John R. Hayes

Integrating Writing Research

The flood of writing research in recent years is certainly a very encouraging sign. It raises our hopes for rapid progress toward a comprehensive theory of writing. But perhaps what is happening in writing research is better described as a stampede rather than a flood. Researchers are running fast in many different directions. The level of effort is impressive and the noise is deafening but the results lack something in coherence.

Our field is now badly in need of integration, as was the whole field of cognitive psychology about twenty years ago. In 1973, Alan Newell wrote a review for the Carnegie Symposium on Cognition titled "You Can't Play Twenty Questions with Nature and Win." In this review, Newell expressed concern that the fragmentation of cognitive research was seriously hampering progress. He characterized the cognitive research of the time as being driven by two sorts of endeavors: 1) the exploration of isolated phenomena, and 2) the resolution of binary oppositions.

Newell identified nearly sixty phenomena, each of which had inspired multiple studies, such phenomena as chunks in short term memory, set, imagery in recall, clustering in recall, and lexical marking. He also listed about twenty-five binary oppositions, such as massed vs. spaced practice in learning, learned vs. innate grammars, continuous vs. all-or-none learning, staged vs. continuous development, and conscious vs. unconscious processing.

The problem that Newell saw in this fragmentation of research efforts was that the separate fragments never got added up. They weren't being put together into an integrated picture of human performance. As he said, "We never seem in the experimental literature to put the results of all the experiments together."

continued on next page
Integrating Writing Research

continued from previous page

To deal with the fragmentation problem, Newell urged his colleagues to adopt a broader, more encompassing theoretical view—to attempt theories which explained bigger units of behavior than just the isolated phenomena—to attempt to explain, say, a series of midgame chess moves from beginning to end. Not just the perceptual chunking or the memory load or the decision processes involved in making the moves, but all of these together. Such theories would reveal not only how the separate phenomena interacted in complex situations but also what was missing—that is, what more one needs to attend to in addition to the phenomena identified so far.

I believe that Newell gave good advice and that the field, whether in response to his urging or not, has moved in the direction he suggested. We now see encompassing theories, such as John Anderson's ACT theory and the parallel distributed processing models of Rumelhart and McClelland, enjoying considerable popularity among cognitive psychologists.

Now, the reason I am telling you all this is that I feel the situation in writing research today bears a resemblance to the situation in cognitive psychology which worried Newell. Our field does tend to concentrate on isolated phenomena and isolated teaching techniques. Consider, for example, the following:

Writing Anxiety  
Discourse Communities  
ESL  
Writing Across The Curriculum  
Effects Of Word Processing  
Audience  
Metaphor  
Cognitive Overload  
Free Writing  
Procedural Facilitation  
Metacognition  
Sentence Combining  
Role Playing  
Egocentrism  
Brainstorming  
Conferencing  
Cohesion

And it does tend to focus on binary oppositions:

Back to Basics vs. Let Them Write  
Social vs. Cognitive  
Process vs. Product  
Ethnographic vs. Experimental Studies  
Primary Trait vs. Holistic Scoring  
Readability vs. Comprehension

We too appear to be playing "Twenty Questions" with nature. There is no reason to believe that we have any better chance of winning than anyone else. We too need to pull together diverse studies so that they give a more integrated picture of human performance in writing.

George Hillocks' recent meta-analysis of writing research (1986; reviewed in The Quarterly, July 1987) is an important step in this direction. It, indeed, pulls together individual studies and thus helps us to draw firm conclusions from a diverse and scattered literature. In this way, it is a very important aid in the generation and testing of theories. However, I feel that meta-analysis isn't enough (and I feel sure that George Hillocks would agree). We should also follow Newell's advice to attempt more encompassing theories—theories which explain larger units of writing behavior. To illustrate the usefulness of such theorizing for writing research, I would like to present two examples which I feel fit the spirit of Newell's advice. The first concerns the writing of research papers and the second has to do with why it is hard for us to write clearly about topics we know well.

EXAMPLE 1

After years of studying writing in the laboratory, we decided that it would be a good idea to study writing in natural settings. Jennie Nelson, a graduate student in the Carnegie Mellon rhetoric program, has been observing undergraduate students doing papers assigned in their regular classes. She asks students to keep diaries of their library research and writing efforts from the day they receive their assignments to the day they turn in the final paper. Nelson found an enormous range in the approaches students took to completing their papers. Some procrastinated until a day or two before the due date. Then they made a quick trip to the library and cranked out a paper very efficiently in twelve to eighteen hours. Other students spent much more time and effort on their papers, making many trips to the library, discussing their topic with friends, doing background reading. The most important factor determining these differences appeared to be the teacher's management style. If the teacher just gave the assignment and a due date, students were very likely to expend minimum effort. However, if the teacher gave reference lists, required drafts, or required them to give a talk, then they turned out much more effort and their behavior was much more expert. In talking to them afterward, Nelson found that students were quite aware that they had alternative writing strategies available to them and that their choice of strategy depended on the situation. If the situation did not appear to demand a great deal of effort on their part, they very sensibly reserved their effort for more demanding tasks.
If we observe writers only in a single situation, for example, a controlled laboratory session or a writing conference, we might fail to notice what is pedagogically a very important fact—that the processes which a writer brings to bear on a writing task, and presumably what the writer learns from the task, depend critically on the situation and, in particular, on the teacher’s strategy for managing the writing assignment. The theory describing the broader range of situations is likely to be much more useful than a theory describing just one situation.

**EXAMPLE 2**

In our work on revision, we described revision as a process which involved a stage of evaluation. Evaluation in turn led to the detection and diagnosis of text faults. In thinking about the evaluation process, we tried to make a connection between evaluation and ordinary reading. We hypothesized that evaluation involves all of the same cognitive processes that are involved in reading for comprehension, but that, in addition, evaluation involves a goal to notice problems, that is, to catalog the errors, weaknesses, and missed opportunities in the text for possible later action. Thus, if we have difficulty understanding something when reading to comprehend, say because of an ambiguous reference, and then we resolve the ambiguity by figuring out who "they" really refers to, we typically remember the meaning and forget that we ever had trouble in understanding. When we are evaluating, however, we mark the trouble spot as a candidate for revision. Viewing evaluation in this light suggested to us that any condition that aided comprehension such as prior knowledge of the text’s content, would make evaluation more difficult. Thus, if an evaluator had prior knowledge of a text’s content, it should be more difficult for that person to predict what aspects of the text would be difficult for a novice reader to understand. In a series of experimental studies we reported last year, we were able to confirm this prediction in considerable detail. Prior knowledge did indeed make evaluators less sensitive to text problems even when that knowledge was acquired only five minutes before the evaluation was performed. Further, the loss of sensitivity became more marked with the passage of time.

My point here is that the attempt at broader theorizing, that is, the attempt to see evaluation as an extension of the reading process, led to further predictions which were solidly confirmed and in turn reflected credence on the theory.

To conclude, I have argued that our field of writing research would profit by greater integration of a rather diverse research effort, and that meta-analysis together with an aggressive theoretical effort to describe larger units of performance is the way to go.

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**Editor’s Note**

I was reaching hard to find a theme for this issue of *The Quarterly* for I do like themes. There is value in an organizing principle. As teachers and as researchers we spend a good part of our days gathering our experiences and arranging them thematically in order to fix our understandings of the things that matter to us. Features of syntax, models of teaching, types of ambiguity—there is no limit to what we encompass and, in the encompassing, see with new eyes. With this in mind, I slip this issue of *The Quarterly* under a rubric, thematizing cautiously—and with just the slightest sleight of hand.

We begin with an article by John Hayes, who asks us to search for an organizing principle for writing research, one larger and more encompassing than the fragments he sees research now focused on and, in this, holding promise for future research. Next, Sheridan Blau arranges and sorts the complexity that surrounds the writing process and in doing so organizes our perceptions of the contexts that impinge on students as they confront the writing task. Dixie Dellinger finds in Center research some organizing principles that enable her use of reading logs in her classroom, and through these principles develops a curriculum that makes new sense of reading and writing. John Menaghan offers the umbrella of Eliot’s poetry as a way of conceiving of writing and writers and in Eliot’s themes finds themes to unite both student and teacher with writing professional. And William Winston finds in Francis Christensen’s generative sentence rhetoric the principles that drive his own writing classroom methodologies.


—M.S.