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CONCEPT 5
Writing Is (Also Always) a Cognitive Activity

5.0

WRITING IS (ALSO ALWAYS) A COGNITIVE ACTIVITY
Dylan B. Dryer

Behind the claim by Linda Adler-Kassner and Elizabeth Wardle in "Metaconcept: Writing Is an Activity and a Subject of Study" in this volume that "writing can never be anything but a social and rhetorical act" are decades of research inspired by what is now known as the *social turn.* Those applying insights from the social turn to the study of writing found again and again that any act of writing is situated in complex activity systems that enmesh any writer's motives with other spaces, traditions, values, ideologies, other humans, previous iterations of the genre, and the constraints and affordances of language itself (see 1.5, "Writing Mediates Activity"; 2.1, "Writing Represents the World, Events, Ideas, and Feelings"; 2.3, "Writing Is a Way of Enacting Disciplinarity"; and 3.2, "Writers' Histories, Processes, and Identities Vary"). But if writing is always a social and rhetorical act, it necessarily involves cognition. While contemporary advanced research on writing is profoundly and productively oriented to influences on writing outside the skull, as it were, the four concepts in this chapter signal the beginnings of a convergence as potentially transformative as the "social turn" itself (after all, the "social turn" was in part a rejection of prior attempts to conceptualize writing as a solely cognitive phenomenon). To see this potential clearly, we must revisit what is known about composing processes inside the skull.

Well before the social turn, writing researchers in the late 1960s were examining cognitive aspects of writing, and their work became particularly relevant to those teaching in the open-admissions campuses of the 1970s. Many students came to those campuses with writing experiences and composing strategies that perplexed and dismayed their instructors; some faculty declared that many of these students could not write at all (for more on this era, see Bizzell 1982; Lu 1999;

Soliday 2002). Even as some faculty members and researchers attributed students' writing struggles to mental and even cultural "deficits," others were trying to map mental processes in a more descriptive way (Flower and Hayes 1981; Perl 1979). By observing writers who had been asked to verbalize what they were thinking while they were drafting and revising, these researchers found evidence for a writing process that extends before and after the moment of text production. The models these researchers produced helped break the grip of still-dominant assumptions that writing was simply a matter of transcribing thought while avoiding error (for more on this, see 1.4, "Words Get Their Meaning from Other Words" and 1.9, "Writing Is a Technology through Which Writers Create and Recreate Meaning"). Researchers in cognition and writing attempted to diagnose and develop interventions for issues still important today: What makes writers "blocked," or causes them to stall once they get going? What can writers do to overcome anxiety? Why do writers interrupt higher-order attempts to shape meaning to correct lower-order issues of spelling and punctuation, and does it matter? What happens when writers' plans for the texts they hope to produce or the readers they hope to reach are changed by the texts they've already produced? What are writers *doing* when they pause while writing? Is there a relationship between syntactical complexity and "maturity" of thought? How do the strategies of skilled writers differ from those of novices? Can thinking *about* thinking enhance writing, reading, and/or revision practices? All of these questions are about cognition although, as previous threshold concepts demonstrated, we know they are not only about cognition.

This early cognitive research produced findings that continue to underpin our field's beliefs and activities. For example, anxiety (about error, imagined audience, or perfectionism) can overwhelm composing processes and can be mitigated with low-stakes, generative writing (Bloom 1981; Elbow 1981; Rose 1985); revision strategies depend on what writers think revision is (Bridwell 1980; Sommers 1980); composing and revising processes are malleable and genre specific (Britton et al. 1975); composing practices can transform as well as transcribe knowledge (Bereiter and Scardamalia 1987); and, perhaps most generally, the ways people think about approaching a writing task affect their experiences with it.

Researchers in the cognitive sciences who happen to study writing have independently and empirically validated much of that early work: neural processes essential to writing must be successfully coordinated across different areas of the brain; revision, even for seemingly

uncomplicated "errors," is cognitively quite complex; and writers' syntactical fluency improves in tight correspondence with knowledge of their topics. Perhaps most important, writers' brains have structural limitations on what is known as *working memory*—where fleeting and mutable bits of information, images, to-do lists, or immediate plans are held, juggled, and discarded. Unfortunately, working memory appears to be fairly inelastic and zero-sum. This limitation is why unfamiliar task loads (as alluded to in 1.6, "Writing Is Not Natural") can reduce performance in other, usually high-competency, areas; why rates of surface error rise predictably when students attempt a new genre for the first time (see also Quinlan et al. 2012); and why field researchers find writers creatively rigging up makeshift additional capacity for their working memories (Angeli 2015; Barber et al. 2006; MacKay 1999).

What's more, there is now substantial evidence that composing practices measurably influence other mental processes (recall, goal setting, attention span, knowledge acquisition, processing time, etc.) as well as psychosocial and even *physiological* phenomena (stress and anxiety levels, recovery from trauma, immunological response, pain sensitivity, postoperative recovery, etc.). As 5.1 ("Writing Is an Expression of Embodied Cognition") makes clear, writing is cognitive not only because it "draws on the full resources of our nervous system" but because it actively influences our nervous system as well (Berninger and Richards 2012; Berninger and Winn 2006). Evidently, as Marilyn Cooper argues in a review of recent work in neurophenomenology, what we write literally helps make us who we are (Cooper 2011, 443). This phenomenon helps explain why writers constrained to "repeated practice of the same genres" may, as explained in 5.3, become "entrenched" in particular approaches or conventions. Although neuroplasticity (the capacity of the brain to create and reinforce new neural connections through learning and use) is only now becoming part of the conversation in US writing studies, our most progressive composition pedagogies have long emphasized metacognition and reflection for just this reason. That is, not only do compositionists want writers to "demonstrate consciousness of process that will enable them to reproduce success" (see 5.3, "Habituated Practice Can Lead to Entrenchment") and to "begin assessing themselves as writers, recognizing and building on their prior knowledge about writing" (see 5.4, "Reflection Is Critical for Writers' Development"), they hope to ensure that writers receiving instruction in one context are also equipped to fend off the cognitive entrenchment of repetition and overgeneralization.

As long as teachers keep this caution about entrenchment in mind, working memory and the benefits of automaticity are set to become powerful enabling concepts for modern writing studies. All writers can increase fluency and performance through naturalizing routines; just as letter shapes recede from children's consciousness (or more specifically, the frontal lobes) and free up working memory for higher-order composing goals, so too will even the most structurally elaborate academic and workplace genres eventually become assimilated into writers' routines (see 2.1, "Writing Represents the World, Events, Ideas, and Feelings"). Teachers and supervisors alike should remember that automaticity takes time, perhaps at a temporary cost to other skill sets (see 4.2, "Failure Can Be an Important Part of Writing Development," and 4.3, "Learning to Write Effectively Requires Different Kinds of Practice, Time, and Effort") and that writers taking on a new task are attempting to forge neurological connections that literally *aren't there yet* (see James and Engelhardt 2012; Richards et al. 2011).

In sum, insights from the social turn and insights from what some are calling the *neurological turn* appear to be converging, as can be seen in this recent definition from two cognitive researchers: "The writing process is supported by a single system—the writer's internal mind-brain interacting with the external environment (including technology tools)" (Berninger and Winn 2006, 108).

5.1

WRITING IS AN EXPRESSION OF EMBODIED COGNITION
Charles Bazerman and Howard Tinberg

Writing is a full act of the mind, drawing on the full resources of our nervous system, formulating communicative impulses into thoughts and words, and transcribing through the work of the fingers. Writers at the computer or desk carry the tension of thought throughout their full posture, can grimace at the difficult contradiction, and can burst into laughter at the surprising discovery or the pleasure of an elegant phrase.

This is as true of the reasoned and evidence-grounded academic writer as of the impassioned writer of love letters. The emotional engagement of scientific writers for their subject may entail careful attention to evidence and reasoning grounded in prior work in the field and an understanding of the theory and methodological principles of the field; yet without a passion for the subject that turns a writer's full

mind and thought to the task of producing new words and ideas, little of value would get written.

If cognition assumes complex mental processes at work, then embodied cognition draws in addition upon the physical and affective aspects of the composing process. While there is still much to learn about how the brain and mind work when engaged in the complex task of writing, it was evident to theorists as early as James Moffett (1968) and Ann Berthoff (1978; 1981) that writing comes from full engagement of the entire writer, which is developed across many years of a developing self. Both drew on the work of Lev Vygotsky (1986) who, in the early years of the twentieth century, explored the role of language internalization and externalization in the social formation of mind and emotions (see Bazerman 2012). More recently, psychologists such as Ron Kellogg (2008) have documented the extensive concentration and long time it takes a writer to develop. Howard Gardner (2008) as well has called for recognition of the full, human dimension of both readers and writers in the construction of meaning. Finally, a number of teachers drawing on psychoanalytic traditions have considered how writing challenges and exposes elements of emotions and psychological structures (e.g., Alcorn 2002).

5.2

METACOGNITION IS NOT COGNITION
Howard Tinberg

"Do you know your knowledge?" asks Samuel Taylor Coleridge, trying to point out the difference between knowing what we know and knowing that we know (qtd. in Berthoff 1978, 233). The first calls upon cognition while the second requires metacognition. In other words, to think through a solution to a problem differs from an awareness of how we came to resolve that problem, or, as Kara Taczak notes in this collection, writers engage in cognition when they reflect on "what they are doing in that particular moment" but display metacognition when they consider "why they made the rhetorical choices they did" (78). For those of us who teach writing, the objective is not just to have our students produce effective writing—that is, to respond in logical and thoughtful ways to the question posed. We also want our students to demonstrate consciousness of process that will enable them to reproduce success. Metacognition is not cognition. Performance, however thoughtful, is not the same as awareness of how that performance came to be.

Cognition refers to the acquisition and application of knowledge through complex mental processes. Writers draw upon cognitive processes when they

- demonstrate an understanding of the question;
- deploy accurately and purposefully concepts, knowledge sets, and terms that reveal genuine expertise;
- meet the needs of their audience;
- fulfill the requirements of genre; or
- exhibit a control over language, grammar, and mechanics.

But the effective accomplishment of writing tasks over time requires even more. It calls upon metacognition, or the ability to perceive the very steps by which success occurs and to articulate the various qualities and components that contribute in significant ways to the production of effective writing, such as

- discerning the structure of a draft;
- delineating patterns of error; or
- discriminating between what is necessary in a draft and what in the end serves little purpose.

Metacognition requires that writers think about their mental processes. Metacognitively aware writers are able, in William Blake's' words, to "look thro it, & not with it" (qtd. in Berthoff 1978, 232). In other words, they engage in "thinking about thinking" (Berthoff 1978, 13). The need for metacognition assumes special importance when writers find themselves required to work in unfamiliar contexts or with forms with which they are unfamiliar. In those cases, metacognition allows writers to assess which skill and knowledge sets apply in these novel situations and which do not. In the end, while cognition remains critical to effective writing, it is metacognition that endows writers with a certain control over their work, regardless of the situation in which they operate.

Popular conceptions of what it means to write assume that knowledge of a subject (e.g., the history of the Civil War) is enough to produce a successful written report on that subject, or that knowledge of the rules of language, grammar, and mechanics is sufficient to produce an effective piece of written communication. In fact, cognition, while essential to thoughtful performance, cannot guarantee success, given the challenges of writing across disciplines, for varied audiences, and in diverse genres. It must be accompanied by metacognition.

5.3

HABITUATED PRACTICE CAN LEAD TO ENTRENCHMENT

Chris M. Anson

When writers' contexts are constrained and they are subjected to repeated practice of the same genres, using the same processes for the same rhetorical purposes and addressing the same audiences, their conceptual framework for writing may become entrenched, "solidified," or "sedimented." When this happens, they may try to apply that framework in a new or unfamiliar writing situation, resulting in a mismatch between what they produce and the expectations or norms of their new community (see 2.1, "Writing Represents the World, Events, Ideas, and Feelings," and 3.3, "Writing Is Informed by Prior Experience").

Repeated practice of the same mental task or activity can lead to what psychologists call *automaticity* or *unconscious competence*, the application of a process or the retrieval of information that doesn't require conscious attention (Van Nieuwerburgh and Passmore 2012). For example, among experienced drivers, the process of shifting gears becomes so habituated through repeated practice that it usually reaches a stage of automaticity, allowing drivers to do it while performing other tasks such as talking to a passenger and gauging the distance of the car from a stoplight. Although writing is far more complex than gear shifting, the principle of automaticity also applies. A veteran police officer who has written many hundreds of incident reports may apply habituated practices, such as being as highly objective as possible, in other situations that call for a different approach, such as sharing subjective impressions or using an elegant, elaborated style.

In writing, the misapplication of habituated practices often occurs among novice writers, such as those who are trained throughout high school to write five-paragraph-style essays for standardized tests (Anson 2008). Placed in a new situation where the audience, purpose, genre, and other aspects of writing may be very different from those required in five-paragraph themes, such writers may resort to their habituated practice and fail to meet the expectations of their new rhetorical community. Habituation also explains the struggles more proficient writers experience when they have practiced certain genres for years and then try to deploy their abilities in new settings. For example, even prolific academic writers who are highly skilled at producing research reports and articles may struggle to write in new or unfamiliar settings. A significant body of literature has accumulated around the problems associated with scientists who are unable to "translate" their complex knowledge and research findings

for public audiences. Such translation requires consciously breaking with entrenched practices and being rhetorically flexible enough to think about how a text will be understood by a broader range of readers.

To counter the effects of habituation, some writing experts advocate a pedagogical approach that emphasizes rhetorical dexterity and an ability to confront new writing situations with a high degree of metacognition or rhetorical awareness learned through exposure to writing studies (Downs and Wardle 2012). Such awareness is said to help writers study and reflect on what they must to do in their writing to succeed by the standards of the community. There is some scholarly debate, however, about the effectiveness of this kind of pedagogy. Using theories of situated cognition, some writing experts argue that in spite of a high level of metacognitive awareness, writers will always have difficulty moving across disparate rhetorical communities and must always, to some degree, "learn anew" in unfamiliar settings (Russell 1995).

5.4

REFLECTION IS CRITICAL FOR WRITERS' DEVELOPMENT
Kara Taczak

Writers develop and improve with practice, time, and—among other things—reflecting throughout the process. Reflection is a mode of inquiry: a deliberate way of systematically recalling writing experiences to reframe the current writing situation. It allows writers to recognize what they are doing in that particular moment (cognition), as well as to consider why they made the rhetorical choices they did (metacognition) (see 5.1, "Writing Is an Expression of Embodied Cognition"). The combination of cognition and metacognition, accessed through reflection, helps writers begin assessing themselves as writers, recognizing and building on their prior knowledge about writing. This deliberate type of reflection centers on writers' ability to theorize and question areas such as their processes, practices, beliefs, attitudes, and understandings about writing, along with the ability to consider why they made the rhetorical choices they did (see Driscoll 2011; Sommers 2011; Yancey 1998). This ability to theorize and question is especially important for writers engaging in new or especially challenging tasks because it helps writers relocate the knowledge and practices acquired from one writing site to another (i.e., a writer might learn genre awareness in a first-year writing course and later relocate the awareness about genres in helping to create a business memo for an advertising course).

Reflection can be troublesome because for some writers, reflection isn't an integral part of their processes and practices. This may be because (1) writers believe reflection needs to happen after the fact rather than seeing it as a critical, rhetorical act within the process; (2) writers assume reflection happens naturally and without prompting; (3) writers think reflection *only* means considering how they *feel* about their writing; (4) some writers may never have been asked to reflect on their writing and thus may simply not think of doing so; and (5) some writers may not be developmentally ready to reflect. All of these suggest that reflection itself can be challenging; thus, such experiences with and misconceptions about reflection can result in writers who do not use reflection as an active and engaged part of their writing processes and who don't understand that reflection can benefit their development and success as writers.

Importantly, and as demonstrated by the other threshold concepts, many factors help ensure students' success with writing; however, almost any of these factors can depend upon writers' ability to use effective reflection as part of their writing processes. For example, writers who are more attuned to conscious reflection make "deeper choices" (2.0, "Writing Speaks to Situations through Recognizable Forms"); writers' identities are connected to various parts of their lives, including their histories, processes, and prior experiences, and using reflection allows them to tap into these as a way to become better writers (see 3.2, "Writers' Histories, Processes, and Identities Vary"; 3.3, "Writing Is Informed by Prior Experience"; and 3.4, "Disciplinary and Professional Identities Are Constructed Through Writing"); revision, which includes some amount of failure, becomes particularly helpful when writers reflect and learn from these experiences (see 4.1, "Text Is an Object Outside of Oneself that Can Be Improved and Developed")."; 4.2, "Failure Can Be an Important Part of Writing Development"; 4.3, "Learning to Write Effectively Requires Different Kinds of Practice, Time, and Effort"; and 4.4, "Revision Is Central to Developing Writing"). Reflection has the unique ability to connect across the various threshold concepts because it offers writers the ability to be active agents of change, making meaningful contributions to any rhetorical exchange (see 5.1, "Writing Is an Expression of Embodied Cognition"; 5.2, "Metacognition Is Not Cognition").

Reflection allows writers to recall, reframe, and relocate knowledge and practices; therefore, it must be worked at in order to be most effectively learned and practiced.

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