behavioral measurement like the MBTI, a teacher must stress that all type descriptors are equally "normal"; moreover, and even more significantly, pedagogical applications of these descriptive personality categories must emphasize that one's preference is not destiny.

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4. Syverson cites Mark Turner's *Reading Minds* as an example of the affect embodiment can have on perception and cognition: "the physiological fact that humans are bilaterally symmetrical determines many of our fundamental concepts, causing us to perceive and interpret the world in terms of bilateral balance, binary oppositions, and other forms of symmetrical relations. Thus we 'naturally' construct argument as a battle between two opposing forces that seek a 'common ground'" (12).

A student whose "T" orientation might explain his or her resistance to revising to please a critical audience, in other words, must not be allowed to use the explanation as an excuse for refusing to thus revise any more than a preference for one subject allows students to graduate without taking others.

Enaction: the final product(s)

Syverson defines "enaction" as "the principle that knowledge is the result of an ongoing interpretation that emerges through *activities* and *experiences* situated in specific environments" (13). In the specific environment of the classroom, obviously, there are many resultant knowledges and enacted products. The final paper demonstrates the most obvious "knowledge" both in content and form, but the various tangible elements of the process itself—an outline, a page of brainstorming—reflect a student's engagement with a process pedagogy and may even be graded or recorded by a conscientious process teacher. Our valuation of these types of "enaction" must address the ecologies of the written utterances themselves and of the evaluation system; student writing products, especially within an academic setting, are complex cooperative systems that must cohere in an ecological fashion to meet with our (complex, cooperative) ideas of end-product quality and what constitutes "successful" writing behavior. To see both writing and process as "enacted" knowledges, and to see them within an ecological framework, contributes concretely to a different (nonlinear, interconnected, holistic) picture of revision than we may be accustomed to. If an essay is a constructed utterance representative of and participating in an ecological macrocosm, it is also its own kind of microcosm, and its various elements work together as a kind of ecosystem. Revision, then, becomes organic insofar as one change necessarily changes the landscape for all of the paper's other elements. On a small scale, changing a verb can lead to multiple changes of number and tense throughout the particular paragraph or the paper as a whole. On a larger scale, one piece of information can initiate a "ripple effect" throughout the paper, as its presence affects the way the original arguments are problematized, may be improved, and likely will be received. On an even larger, macrocosmic scale, one rhetorical decision—like a reconsideration of audience—can change the paper profoundly as the evolving speci-

> "becomes organic insofar as one change necessarily changes the landscape for all of the paper's other elements"

men, as it were, adapts to better thrive in its target environment. All of these revisions involve more or less generative thinking by insisting upon holistic awareness, rather than just stressing isolated corrective behaviors.

Emergence: processes of adaptation and coordination

The guides we use to determine whether these changes—from the surface to the global—are successful can be described under Syverson's explanation of "emergence." "Emergence" is essentially the process of students' making their own ideas and utterances conform to the communication expectations of their environments. Syverson explains adaptation and coordination as the "emergent properties of self-organizing systems," and dividing the category of "emergence" into these two processes, she explains it as the ways that writers experience their "internal structures" (103) within the larger meaning-making structures in which they participate: college in general, their academic institution in particular, the specific class, the assignment in question, small work groups in and outside of class, interactions with the teacher, and so on. Writers attempt to *"coordinate* their internal structures—such as prior experiences with, knowledge of, skills and strategies for, and beliefs about writing—with external structures, including my expectations, the other writers in the group, the emerging text, the structured task, the technologies for composing, and the demands of other course work" (103, emphasis mine). A main goal of emergence is students' "understanding of themselves as writers, the development of [the] writing group as a complex adaptive system, and the group's situatedness in an ecology of composing," says Syverson (104). The students involved in Syverson's study experienced "emergence" with elements ranging from real and mislearned rules (i.e., a paragraph must have at least three sentences) to the textbook's language ("invention").

Further, using the very Darwinian metaphor I employed above, she claims that students have to adapt to the "co-evolving" environment of the class, including workshops, conferences, class discussions, responses to their work, revision suggestions which produced more revisions and more suggestions, *et cetera*. Syverson does not clearly identity the writing process as institutionally prescriptive, but especially as we adhere to a process model of writing and revision, we must recognize that the "process" is itself many times a monolith to which students must adapt. In fact, despite the research that suggests students' writing processes are demonstrably different in predictable and classifiable ways (e.g. Jensen & DiTiberio, above), we may present this writing "process" as the single most important institutional structure to which students must respond. Syverson's model of the writing process certainly stands out as a weak point in her study. Outlining it strictly on her syllabus, Syverson reifies this institutional apparatus with no obvious critical attention of the ways she rein-

forces it. Requiring a "minimum of four pages" of prewriting and brainstorming, the stage she terms "invention"; one to three labeled rough drafts, "depending on the assignment"; and peer comments guided by a sheet of specific questions, Syverson carefully constructs an institutional apparatus very familiar to most contemporary teachers of writing, but in so doing she requires her students to adapt to her classroom, to coordinate their writing beliefs with the ones she values. But she does so without interrogating the apparently *a priori* position of that apparatus or inviting students into an awareness of the power structure the apparatus comes to represent.

Syveron's apparent misstep here is so typical as to be missed entirely by well meaning teachers and researchers. Martin Nystrand and Nelson Graff's ecological investigation of a seventh grade classroom, reported in 2000, reveals the assumptions about quality that teachers and researchers often make. Regularly, their subject teacher had found her students produced "hybrid drafts" of claims and "factoids" rather than sustained, coherent argument, and in response to low state scores in this area, she focused on this type of writing in her class. The teacher was committed to process-oriented pedagogy; "her students continuously wrote and rewrote; she often responded to drafts, not just final copies, and revision was an expected part of every major assignment" (2). Still, as Nystrand and Graff argue, the students' responses were products of a complex "classroom epistemology that favored efficient recitation, recall, and a mastery of givens, inimical to vigorous discussion and argument" (4). What emerges from their discussion though, is not only the claim that the writing environment, both tangible and intangible, wields power over the writing process and product, but that the role(s) and definition(s) of "quality" in ecologies of writing may go understated or unspoken entirely, despite their obvious centrality to any pedagogy of writing. Clearly, quality itself is ecologically determined and dialectical, fueling the very system that gives it meaning. The "quality" toward which a teacher pushes, nudges, or leads his or her students arises from its own "complex system": the teacher's previous experience, reading, his or her own writing process, the objectives embedded in day-to-day lesson plans, and the expectations for the lesson plans' ability to realize those objectives. Then, it becomes an inextricable part of the classroom and institutional ecologies that dictate student writing. To use Syverson's terms, "quality," though measured through enacted utterances, reveals the ultimate emergent process operating in the pedagogical ecology.

For any theory to be usefully applied to classroom practices, it must at least speculatively articulate the bases for a measure of success, but it is artificial to see "quality" as monolithic in a universe where everything else is contingent. The contributions of post-process theory may help us bridge the gap between ecological theory in the classroom and the com-

munication macrocosm for which we try to train our students. The post-process period, marking the "social turn" that composition has increasingly reflected over the past two decades theoretically interrogates notions of power relationships within society and within the discourse construct of higher education. As Sidney Dobrin explains, "post-process in composition studies refers to the shift in scholarly attention from the process by which the individual writer produces text to the larger forces that affect the writer and of which that writer is a part" (qtd in Fulkerson 132). But scholars have noted a sizeable rift between theory and practice (Howard 52). This is especially ironic in the open access institution, as issues of power and social monoliths bear directly on students who may rely on little or long-ago academic preparation, have weak or nonexistent support networks, inhabit inconsistent discourse communities within academia and without, and/or negotiate with more numerous and various power structures in their everyday lives than traditional, high-performing students in more exclusive educational settings do. In view of our ostensibly democratic post-process ideals, classroom writing instruction still typically directs students toward writing models and quality standards imposed from without: it has to in its effort to create and promote a standard of quality translatable to the outside world. But in our failure to incorporate a meaningful interrogation of these models and standards *vis a vis* students' actual behaviors, beliefs, and practices, we miss a tremendous opportunity to invite students into the post-process mindset, illustrating the ways in which each utterance participates—or fails to—in a power structure far more extensive than our classroom. We miss the opportunity, further, to hold a mirror up to the student and the structure, revealing the fact that they are always already coexisting.

We can further clarify this structure and more concretely describe our classroom environments with notions familiar to composition theory, those of "discourse communities" and "contact zones." Porter describes discourse communities as a "group of individuals bound by a common interest who communicate through approved channels and whose discourse is regulated" (38–9), so a student's various discourse communities could include friends, family, and academic contacts. Their success in communicating with the first groups are rarely questioned; teachers' assessments of "quality" are generally restricted to the last group. But Pratt's contact zones are a better descriptor of the nature of this particular discourse community's relations, as "social spaces where cultures meet, clash, and grapple with each other, often in contexts of highly asymmetrical relations of power" (34). Definitions of quality, which inform a teacher's instruction and evaluation, are representative of this asymmetrical power structure. Syverson's notion of students' "coordinating and adapting" to a cooperative idea of quality, then, may fail to appreciate a system more characterized by competition and hierarchy, trapping them in a discourse-community mode, and teaching them to coordinate

and adapt to an artificial discourse community (the college writing class) that is exceedingly difficult to translate to other discourse communities. [5]

Ken Lindblom's update of the sophistic idea of the *"nomoi"* and adaptation of H. P. Grice's Cooperative Principle (CP) offer us another theoretical framework for identifying the hierarchical nature of our classrooms, the quality assessments that we make within them, and the "bridges" teachers provide for students between the academy and the larger world. Lindblom describes *nomoi* as a "collection of continuously renegotiated agreements for the making of meaning that makes discourse work in any particular community" (37)—or systems of meaning making within discourse communities. Lindblom's rearticulation of the CP interposes *nomoi* between the writer/speaker and reader/hearer. Unlike those who have interpreted Grice as saying that communication is cooperative between the speaker and the audience, Lindblom argues that communication is cooperative, first, between the speaker and his or her understanding of a *nomos* and, second, between the audience and a closely compatible *nomos* (54). The system of signification of the *nomos* in question is what legitimizes the utterances. It is here that we find the grounds for our assessments of quality and for our roles as post-process or ecological teachers.

Using this model of communication, we can see the teacher's evaluation practices as measuring the extent to which student writing cooperates with the teacher's privileged *nomos* (generally also one that is privileged in the larger world of communication). In order to reinforce the cooperative principle, we must not leave that *nomos* unspoken, understood, or, worse, individually (and often incorrectly) constructed by students according to their notions of "what teachers want," of grammar handbooks, and the "rough draft" of an academic, "standard-English" *nomos*, so to speak, that they've been constructing repeatedly as they move from teacher to teacher throughout their academic careers.[6] Rather, as *nomoi* are "a collection of social practices or processes to which the members of a given society appear to assent" (Lindblom 53), teachers must both share the privileged *nomos* with the writers and allow them to at least perceive their complicity in its construction. Some pedagogical theorists have long advocated distributing a draft of an evaluation rubric and allowing students to provide input and to negotiate change, or even creating as a class the list of criteria by which their papers will be evaluated (Lindemann). Still,

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5. Syverson's own study of collaborative student writing stands as a good illustration of this point, if by opposition. When her student group coheres nearly too well—certainly too well to agree with the teacher's increasingly forceful suggestions that they change their topic—and produces a thinly reasoned, inconsistently argued draft, she despairs, though ultimately dismissing her own dissatisfaction with the quality of their work as appropriate to "some other time or place" and focusing instead on the "struggles of this ecological system of readers and writers and texts" (88).

6. Lindblom actually uses "grammar handbooks" as an example of familiar *nomoi*, alongside scientific method, town zoning laws, etiquette, and specialized professional jargon (55–56)

students often don't understand the significance of the rubric as a factor in their attempts to communicate: they don't appreciate it as a vital component of the ecology of their writing.[7] And they don't understand that the *nomoi* are multiple, shifting, and communally agreed upon. In terms of real power, the rubric is still artificial. Students can't easily alter the *nomoi* of the macrocosm in which their utterances ultimately aspire to make meaning. They can, however, learn them.

Pedagogical Applications

Conscientious use of scales and models and careful rhetorical analysis that accompanies collaborative rubric design can help publish *nomoi* and provide a transferable skill. In order to encourage students to achieve "emergent" knowledge that transcends the individual writing group and writing classroom and "adapts" to the demands of the communication macrocosm in which we participate beyond freshman composition, I utilize various emergent models of quality—sample essays, the rubric, graded writing and teacher comments, and professional texts—and we discuss the similarities, the rhetorical effects, and the apparent community constructed by this wide variety of "good" texts. This approach, obviously, draws on some practices already current in composition pedagogy but furthers ecological and post-process goals. Indeed, many types of pedagogy lend themselves well to various elements of ecological theory: a personality type pedagogy like the one Jensen and DiTiberio explained in 1989 fairly obviously fits within Syverson's embodiment category, considering individual differences between students themselves to anticipate their different approaches to writing tasks. Teachers who use scales and models or style-imitation strategies in the classroom are emphasizing students' familiarity with the emergent forms of the communication world in which they strive to participate. Nearly any emphasis we place on audience awareness probably fits within the emergence category as well.

One of the places ecological theory can really contribute, besides just providing a framework for using these other types of pedagogical methods in concert with one another, is in the distribution category, where writing pedagogy has rarely ventured until now.

In part, distribution refers to the way that knowledge is constructed from shared real-

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7. Ron White offers a useful way of maintaining and explaining standards within a social-constructivist model of communication, by adapting Grice's Cooperation Principle to writing tasks. Beginning with the assumption that "teaching writing well depends on recognizing that cultural expectations about how texts are written are as important as grammar and vocabulary" (Kirkpatrick 99), White evaluates the success of student writing on bases vouched for by members of the professional business community. In this case, he identifies a shared discourse that prefers brevity to prolixity, critiquing the draft of a student who, like many, desires to "write as much as possible in order to demonstrate linguistic skill" (89). Six out of seven readers from the professional world agree with the standards White applies to the text. White doesn't use Lindblom's idea of *nomoi* but discusses the CP as if it is cooperation between the speaker/writer and the audience—his student, apparently, is not told that her work is being evaluated according to a particular, and professionally shared meaning making system.

ity, so in some small way any pedagogy that emphasizes groupwork already participates in the distributed environment. Controls on writing environment, however—or, attention to physical distribution of individual students' writing microcosms—could use the idea of distribution to enhance both classroom pedagogy and the advice teachers give for the way students perform their writing behaviors outside of the classroom environment. It might not occur to teachers to mention things like distractions and noise or even to dictate whether students should compose on computers or on paper; we control these things in the classroom and may be satisfied to write these things off as student preference outside our purview, assuming that students will prefer the things that best contribute to their success. The more we know, however, about the effect that such things have (or may have) on revision success, either for most students or for certain types of revisers, the better. We can also encourage students to manipulate their personal writing environments to the best end. Even encouraging students to be cognizant of where their work is done has the potential to be helpful.

Attention to the elements of students' writing ecologies (and papers themselves as complex, cooperative systems) may inspire new classroom approaches and even greater emphasis on the flexibility and recursiveness supposedly inherent in process writing. In some small way, any pedagogy that emphasizes groupwork already attends to Syverson's notion of distribution. For instance, insofar as distribution refers to knowledge's being constructed from shared reality, distribution may also take us where writing pedagogy has rarely ventured until now, encouraging us to attend differently to the physical environments in which students write, to challenge them to manipulate their environments experimentally, consciously, or to deliberately alter our classroom environments. We may find ourselves more comfortable with classroom noise or apparent distraction, for example, or designing activities that incorporate music, television, or talking. We may carve out spaces wherein to address the increasingly multitasking student mind. The following assignment sequence gestures to novel methods that I believe deserve much more study and practice. But with the suggestions that follow, I am not trying to reinvent the field: indeed, I rely on familiar practices of groupwork, brainstorming, research, drafting, and revising. I do strive, however, to broaden current practices to accommodate a reimagining and recontextualizing thereof, within the more holistic model of ecology, the diverse ecological experiences of open access students, the power differentials that characterize the ecological macrocosm that supports our ideas of quality, and our students' inevitable engagement with that power.

One: exploring the distributed environment

Student writing often begins with a more or less formal brainstorming exercise with the purported aim of revealing to students the ideas they already possess so that they may select a

topic about which they are knowledgeable and somewhat interested. The weakness of this notion is that it underrepresents the complexity of the very consciousness that students are mining: the student mind, into which he or she goes diving, at best believes in its own discrete boundaries, between itself and its community, between its essence and its ecology. At worst it has a mentally-drafted list of "potential paper topics" that the student has been collecting for years. Preferable, then, is a pre-writing exercise that examines the distributed nature of ideas and illuminates the connections that students have with their worlds. At this prewriting and topic selection stage, students should actively pursue those connections, beginning with a group session to generate possible topic ideas by following even insignificant-seeming moments of overlap between group members' interests.

Obviously, one cannot predict students' interests and assign topics accordingly. This seems even truer in an open-access institution where students may represent a wider variety of experiences, reasons for coming to college, and lifestyle features. But even in dissimilarity, there are but degrees of separation: students might choose to study local after-school programs for children, for instance, after realizing that they a) have been to such programs, b) suffered for lack of access to them, c) have sent their children to them, d) would like to send their children to them, e) would like to work for them, f) are concerned about who funds them, g) are concerned about who runs them, h) are concerned about equal access to them (the list goes on).

> "an interesting game of counting degrees of separation"

Appropriate brainstorming from that moment forward could prompt students not only for what they already know about the topic, as is typical, or even to generate research questions to address the things they don't know, but why they might care about—and how they are already connected to—the topic. Better, and opening the door to students who aren't sure that they do care about the topic, it may include listing people the students might *know* who might have reasons to care about the topic, demonstrating the web over which knowledge on a topic might be distributed. Maybe the students have younger siblings or children themselves. Maybe they or their parents are coaches or teachers. Maybe they belong to low-income neighborhoods or fiscally conservative families and are thus more concerned about the proverbial playing field for lower-income students or about where their tax dollars go. Maybe they or their friends were latchkey kids who hated school or see themselves as having fallen through the cracks of the American school system. If students are shown that they are, of necessity, connected to the topic in *some* way, brainstorming can become an interesting game of counting degrees of separation, illuminating the web-like community in which students all, nec-

essarily, participate. Any of the points of the web can provide a promising strategy of engagement with the topic, and any of them could propel a student toward further inquiry.

Of necessity, this behavior will be repeated throughout the writing process. Not just "brainstorming" to "topic selection" in a more-or-less linear fashion, this behavior fuels decisions about topic, issue, thesis, audience, evidence, and appeal. In early stages, students should be encouraged to draw something more like a web than an outline and to resist the thesis/audience/appeal decisions until their inquiry begins to take on a sort of vitality of its own; the goal is that they begin to recognize the multidimensionality of the topic (and all topics) and their participation in it.

Two: mining the distributed environment

The next so-called prewriting behavior in this project involves collecting information, but instead of sending students to the library to "find quotes," as so many of them refer to research, they should do a much more hands-on type of "research" project. Often, in our well-intentioned attempts to teach responsible secondary research, we create students who obsess about the commas on the works cited page or "how many sources" they are responsible for having represented in their paper. Instead, I encourage an information-collecting behavior that, like the topic selection behavior described above, steeps students in their ecological contexts. In an open-access setting with many commuter students, restricting research to library sources—done, justifiably, in the name of promoting "scholarly" inquiry—also reinforces a hierarchy of knowledge, tacitly separating students from the value of their own experiences and observations. Many of our students already have the power to find the answers they need in real life—at work, from family members, online, through organizational contacts. But "asking around" doesn't earn any respect whatsoever in the academy, regardless of what positive virtues it reflects: curiosity, initiative, investigation. But currently, few if any composition textbooks instruct students in writing polls, compiling survey data, conducting interviews, or doing observational field research; few if any textbooks illustrate to students the research value of anecdotes, letters to the editor, notes from PTA meetings, or blogs. Instead, they (and we) reify the invisible power structures that alienate students where they live, authorizing only select (and sometimes apparently unattainable) types of information.[8] We build the eco-

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8. Sending students into their own worlds to gather information carries an additional bonus for open-access students: teachers may use this wider definition of research to model the rich interdisciplinary wellspring of information that is the college itself, encouraging students to ask teachers in other departments, counseling and advising centers, and administrative offices, besides just library sources. Not only is this a way of promoting skill transfer between disciplines, but it is an embodied illustration of the broad value of a college education (over, say, a trade school or on-the-job training): the complex cooperative system of higher education itself.

logical model of writing as we authorize and enrich students' experiences as sources for writing: breaking down the intellectual hierarchies by illuminating the steps between them, bridging the environments our students mutually inhabit, we enable our students to see writing as a way of participating in the ecological macrocosm in which they live, work, and think.

Returning to what should be a group's ongoing examination of their distributed knowledge, students should be encouraged to share their findings with the class and/or their small group, resisting traditional classroom notions of ownership over scarce information resources. If one student's grandmother has a direct tie to the topic, after all, each of his or her peer group members are only one step removed from someone with a direct tie to the issue. If one student's brother disagrees with said grandmother's position, the entire group's wisdom on the subject stands to be deepened and enriched. This example also illustrates how we may newly respect and validate our open-access students' experiences. Rather than divorcing their academic selves from their still-intact social networks, we aim to teach each whole student in the ecology he or she inhabits.

Three: reflection on distributed knowledge

I advocate including reflective writing throughout the project to help students more fully comprehend the ecological nature of their communication. Rather than have students collaborate on a writing project (as Syverson's students did), I encourage students to reflect on the collaborative learning they did as they explored and mined their distributed environments. In a project diary, they frankly discuss where the topic came from and where in the world their "information" was located. In so doing, they begin to sketch the interconnectedness of the topic's world and see their paper topics as potentially real utterances rather than arbitrarily chosen subjects for an inherently artificial academic writing occasion; they also "relocate" the information from its original sources to their project diaries (and thus into their personal microcosms), learning—beyond questions of what to cite as specialized information and what is generally known—to own what they have gathered. The "information" may have been originally located in an external site or many external sites, but by the end of the project, students see their own connections to the topical knowledge.

Here, too, students should be encouraged to differentiate sources by their quality, correctness, and respectability, but this too may be an easier message in the terms of distributed knowledge, which ascribes them some authority, rather than more common analysis of sources, which typically positions them oppositionally to "expert opinion." If grandmother and brother disagree, for instance, we are confronted with our own values and the values of the community in determining which source is better. In other words, we have a natural, immediate, and practical analogy for analyzing the hierarchy of published and

scholarly sources, easing them into the complexities of informational and institutional power by starting with the familiar distributions of authority they already participate in (and in which, often, they assume some).

Four: reflection on physical distribution and embodiment

Students should at several points in the project reflect on the physical realities of their distributed environments and their personal embodiment(s) through personality preferences or another measure. I advise students to try different settings for writing, revision, or group conversation; teachers likewise might consider changing locations, welcoming background noise, or experimenting with technological tools that allow for real-time or asynchronous written communication, instead of or in addition to talking aloud. In a writing journal—separate from their project diaries in that they extend over a whole semester and ideally beyond—students focus on their ease and comfort with writing itself, independent of the topic-specific ideas that some writing journals often collect. In this step, which should be performed multiply or constantly, students become aware of how much they do (or can) control their material environments and begin to learn how to manipulate their environments for their own best success. Students in traditional environments—dorms, libraries—may find this step necessary as well, but to some extent the traditional environment is already controlled. Open-access students may be trying to fit writing into a significantly less conducive atmosphere without becoming deliberate and conscious of their efforts or the necessity thereof.

Five: interaction with emergent forms, the nomoi

Students should examine emergent forms of writing that are relevant to their topics. Here, by "relevant," I mean those forms of writing that are not only on the same subject but those that literally come in contact with the chosen topic. For instance, if students are exploring the topic of local after-school programs, they should examine memos to parents, press releases, legal documents, grant applications, or charters that keep the programs running. They should value whatever they can get their hands on: promotional material, applications, newspaper stories, letters to the editor, stories from their friends, siblings, children. Students should read the relevant written documents for their tone, style, vocabulary, and rhetorical features as well as for their content, always addressing these documents' relative power within the complex cooperative system of the issue, and they should keep a record of this analysis in their project diaries. Research thusly conceived contributes not only to the idea-generating part of the project but illustrates the CP that defines "quality" to the audiences that care most about the topic in question: often, they find their target audience outside of academics, but consistently they find value placed on relatively formal, Standard

Written English and strong rhetorical appeal and arrangement of ideas. I also encourage students to collaborate at this stage of the project, using their project diary entries to contribute to the group's wealth of knowledge not only of the topic but of the topic environment's CP. In this way, "research" becomes the analytical, imaginative, and profitably collaborative work that professional writers know it to be, and "quality" becomes something unfixed, situational, and knowable.

Six: producing the enacted products

Sooner or later, like any project assigned in our educational institutions, this one must assign some sort of enacted product. I don't lament this: writing is, after all, a communication code that adapts and coordinates in order to be effective for an audience. Indeed, I don't assign an end-product dramatically different from the essays traditionally assigned in writing classes; I do, however, think that studying "enaction" as an ecological category could be useful to students as they produce that essay. They should be aware, that is, of the conventions and limitations of the academic essay, the alternate forms of writing that might be appropriate in other situations, the rhetorical decisions they would face were the situation to change. At this point, I provide rhetorical and style models of academic writing on other topics and we briefly discuss the different demands of diverse disciplines in the academy. Appreciating that any written utterance is a small part of a large and complex matrix, students should be encouraged to compose thesis statements that are decidedly non-comprehensive, and they should be aware of the elements of the topic they are choosing not to talk about. A useful corollary exercise is a detailed freewrite in the project diary on the other products which could arise from this topic in its ecological context (including the writer him- or herself): I ask students what (thesis) they could write about were they to produce a very different product on the same topic and what (genre) they could use to effectively communicate the most important features of the topic to a different audience.

Further, since "enaction" describes both demonstrable process as well as the finished document, I ask students, first, to be cognizant of their own apparent preferences and, second, to consider manipulating their writing circumstances as they revise, reinforcing the reflective behaviors advocated in step four. Ideally, this encourages students to be conscious of the things they do as they write and revise, possibly empowering them to construct their own most successful situations and processes. Finally, rather than requiring a certain number of drafts or insisting on commenting on each one (and tacitly asking students to write to please only me), I ask students to annotate a final draft, where they note rhetorical decisions and revision events and to describe the ecological features that went into each one. I thus encourage them to consciously make changes and to take note of them, even if those changes

occur within a "drafting" step rather than a "revising" one. In so doing, I hope to encourage the recursiveness of process writing and to dismantle its apparent linearity.

Seven: (final) reflection

This project concludes with an opportunity for reflective synthesis. As with the annotations on the enacted product, this final reflective document has as its primary benefit that it makes overt otherwise unconscious processes. Students formulate a clearer understanding of what they do by having to reflect on and to describe the assignment and their engagement with it. I think this end is best realized when students are guided to consider the ecological elements of their projects, from the early brainstorming to the final essay, from the distributed ideas arising from group conversations to the enacted product offered up for evaluation and their project diary. Ideally, this encourages students to examine their entire writing microcosms, giving them a full sense of their writing processes and their engagement with an ecological world of ideas and utterances.

Conclusion

Obviously, no single assignment can negotiate the innumerable difficulties and complexities of writing, for open-access students or for more traditional ones. But if our practice is to be reinvigorated by the democratic energies of the post-process movement, while maintaining our pedagogical aims of teaching "quality" writing, ecology provides us a useful metaphor for re-imagining our work. Ecological theory has been applied to numerous problems in the worlds of science and mathematics, and, more recently to social science and business fields. In the preceding application to the composition classroom, it has tremendous potential for helping students write by better comprehending writing, and helping teachers help students write across rhetorical situations by showing them how to learn to do it. It has not yet been thoroughly explored, however, and I earnestly hope that future studies will attempt to build upon what I have done here. Scholars have agreed that it is high time we integrated the lofty goals of post-process composition rhetoric and the activities of classroom teaching: I am eager to see a composition pedagogy that grows to incorporate the ecological features of writing, the academy, the social world beyond its walls, and the complex intellectual lives of the students who populate it.

Figure One: Working definitional matrix for ecological writing behaviors

	physical	Social	psychological	spatial	temporal
distribution: writing/revision environ-ment(s) and occasion(s)	physical space: how were students situated physically to revise? where were they? what environmental elements were present: noise?	exchange/ creation of ideas: to what extent did students engage with others while writing and revising? with teacher or students only?	cognitive elements: how did students intellectually prepare for writing? personal interest in a topic? brainstorming exercises?	objective concerns: how concerned were students with assignment-specific surface details: page length requirement, required research, format?	time usage: how did students manage time and deadlines; how and when did student work; how much time did students spend revising?
embodiment: personality type	what are students' consistent, apolitical, untaught personality preferences?				
emergence: influential forms, models, genres	quality forms: was the student familiar with models of the paper assigned? did the student use the rubric to revise?	social quality constructions: was the evaluative rubric perceived as a useful statement of the *nomos*? did they use teacher comments?	students' participation in larger-world communication: do students read? are they skilled and careful readers?	assignment criteria: do students com-pare own writing quality to models? to the rubric?	form evolution: do students see rough drafts as themselves emerging, possibly formally different from final drafts?
enaction: the process and the final drafts	physical drafts: does student present draftwork as a more or less linear process? Is the final draft proofread and professionally presented?	audience: is final argument audience aware? are students aware of audience and anticipatory of audience response to rhetorical appeal?	choices of appeal: are arguments self-aware about their own premises and the types of appeal that work most compellingly for them?	format: do final documents adhere to surface conven-tions? are they spell-checked? how important are these elements for student writer?	time management: are papers on time? do students see quality of portfolio revision or teacher's deadline as most important time consideration?

Works Cited

Cooper, Marilyn M. "The Ecology of Writing." *College English* 48.4 (1986): 364–375.

Faigley, Lester and Stephen Witte. "Analyzing Revision." *College Composition and Communication* 32.4 (1981): 400–414.

Flower, Linda, Hayes, John R., Carey, Linda, Schriver, Karen, and James Stratman. "Detection, Diagnosis, and the Strategies of Revision." *College Composition and Communication* 37.1 (1986): 16–55.

Fulkerson, Richard. "Of Pre- and Post-Process: Reviews and Ruminations." *Composition Studies* 29.2 (2001): 93–119.

Howard, Rebecca Moore. "The Dialogic Function of Composition Pedagogy: Negotiating Between Critical Theory and Public Values." *Under Construction: Working at the Intersection of Composition Theory, Research, and Practice.* Eds. Christine Farris and Chris M. Anson. Logan: Utah State UP, 1998. 51–64.

Jensen, George H. and John K. DiTiberio. *Personality and the Teaching of Composition.* Norwood, NJ: Ablex, 1989.

Kirkpatrick, A. "Contrastive Rhetoric and the Teaching of Writing: Seven Principles." *Australian Review of Applied Linguistics* 14 (1997): 89–102.

Langan, John. *College Writing Skills.* 6th ed. New York: McGraw-Hill, 2004.

Lindblom, Kenneth J. "What Exactly Is Cooperative in Grice's Cooperative Principle? A Sophisticated Rearticulation of the CP." *RASK* 14 (2001): 49–73.

Lindemann, Erika. *A Rhetoric for Writing Teachers.* 2nd ed. New York: Oxford, 1987.

Minkoff, Harvey, and Evelyn B. Melamed. *Visions and Revisions: Critical Reading and Writing.* Englewood Cliffs, NJ: Prentice Hall, 1990.

Murray, Donald. "Internal Revision: A Process of Discovery." *Research on Composing: Points of Departure.* Eds. C. Cooper and L. Odell. Urbana, IL: NCTE, 1978. 85–103.

Nystrand, Martin and Nelson Graff. "Report in Argument's Clothing: An Ecological Perspective on Writing Instruction." Office of Educational Research and Improvement. Albany: National Research Center on English Learning and Achievement, 2000.

Perl, Sondra. "The Composing Processes of Unskilled College Writers." *Research in the Teaching of English* 13.4 (1979): 317–336.

Porter, James E. "Intertextuality and the Discourse Community." *Rhetoric Review* 5.1 (1986): 34–47.

Pratt, Mary Louise. "Arts of the Contact Zone." *Profession* 91. New York: MLA, 1991. 33–40.

Richardson, Richard, Fisk, Elizabeth C., and Morris A. Okun. *Literacy in the Open-Access College.* San Francisco: Jossey-Bass, 1983.

Sommers, Nancy. "Revision Strategies of Student Writers and Experienced Adult Writers." *College Composition and Communication* 31.4 (December 1980): 378–88.

Syverson, Margaret A. *The Wealth of Reality: An Ecology of Composition.* Carbondale: Southern Illinois UP, 1999.

Turner, Mark. *Reading Minds: The Study of English in the Age of Cognitive Science.* Princeton, NJ: Princeton UP, 1993.

Warren, Keith, and Cynthia Franklin. "New Directions in Systems Theory: Chaos and Complexity." *Social Work* 43.4 (1998): 357–372.

Zellermayer, Michal, and Judith Cohen. "Varying Paths for Learning to Revise." *Instructional Science* 24 (1996): 177–95.
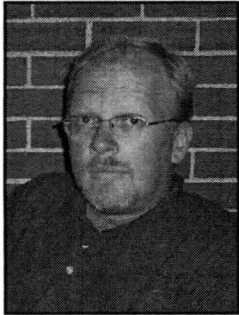
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