Where to Put the Manicules: A Theory of Expert Reading

Alice S. Horning, Oakland University

Abstract: Manicules are hand-drawn symbols used by medieval readers to mark important parts of a text. Knowing where to place manicules is one characteristic of an expert reader. A meta-cognitive theory of expert reading helps to account for what readers know that allows them to place manicules appropriately. This theory proposes that expert readers are meta-readers who have awarenesses and skills enabling them to read texts efficiently and effectively. The awarenesses of experts include meta-textual awareness of organization and structure, meta-contextual awareness of how the text fits into its discipline or area, and meta-linguistic awareness of the linguistic characteristics of the text such as specialized vocabulary. The skills of expert meta-readers include analysis of main ideas, details and other aspects of the substance of the points presented, synthesis of points in a single text or multiple texts on the same topic or issue, evaluation for authority, accuracy, currency, relevance and bias, and application or creation for the readers' own purposes. The theory, supported by a variety of research findings, helps to distinguish experts from novices; teachers can use specific intensive and extensive teaching techniques in any discipline to help novices learn to read well in order to place their manicules successfully.

I'm reading now for new courses I am teaching this coming academic year. The texts are informational prose, some textbooks per se and some not. As always when I read this kind of material, I am marking the text in a very particular way, following a strategy used in medieval texts. I sometimes underline or draw boxes around important ideas, but for key points, I draw a little hand in the margin with the index finger pointing to the passage. When I review the text, the little hands make it easy to find the key points without re-reading the whole text. I've been reading this way since I studied with a medieval literature scholar in college who told me about this text-marking scheme; the little hands are called manicules, according to Renaissance scholar William Sherman of the University of York in Britain (Sherman, 2005, p. 28). Part of what makes me a good reader is that I know what to mark and where to put the little hands. It is this ability and related skills in text processing, analysis, evaluation and application that distinguish expert from novice readers. A theory of readers' awarenesses and skills accounts for experts' appropriate placement of their manicules; the theory reveals the abilities student novices lack and urgently need to develop in order to be successful in any major in college and in their personal and professional lives.

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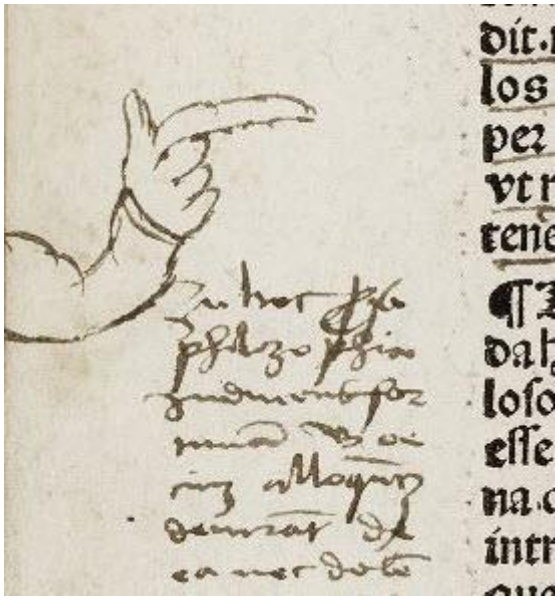


Manicule Sample from the Folger Library
(http://luna.folger.edu/luna/servlet/s/qae9l0)

The uses of those little hands in text marking is quite pertinent to the theory of meta-reading to be explored here. Sherman points out that manicules help readers to see the organization and structure of a text and also to mark passages that are interesting and/or important (2005, p. 35). Medieval readers used them to mark passages they "considered worth noting" (2005, p. 38) for whatever specifically individual reason. Sherman says manicules "played an important role in the *personal* process of making a book meaningful" (2005, p. 43). For me, the symbol became just such a personally distinctive way of marking the text that has stayed with me since my college days. In the same way, Sherman's observations indicate that readers working with informational prose do have a specific and personal investment in the text. This individuality plays out in what readers read and how they read it; it appears in what they mark in a text and why; and it can be accounted for in a theory of meta-reading that explains how expert readers know where to put their manicules.

The following discussion of the characteristics of expert readers focuses exclusively on the extended reading of informational prose in one discipline for three specific reasons. First, there are many different kinds of readers and a variety of kinds of expertise in reading for different types of texts in different disciplines, now ever-expanding as the universe of texts includes all things digital. For pedagogical purposes, however, extended informational prose text on paper is a kind of gold standard in a variety of disciplines, even with variations in genre, purpose and so forth. Extended informational prose continues to be the main type of text that students read on pages or screens in any field. In some disciplines, like history, reading original texts (of, for example, the Constitution or a Supreme Court decision) will also be part of students' reading experiences, but that kind of work will be closely related to course discussion and textbook materials.

So it is essential that students have strong reading skills they can use to read and learn from informational prose texts of various kinds. University of Maryland educational psychologist Patricia Alexander, who has published extensively on reading and academic development makes this point in her discussion of a "Model of Domain Learning" (2003, p. 47). Alexander's studies examine reading development in such fields as physics, special education, and immunology (2003, p. 54), noting that readers develop over time through stages of acclimation to competence to expertise (2003, p. 55-57)

as their knowledge of discipline or subject area and their reading ability in that area grows. This discussion focuses specifically on the informational prose texts students might read in linguistics courses because students taking early courses in this subject are often novice readers who are learning to read in the discipline as they are learning course content. Linguistics serves as the exemplar for the general principles; similar texts in any discipline could illustrate the key points of the theory.

A second reason for focusing on extended informational prose on a specific topic is that the theoretical proposal offered here can be supported with some evidence and examples based on readers developing skills in working with this kind of material. Reading is an enormously complex activity that involves the interaction of the reader and the writer as they meet in and through the text. Because reading is in some sense transparent, such that highly skilled readers get meaning directly from the text with very little or no attention to the mechanics of the visual array of letters, words, punctuation and so on, it is a challenge to access exactly what is happening as reading takes place. Published studies rely variously on self-report data (United States, 2007; Jolliffe & Harl, 2008), multiple choice tests of comprehension (American College, 2006), think-aloud reporting of text processing (Bazerman, 1988), brain scans (Dehaene, 2009) or other measures; every strategy has strengths and weaknesses and none provides a complete picture. Limiting the topic and type of reading permits a more detailed analysis of reading expertise.

The theory of meta-reading presented here rests to some degree on proposals concerning novices and experts in literacy and other areas. There has been a significant amount of research in this area over the last several decades. While only a small portion of this work can be discussed here due to the constraints of space, it is also true that only some of the work on the nature and development of expertise is specifically pertinent to reading and to helping students read better across disciplines. So, for example, Ericsson and Smith compiled a series of articles arising from a 1989 conference on the nature of expertise at the Max Planck Institute in Germany that appeared in 1991. One of the papers in this volume focuses specifically on "literate expertise" (Scardamalia & Bereiter, 1991). The insights of these scholars and those of Ruth Clark in *Building expertise* (2008) provide a useful backdrop to the meta-reader theory. Other research on expertise such as that presented by Fox et al. (2008) at AERA and the insights of psychologist Ronald Kellogg (2006) on the role of reading in expert professional writing will be presented where it is relevant to key parts of the theory to be discussed a bit later in this article.

Scardamalia and Bereiter (1991), researchers at the Ontario Institute for Studies in Education, note that reading expertise goes beyond and is essential to developing expertise in a particular field because it is more than a "tool skill," (1991, p. 174), i.e. more than a simple means to an end, but rather, an essential, inseparable part of the growth of expertise. Their research shows that "*...being an expert reader and writer within some domain means reading and writing in ways that maximize the productive interaction between these activities and others going on at the growing edge of expertise*" (Scardamalia & Bereiter, 1991, p. 175, emphasis in original). So, as readers develop their knowledge in some domain, they can use it to understand specific texts, just as doctors use their general knowledge of medicine to diagnose a specific illness. Nonexperts are usually thought to lack domain knowledge, but Scardamalia and Bereiter point out that they lack the ability to integrate what they learn into their broader knowledge (1991, p. 178). In reading, comprehension involves both understanding the content of the text per se, which they call the textbase, and also integrating it with prior knowledge of the domain which they call the situation model. Expert readers working with difficult texts can apply teachable and learnable strategies to achieve comprehension of the text itself and integration, such as "lexical repetition, relational terms and features of text organization" (Scardamalia & Bereiter, 1991, p. 183), along with skimming, scanning and adjustments to speed.

They point out that true expertise in reading, uncommon among novices, "would involve cycles of attention to textbase and situational model, modifying each in response to problems arising from the other" (1991, p. 185). All of these aspects of expertise in reading are addressed in the meta-reader theory to be discussed shortly.

Some further insights from educational research on novices and experts offer additional background and support for the theory proposed here. Educational psychologist Ruth Clark's 2008 book *Building Expertise* for example, offers seven principles about experts and expertise that tie directly to the meta-reader theory. Clark's broad discussion of research in teaching and learning shows that expertise arises from extended, deliberate practice within the domain or area that is of interest to the learner (2008, p. 9-12). Experts rely heavily on prior knowledge and can and do sometimes get stuck on a problem (2008, p. 12-14). When stuck, experts draw on both their routine expertise that arises from experience and what she calls "adaptive expertise" (2008, p.13) or the ability to apply prior knowledge and experience to a new situation. Finally, research shows that expert teamwork is most effective for solving challenging problems. The meta-reader theory relies on these principles in that it argues for practice, application of prior knowledge and some collaborative work. In all of these ways, novice readers can move toward expanded expertise.

Finally, a third reason for limiting the discussion here to extended informational prose in one subject area is that the theory of meta-readers is pertinent particularly to those who are literacy experts as well as experts in their fields, an array of abilities I have defined this way:

> Expert literacy is best defined as the psycholinguistic processes of getting meaning from or putting meaning into print and/or sound, images, and movement, on a page or screen, used for the purposes of analysis, synthesis, evaluation and application; these processes develop through formal schooling and beyond it, at home and at work, in childhood and across the lifespan and are essential to human functioning in a democratic society.

Experts have these abilities; novices lack them and must develop them. I have argued elsewhere that these abilities should be the focus of work in every discipline taught in colleges and universities (Horning, 2007). I am far from the only person to be thinking along these lines; indeed, the research literature on reading is vast, and addresses every aspect of reading from beginning to proficient, from novice to expert, from one language to two, from paper to digital.

In a recent volume attempting to review this research, literacy scholar Stephen Kucer has built a series of chapters around the 2004 reports of the Commission on Reading of NCTE (2008). Kucer summarizes the dimensions of literacy as including the cognitive, linguistic, social and developmental; he argues that every literacy event entails the interaction of these dimensions (2008, p. 29-30). This broad view captures what other scholars (Dole, et al., 1991) have described as a "bottom-up" view of reading as understanding sounds, letters, words and sentences to get meaning from print. It also captures what other scholars (Goodman, 1996; Smith, 2004) have described as a "top-down" view of reading, as understanding the whole meaning of a text in the context of other texts and the situation in which the text appears, in order to get meaning from print. Kucer's notion of dimensions captures what might be described as the "meta-cognitive" view of reading (Kucer, 2008, p. 39) in which readers understand and are able to exercise such abilities as evaluating, predicting, drawing inferences and conclusions consciously as they get meaning from print. The meta-reading theory sketched here fits into this last view.[1]

The proposals here, then, concern the ability to read extended informational prose texts in a college course for the purposes of analysis, synthesis, evaluation and application. A theory of meta-reading, based on the meta-cognitive approach, helps account for readers' abilities to carry out this kind of

reading. Our goal in every course is to help students move toward this kind of expertise through understanding and practicing the skills we see in experts. This goal can be achieved through teachers' understanding of what experts do, through specific instructional scaffolding strategies to be discussed below that will help students learn these skills, and through requirements of extended, focused practice. If we want our novice reader students to know where to place the manicules in their reading, theory and practice are essential.

Meta-reader Theory

The theory proposes that expert readers are meta-readers, drawing on the meta-cognitive view for its base. The prefix 'meta' is drawn from the Greek, according to the dictionary ("meta," def. 1, 1966). It means after, along with, beyond, among, behind. Experts are able to do things with texts as they read, among the ideas presented and beyond them, so that behind, after and beyond the reading, they are able to get the essential meaning of a text. They can then analyze, synthesize, evaluate and apply, that is, engage with the text as expert readers. This engagement occurs as meta-readers bring specific kinds of awareness and an array of skills to bear on their reading experiences in ways that may or may not be fully conscious. The three different kinds of awareness overlap a bit; these categories as described sound more separate than they probably are in actual practice.

Awarenesses of Meta-readers

Meta-reading builds on meta-cognitive analyses of reading, and includes, according to my proposed theory, *meta-textual awareness* of the organization and structure of the text. I had an expert reader tell me, for instance, in case study research with novices and experts, that she was marking key parts of a text because the writer was setting out three points. She marked these points 1, 2, and 3 as she saw the ideas unfold in the text. This meta-textual awareness allows readers to see the organizational structure of the text or how the ideas are presented, developed and exemplified.

Meta-readers also have a *meta-contextual awareness* of where the text comes from and how it fits into the larger scheme of things—topic, research, author, disciplinary issues, and related matters. They are able to see the text as part of an on-going conversation about key issues or ideas in a discipline, drawing on their prior knowledge of the topic, the author's likely purpose and whatever else may bear on the text. Essays of literary criticism or Darwin's *Origin of Species* or reports of psychology experiments all arise from particular contexts and from long rhetorical and disciplinary traditions and genres. Expert readers know about and draw on this context, using their meta-contextual awareness. In Bazerman's description of the physicists reading physics texts, to be discussed in greater detail below, for instance, the readers make choices about what and how to read based on their purposes, their prior knowledge of context, the author's other work and a range of other factors.

Finally, expert readers have a *meta-linguistic awareness* of the language of the text. Meta-linguistic awareness includes not only individual words but also various other aspects of the language of the text, such as the sentence structures or patterns (parallel structure, for example), tone, register and other features of the language per se. Second language acquisition scholar Stephen Krashen explains that just as language learners must get what he calls the "din" of the target language in their heads, so expert readers are aware of the typical language forms of written language in their discipline (1983). The "din" refers to not only the sounds and sound patterns, but also other kinds of patterns in the text. Expert readers have an awareness of the typical patterns of informational prose in their discipline. The text examples below include both linguistic theory and application, drawing on the "din" of these types of texts.

Meta-linguistic awareness includes what University College London discourse scholar Ken Hyland calls metadiscourse. He examines the various aspects of metadiscourse in the informational texts of particular disciplines in *Disciplinary Discourses*, which appeared in 2000. More recently, Hyland has defined metadiscourse as "self-reflective linguistic material referring to the evolving text and to the writer and imagined reader of that text" (Hyland & Tse, 2004). Through metadiscourse, writers help readers see how the ideas of the text develop and connect by using their "interpersonal resources …to present propositional material" (Hyland & Tse, 2004). These three kinds of awareness, which may be fully or only partly conscious, meta-textual, meta-contextual and meta-linguistic, make experts meta-readers.

Most faculty don't aim to help students become expert readers, at least not in introductory or general education courses. Instead, to achieve ordinary instructional goals, most faculty want students to DO the reading and get concepts and content that connect with the rest of their learning in the course. Helping students move toward the awarenesses of expert readers can be done through the process education scholars call scaffolding, described by a number of scholars in the field (Kucer, 2008, p. 51; Manzo, et al., 2009, p. 46; Bransford, et al., 2000, p. 213-16; Yancey, 2009, p. 262-66). Like the scaffolding outside a building, put up temporarily while workers do construction or painting or similar work, scaffolding for learning provides temporary support to students while they develop the awarenesses and skills needed to be effective and efficient readers who know where to place their manicules. It should be clear that the scaffolding supports meta-cognitive activities involved in getting meaning from print.

A more formal definition of scaffolding grows out of the work of Vygotsky, in connection with his idea of the Zone of Proximal Development (1978, p. 86-87). The ZPD accounts for what a student might be able to do with help, i.e. scaffolding. Vygotsky defines the zone quite specifically this way:

> It is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers. (Vygotsky, 1978, p. 86, italics in original)

Although Vygotsky was writing about children, the concept of providing support through scaffolding can be useful for older students as well. Educational researchers describe the scaffolding processes in reading instruction as including "cuing, prompting, analogies, metaphors, questioning, elaborations and remodeling," according to reading researcher Janice Dole and her colleagues (1991, p. 255). Effective instruction of the kind suggested here leads students to develop increasing skill in reading, leading to a "gradual release of responsibility" (1991, p. 255), by teachers and increasing assumption of that responsibility by students. This latter process of moving students to take on more of the work of reading and learning by themselves as teachers step back and remove the scaffolding is captured by the concept of "fading" as discussed by Manzo et al. (2009, p. 46). Scaffolding is essential when students are working in their Zone of Proximal Development in any area of study, and this approach is also useful in helping students read well enough to place their manicules appropriately.

Course examples. There are specific strategies teachers can use to provide such scaffolding to build readers' awarenesses. Recently, for example, I taught a version of an upper-division psycholinguistics course (called "I-Brain: How Your Brain Does Language") to a group of student novices in our Honors College program. To help these novices develop their meta-cognitive skills through stronger meta-reading awareness, I provided them with reading guides for all chapters of the assigned course textbook. These guides are designed so that over the course of the term, students will build their

meta-textual, meta-contextual and meta-linguistic awareness, though I don't tell them this explicitly. This approach is consistent with the "Model of Domain Learning" (Alexander, 2003, p. 47) mentioned earlier. I do tell them that one of my goals is to help them become better readers.

My guides follow instructions from a book called *Teaching Reading in the Content Areas* by Harold Herber (1978). Though the book is somewhat dated, the advice Herber gives is not; indeed, similar strategies are suggested in Manzo, Manzo and Thomas' *Content Area Literacy* (2009). Following Herber, I provide guides early in the course to help students get main ideas and details from the chapters, often with true/false questions or questions that ask for content-based reading (Herber's literal level). In the middle of the term, I ask students to look beyond the content to see how key ideas we are discussing relate to one another (interpretive guides). In the last third of the course, the guides may provide general claims or inferences from the text which students must support with evidence from the chapter or class discussion, or other knowledge they have from their outside reading, other courses and other sources (applied level guides). I recognize that I am not tapping students' work with multi-media texts; as noted previously, my focus here is exclusively on extended informational prose in print in one discipline. As students develop their meta-reader awarenesses through the use of reading guides, they can make better use of manicules to mark their texts effectively. (See Appendix A for samples of reading guides for Jean Aitchison's *The Articulate Mammal*, the course text.)

Meta-readers' Skills

Beyond meta-reading awareness, expert readers have an array of essential skills that make it possible for them to read informational prose efficiently and effectively. These skills consist of those that contribute directly to the elements of expert literacy as I have defined it, that is, skills in analysis, synthesis, evaluation and application. In each area, the skills contribute to meta-readers' expertise with texts.

Skills in analysis. Analytical skills include being able to read quickly, since one of the key findings of reading research is that readers who read too slowly lose track of the developing ideas of the text. According to psycholinguist Frank Smith, successful reading must be fast, selective and fully integrated with everything the reader brings to the text, i.e., nonvisual information about language and content (Smith, 2004, p. 86-89). Experts can move through the text quickly in order to sort main ideas from details. Novice readers often complain that they do not know how to highlight or mark a text because everything seems important. Meta-readers are able to persist, staying with longer texts because they can move through them at a reasonable pace. They are also flexible: skimming, scanning, reading closely as the need arises based on what they are getting from the text and from their awarenesses of structure, context/purpose and language.

Analysis hinges to some degree on skills with the specialized vocabulary of a text. New vocabulary is often what makes an introductory textbook in any field difficult reading for novice readers because they are learning the vocabulary of the discipline. Experts have enough high level vocabulary to understand complex texts and get meaning. Beyond meaning, though, experts understand the specific, disciplinary implications of some words. For example, words like 'significant' or 'correlation' have particular implications in an article presenting statistical data that they do not have when used more generally. In a typical early reading guide in my courses, I will provide a list of terms for students to define from the text, to build their disciplinary vocabulary. In addition, meta-readers know the forms and genres of the discipline. Bazerman's physicists, we will see below, know how to read research reports, and they read quickly and selectively based on this analytical skill.

Experts do not surf the text "like a guy on a Jet Ski," as Nicholas Carr suggests in "Is Google Making Us Stupid?" (2008) as a result of the loss of the ability to sustain attention and focus on longer passages of text. Instead, meta-readers can and do stay with a text from the inside to get the larger points that may not be clear till the end of the reading. The skills experts have may entail skimming or scanning the whole text to get the overall gist as Bazerman's physicists do, or having enough knowledge in the discipline and its genres so that only certain parts of an article or research report are needed to get the overall point (Bazerman, 1988. p. 243). These skills allow meta-readers to carry out the analytical aspects of expert literacy.

Skills in synthesis. Experts can put together the text they are reading with other texts or sources of information to synthesize ideas. Research on expert readers presented at the AERA meeting suggests that they go into reading with "multi-layered goals" and these help them use their reading to further develop subject matter expertise (Fox et al., 2008). Other research on expertise mentioned earlier includes work on reading/writing connections. Psychologist Ronald Kellogg (2006) points out that expert professional writers are typically extensive or compulsive readers (2006, p. 397-98) and use their reading to develop knowledge about their fields and about the genres used in them. Expert readers know how to draw inferences and conclusions from a text. The writer's point may or may not be explicitly stated, but is there to be drawn by an expert reader. This skill relates to the 'beyond' or 'after' aspect of what makes experts meta-readers. They can move beyond the array on the page to see the larger concepts several writers have presented. They can also follow the lines of an argument, particularly in extended texts, comparing, contrasting and drawing together various sources to form a more complete picture or to support an argument. Extended texts here include longer magazine or journal articles, monographs or books, where a complex argument is fully articulated and defended. Expert readers can see the key points of more than one text, and will mark those, omitting details, examples, comparisons and other developmental techniques.

Skills in evaluation. Expert readers build on these basic skills in analysis and synthesis in order to conduct critical evaluations and apply what they glean from their reading. Their additional skills in evaluation entail reading for authority, currency, relevancy, accuracy, objectivity/bias and appropriateness (Lombardo, 2001; based on Association, 2001). These skills are often taught to novices in the context of library research in first-year writing courses. They are teachable and learnable skills that expert readers have and use in all kinds of reading situations, but especially when reading informational prose. Novices, by contrast, lack these skills. Students in my advanced class focused on this kind of evaluative reading, partly as a by-product of instruction from a member of the library faculty.

Skills in application. Finally, expert readers have skills in application—knowing where and how to use information from reading. They can take whole ideas or arguments or lines of reasoning and use them in their own work. They can incorporate specific facts or findings from research reports into their discussions. They know how to integrate information gained from reading and apply it to other situations, to broader questions, or to larger issues. They might use what they have read to answer a question or solve a problem, or they might integrate their reading of the work of others into their own writing. The point is that meta-readers can not only get ideas from extended informational prose texts, synthesize different readings on the same issue or topic, and evaluate the material, but they can also make use of it for their own purposes. In my book review task to be described below, I ask students to comment at the end of the review on the relevance of the book for their personal or professional lives. Here, I am encouraging them to think about what they have read and how it might be of use to them in other parts of the course, as well as outside my class, whether in other courses or in other areas of their lives.

Course examples. The students in my Honors College I-Brain class were novice readers both because they just don't read as well as they might and because they were new to linguistics and psycholinguistics. To help students develop skills in both analysis and synthesis, I have additional work in reading required for this and all courses I teach. I provide the students with a short list of current, related texts and ask them to choose two to read during the term, outside of class. They must write reviews of both of the books that they choose (see Appendix B for a sample of this assignment). These I do not discuss in class except at the beginning to describe the content and appeal of each and then only if students mention their outside reading in class discussion. In the reviews, they must first summarize five major points in the book; this part requires analytical skills most students have, at least to some degree. In addition, though, they must tie each idea to issues we have discussed in class. Here, I am calling for them to exercise their synthesis "muscles" to "tone up" their reading abilities by making connections between course content and ideas in the book. In the I-Brain course, for example, one of the books on the list is psychiatrist Alice Flaherty's *The Midnight Disease* (2004), about writer's block; students were able to tie her discussion of brain anatomy and physiology to class discussions of the importance of key areas of the brain for language comprehension and production.

In the I-Brain course, the work on evaluation called for students to read two different kinds of articles in the discipline. One kind of work might be described as linguistic argument, focused on some aspect of a theoretical proposal. An example of this type of argument appears in an article that was published in the leading journal in theoretical linguistics, *Language*, in 2009. In this article, Harvard linguist Andrew Nevins and his colleagues discuss the work of a scholar named Daniel Everett on Pirahã, a language spoken by a small number of speakers in Brazil (Everett, 2008). The discussion entails a review of data presented by Everett; Nevins et al. explain why, for a number of reasons, they disagree with Everett's analysis, and then they consider the implications of their discussion for the theory of Universal Grammar. To read this article effectively and efficiently, readers need all of the awarenesses discussed above, plus the skills under discussion here. Readers need to know that this kind of argument has a typical organizational pattern, ordinarily starting with another scholar's analysis of some linguistic data and then moving to offer a different analysis of the same data. They need to know the context of the discussion, often through prior publications by all the scholars involved. And they need to know the meta-linguistic and metadiscourse forms that are used in an article like this one. While the I-Brain students didn't read this particular article, it is a good example of a typical theoretical discussion in linguistics.

Because the research projects undertaken by students in the course entailed applying some aspects of linguistic theory to small psycholinguistic experiments, we looked at an article by Pontifex et al. (2009) on the impact of exercise on memory. Unlike the theory article mentioned above, this article is a standard experimental research report, including an abstract, an introduction, literature review, methods, results, and discussion. There are charts and graphs, tables, statistical analysis and so forth. My novice readers found this article challenging, and not only because it had a lot of numerical data and statistics. We were able to call upon the knowledge of one class member who had taken an AP Statistics course in high school to explain some of the results. One student who was a certified personal trainer loved this article (naturally, it drew on her meta-contextual awareness through her prior knowledge of exercise physiology) and went on to use it as the basis for her experiment with some of her clients in the gym where she works. This personal trainer was also helpful to the class as a whole in explaining the exercise tasks in the study. But what they needed the most help with was how to read a research report of this kind.

The reading goal I set for the students, of being able to report what was done and what was found in the study, was novel for them. However, once they saw the headings and understood that each section

must by convention provide certain types of information, they were able to see how the report was put together. From this work, they were able to go on to read other research reports in this genre, evaluate them and use them in their own work, reading and marking the reports with manicules where appropriate. In this connection, I often refer students who are novice readers of empirical research reports (and novice researchers and writers as well) to the early pages or so of the American Psychological Association style manual. The latest edition has a very helpful discussion of the conventions of work in this genre (American Psychological, 2010, p. 21-40). I encourage further development of similar evaluative skills in the book review task where students are doing extensive reading on their own, as they incorporate into their reviews their personal judgments of the books, comparisons of the two they have read and so forth (see Appendix B).

Finally, the students did apply some of the concepts from the extensive reading, in the course. On the final exam, some of them used evidence provided particularly by Gopnik in *The Philosophical Baby* (2009) and by Flaherty in *The Midnight Disease* (2004) to support points they were discussing in essay responses to questions. They did also write evaluative comments in their reviews of these books and others on the list; their evaluations pertained to both style and substance as well as commentary on the relevance of these books to issues discussed in the course. Will they take the concepts from this reading and the strategies of using manicules and apply them to other courses or in other parts of their lives? I have no way to know, of course, but I am confident that these reading skills that expert meta-readers have and novice readers need to acquire do, when novices develop them, transfer to many other venues.

There is one final way that my novice students' developing expertise in reading empirical research reports common in psycholinguistics marks their beginning transition to more expert reading. I asked them to apply their ability to read this kind of text using their developing expertise when they review one another's research reports in a peer exchange. Each student in this course conducted an empirical study with a small number of subjects. The personal trainer, for example, had a few of her clients at the gym complete a reading comprehension test before and after an aerobic exercise session. The participants did in fact score higher on the second test, following a workout, a result similar to that found in the model article we read together as a class. The peer review sheet students used to respond to one another (see Appendix C) draws on their prior reading of the article we read together, their own individual work with published research reports, their understanding of the genre (based in part on the discussion in the APA manual) and their developing awarenesses and skills as meta-readers. While this exchange is not a perfect process, it is one more way to move novices toward disciplinary expertise with this kind of informational prose.

Of course, most readers of this article know that a key problem we all face in the classroom is actually getting students to do the reading we assign. On this problem, the insights of Linda Nilson, director of the Office of Teaching Effectiveness at Clemson, are quite specific and useful. In *Teaching at Its Best* (2010), Nilson writes that students don't do the reading because they don't want or need to, especially if teachers discuss the readings in detail in class. She suggests that rather than review all the content in assigned material, teachers should help students develop strategies for doing the reading and hold them accountable for completing the work. She also suggests teaching students appropriate strategies for text marking, that is, for using their own system of manicules (Nilson, 2010, p. 216-17). In addition, she cites research demonstrating that regularly assessing students' work with reading material, such as reading guide responses (to be discussed below) in a way that counts in their grades provides an effective incentive to what she calls "reading compliance" (Nilson, 2010, p. 219). If teachers understand the nature of expert reading first, they can use it as a base for the instructional strategies illustrated above.

Novices and Experts by Other Measures

Expert readers, then, have both awareness and skill that allows them to read informational prose texts quickly and efficiently; even if they don't use manicules, expert readers can extract what they need from extended informational prose texts and could, if asked, say where they would put manicules in the margins of any text they read. By understanding these characteristics of expert readers, the needs of novices become clear (see Appendix D for a condensed sketch of the elements of meta-reading theory). There is plenty of evidence that today's students are novice readers who lack both the awarenesses and many of the skills of expert meta-readers and do need to strengthen their reading abilities. Case studies with novices and experts, self-report data from a survey of novices in Arkansas, objective testing by the American College Testing organization (American College, 2006) and by the Pew organization (Pew, 2006), and work with experts by Bazerman (1988) all show that novices differ from experts in specific ways when reading informational prose texts. The need to help all readers become meta-readers is widespread and urgent.

My own case studies with a few novice and expert readers show some of the differences between the two groups. I collect reading biographies and ACT Reading test scores and then ask both novice and expert readers to read extended informational texts on various topics and talk about their marking of them as they are reading. Readers write a brief summary of what they have read after about ten minutes. My cases suggest that not only do experts read more of the passages and understand more of the content, but they also show their awarenesses and greater skills in their explanations of text marking. The novice readers get fewer of the key points and can say little about why they mark certain parts. The experts use both their awarenesses and their skills in their meta-reading. If I had asked these readers to place manicules in the texts they read, I'm guessing they could have done so, but the expert readers, drawing on the conscious meta-cognitive abilities that are the basis of my theory would have been able to say explicitly where they were putting those little hands and why.

A recent study by University of Arkansas literacy scholar David Jolliffe and doctoral student Allison Harl draws on novice readers' self-reported data to show that student readers do in fact complete a lot of reading, but not of the kind under study here, i.e. not of the kind they must master to be successful, particularly in college coursework, regardless of discipline. Jolliffe and Harl paid a small group of students at the University of Arkansas to complete a background questionnaire, keep a reading journal logging their reading activities for two weeks, and write a detailed exploration of one item they read each day, responding to a prescribed series of questions (Jolliffe & Harl, 2008, p. 602-03). They conclude from careful analysis of the data that these novices do not read as well as they could or should and that in order to help them do so (that is, help them move from novice to expert status), faculty need to work in three different areas.

First, these novices can be helped to develop "text-to-world and text-to-text connections" (2008, p. 613). In addition, novice readers need to have opportunities to make broader connections between reading and coursework and other kinds of educational opportunities. And third, because of students' interest in, use of and comfort with technology, faculty can and should find ways to encourage students to develop their "literacies in electronic contexts that instructors overlook or ignore" (2008, p. 614) in ways that can lead to deeper engagement with reading material. Jolliffe and Harl argue directly for building novice readers' awareness, particularly in the meta-contextual area, and indirectly for developing their skills in analysis, synthesis, evaluation and application. They advocate additional research since students on each campus, and though they don't say so, readings in each discipline, will inevitably be somewhat different. Still, the kinds of awareness and skill they want to see novice readers develop are those captured in the theory of meta-readers. My reading guides and

book review assignment address the needs Jolliffe and Harl found among the student novices they studied.

Much more of what we know about novice readers' strengths and weaknesses comes from objective tests of reading performance. Of these, one study provides essential insights about skills in analysis, synthesis and evaluation based on large-scale testing. The ACT Reading comprehension test is taken by thousands of high school students each year. In 2006, the ACT organization released a careful study of the performance of 563,000 students who were tracked over three years, using their score on the Reading portion of the test and their performance in college as indicators (American College, 2006). The overall results support the claim that many students are novice readers. ACT reports that students who earn a score of 21 or higher (the top score is 36) are more likely to be successful in college, where success is defined as a 2.0 GPA and persistence to the second year of college. By these minimal standards, half the students in the ACT sample lacked the reading skills to be successful. The Pew organization did a different kind of direct testing of a sample group of students across the country graduating from college (Pew, 2006). The results of this study show that half of these students who should be moving to expert status are not there yet. Thus, there is much work to do to help novices move toward expert status.

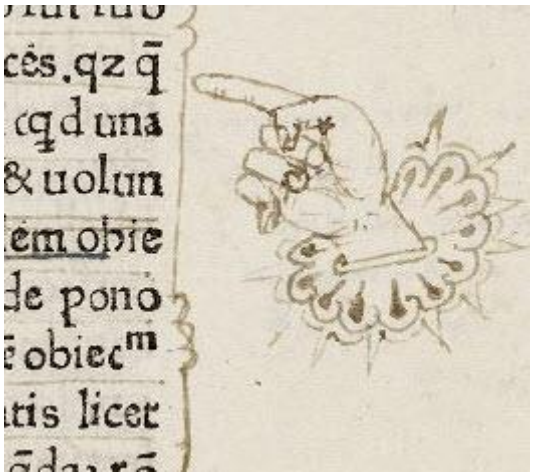
My intensive work on reading through the reading guides and extensive work through the book reviews can both provide some measure of whether students are improving their reading. By focusing on reading, I am trying to help students build their reading "muscles;" I'm not sure that such reading fitness can be measured or tested in direct ways. In terms of the reading guides, though, if students are using them consistently, it is easy to see when we get to the applied guides if they are able to build on the literal and interpretive skills to discuss and apply the concepts from the text. The extensive work in the book reviews, especially if the first and second book reviews are compared, should show growth in the ability to analyze, synthesize, evaluate and apply the concepts from the text to connect them with other work in the course. The awarenesses and skills I have proposed in the meta-reader theory are essential to expert reading and that everything we can do to help student novices move toward them is useful.

Turning, finally, to Bazerman's interview study of physicists, this detailed examination stands out because these experts practice the kind of meta-reading that supports the meta-cognitively-based theory under discussion here. Though published in 1985 in *Written Communication* as a separate article, "Physicists Reading Physics: Schema-Laden Purposes and Purpose-Laden Schema" appeared a few years later in Bazerman's *Shaping Written Knowledge* (1988). There, it serves as a detailed report of how practicing scientists work with published research articles in the context of his larger exploration of the nature of expert reading and writing in several different disciplines. He points out in the opening section of the book and repeatedly elsewhere in his work (as well as in personal communication May 25, 2009) the importance of context in how experts and others go about reading.

"Physicists Reading Physics" (hereafter PRP) is especially important to the meta-reader theory I have proposed because it is one of a very few close studies of expert readers actually reading text. Bazerman conducted seven interviews with research scientists in various areas of physics. He points out that there are two key ideas from reading research that help to account for the ways in which expert readers work with text: the reader's purpose drives approach, strategy, and use of the material being read, and this purpose is shaped by the reader's prior knowledge or background. Prior knowledge leads readers to create a schema, a kind of outline or set of expectations about text content and form.

Bazerman summarizes his findings toward the end of the report. He notes that reading entails many different kinds of activities: reading bits and pieces for information, adding that information to prior

knowledge, reading for particular purposes, evaluating materials while reading, and varying reading depending on prior knowledge, experience and purpose (meta-contextual awareness). In addition to all this complex and variable activity, reading is influenced by social and psychological factors such as the relevance of the reading material for an expert's own research or work situation. Bazerman's ideas are captured in my proposal that readers bring meta-textual, meta-contextual and meta-linguistic awareness to reading. The experts he worked with in the PRP study did not mark the texts they read during the study in any particular way that Bazerman commented on; if they used manicules or another system, he did not record it. However, it is clear that these experts could have put manicules into the texts they read; they have the awareness and skill to analyze, synthesize, evaluate and apply material they read in extended informational prose texts.



Manicule Sample from the Folger Library
(http://luna.folger.edu/luna/servlet/s/5xha86)

Placing the Manicules

The placement of manicules in a text is of course not the whole story in reading, regardless of who is reading or what text is being read. And the process of reading and responding to a text in this way is a highly complex task. In addition, the teaching strategies in my sample course discussed here do not address many other aspects of reading, both print and digital. However, there are some definite differences between novice and expert readers reading extended informational prose as reflected variously in my own case studies, in self-report data from the college students studied by Jolliffe and Harl, in direct measures of reading comprehension as tested by ACT, and in detailed interview research such as that conducted by Bazerman. All this evidence suggests that expert readers have some essential meta-cognitive awareness of text structure, context and language as well as skills in analysis, synthesis, evaluation and application. Novices lack awarenesses of these kinds and do not have as complete an array of skills as they could and should. Teachers in every discipline can and should help students develop the awarenesses and skills to become expert readers in their field. Meta-readers know where to place their manicules and all readers can benefit from having the awarenesses and skills to do so, too.

Appendix A: Reading Guides

Samples for *The Articulate Mammal* by Jean Aitchison.

Reading guide for ch. 3 in Aitchison (Literal level guide)

The reading guides are meant to help you read thoroughly and efficiently. You may find them helpful as a pre-reading quiz, a post-reading comprehension check, or a guide to keep you focused while you are reading the chapter. Whether you use them in any of these ways or not, you should print them out and bring them to class as they will be the basis of our discussions.

In this exercise, be able to say whether the following statements are consistent with points presented in the chapter (i.e. true/false) and be able to cite a page number for material that is the basis for your answer.

1. Humans have particular biological structures that make speech possible.
2. The size of the brain relative to the size of the body is a key factor in what makes talking possible.
3. The cerebrum controls how we function in the world.
4. Contralaterality is the principle that each side of the brain controls the opposite side of the body.
5. Speech is centered in the right hemisphere of the brain for almost everyone whether left- or right-handed. (Be able to discuss 3 different kinds of evidence presented in the chapter for your answer.)
6. Evidence for localization of function is very clear.
7. Broca's area in the brain controls language comprehension; Wernicke's area controls production.
8. Language production and comprehension are simple processes.
9. Slips of the tongue help to explain how people plan speech.
10. Women are better at spatial tasks and math; men have the edge in language.
11. Language ability is somewhat genetically determined.
12. The ability to understand intentions of others is a specifically human ability related to language that humans have by age 4.

Reading guide for ch. 4 in Aitchison (Interpretive level guide)

Directions: The following statements are generalizations drawn from chapter 4. Be able to support each statement with evidence from the text, class discussion, other readings or other information you have from other courses or your own research and reading.

1. Language appears to be an internally driven, biologically-based behavior.
2. Trying to teach kids language in a direct and overt way has little impact on the acquisition process as observed.
3. "Motherese" or child-directed speech appears helpful to children in acquisition (think about why).
4. The stages of acquisition appear to be universal.

5. Language acquisition is not really complete by age 2, but continues through the rest of childhood and to some extent, across the lifespan.
6. There appears to be a critical or sensitive period for acquisition, ranging from birth to age 2 or perhaps to age 5 or perhaps to puberty. (Be able to discuss the cases cited as examples.)
7. The critical or sensitive period may apply specifically to language or more generally to all kinds of learning.

Reading guide for ch. 10 in Aitchison (Applied level guide)

To frame your reading of this chapter, think carefully about how you understand spoken language. A couple of real-life experiences might help:

A. Find, if possible, someone who speaks a language you don't know and ask them to say a sentence or two. What does it take to understand language?
B. Turn on a talk or interview program on TV and turn off the sound. Can you understand what is happening? Why or why not?
C. Think about a recent misunderstanding you've had where you either didn't hear at all what was said by another person, or you heard something other than what was said. What went wrong? How often does this happen?

Be able to explain, define or give examples if possible for each of the following terms or concepts from the chapter, drawing on the text, the real-life experiences above, your first outside book and/or knowledge from other courses:

1. Prior knowledge
2. Cohort model of comprehension
3. Connectionism/spreading activation/interactive activation
4. Verbal complexity
5. Lexical decision tasks
6. sentoids
7. minimal attachment strategy
8. late closure strategy
9. parallel processing
10. short term memory (and its limitations)/other processing factors

Appendix B: Book Review Assignment

During the semester, you will be required two read two books from the following list (or others you bring in for specific approval) and write brief reviews. There are two main purposes for this assignment. The first is to provide you with the opportunity to explore a range of topics related to course issues in greater depth. A second purpose is to provide you with the opportunity to develop and practice your skills in critical reading, essential in both your personal and professional lives. I hope you will find the books you choose interesting and enjoyable as well as challenging.

To write each of your two reviews (see due dates on the course outline), you should prepare a brief paper (approximately 500 words, or two typed pages, double spaced). Your review must include the following three elements:

1. Your review should summarize five (5) main ideas discussed in the book you are reviewing and for each major idea you summarize, you must connect it clearly and specifically to issues we have discussed in class or that appear in other readings.
2. Find some background information about the author online or in the library. Print out or photocopy this material and attach it to your review, and incorporate information about the author in your paper.
3. Choose at least <u>one</u> of the following additional features to include in your review:
    a. Explain what the book has to do with the course and why you think I chose it for the list;
    b. Discuss the practical implications of the book for your personal and/or professional life;
    c. Relate your personal experience(s) to two concepts in the text; OR
    d. (for second review only) Compare and contrast the two books you have read for the course.
4. Provide an evaluation of the book, positive, negative or in between.

Following is a list of approved books from which you can choose your reading. If you come across, hear about or find in your local library other books you think are relevant that you would like to read, please DO bring them in for my specific review and approval.

- Bartlett, F. *Remembering* (Cambridge, 1932)
- Brandt, Deborah. *Literacy in American Lives*. (Cambridge, 2001)
- Chomsky, Noam. *Language and Mind* 3rd ed. (Cambridge, 2006)
- Flaherty, Alice. *The Midnight Disease*. (Houghton Mifflin, 2004)
- Gopnik, Alison. *The Philosophical Baby: What Children's Minds Tell Us AboutTruth, Love and the Meaning of Life.* (Farrar Straus, 2009.)
- Kucer, Stephen. *Dimensions of Literacy*, 2nd ed. (Erlbaum, 2005)
- Pinker, Steven. *The Stuff of Thought* (Viking Penguin, 2007)
- Pinker, Steven. *The Language Instinct* (Harper Perennial, 1995)
- Smith, Frank. *Understanding Reading*, 6th ed. (Erlbaum, 2004)

NOTE: If you do not complete both book reviews, your course grade will automatically be a 0.0.

Appendix C: Peer Response Worksheet

Writer's name:_____
Reviewer's name:_____/phone:_____

PEER REVIEW SHEET FOR PROJECT REPORTS

Here are some questions that may help you to think through the parts of your report, and/or help you help one another with drafts of your report. Hand in the draft and responses with your report.

Respond to these questions as specifically and constructively as you can. The more you can say about why a problem is a problem and how the writer might fix it, the more helpful you will be. Use the back and/or write on the draft itself if possible.

1. Is the point that the writer wants to make clear in the introduction section of the paper? Is the plan of the paper spelled out in detail? Is the tone appropriate for a formal research report? Are both the research question and answer obtained made clear in the opening section?
2. Does the review of the literature describe relevant studies with enough detail so that you can tell what was done and what was found in each? Check citation format, if you can, both in the text and on the reference list at the end of the paper.
3. Could you replicate this study exactly from the information provided in the methodology section? Indicate in notes here or on the paper what information is missing that you would need to copy this study.
4. Can you tell what the researcher found out in the Results section? There should not be an analysis here, but only a clear statement of what was found or the results obtained, counts or scores, or a transcript of utterances (referred to here and presented as an appendix to the paper).
5. What sense has the researcher made of his/her findings in the Discussion/Conclusion section? Is there a clear connection between the findings and the point the writer set out to make at the beginning (read first and last paragraphs to check this). Is there a summary of the research question, approach, findings and discussion in this section?
6. Check Works Cited or References for format and make sure all and only works actually referred to are on this list.

Appendix D: Meta-reading Theory Sketch

Awarenesses:

1. Meta-textual awareness—text structure and organization.
2. Meta-contextual awareness—text context, reader's prior knowledge and purpose.
3. Meta-linguistic awareness—language about language and ability to reflect on it and talk about it explicitly.

Skills:

1. Analysis: taking the text apart through
    - flexible speed and persistence
    - knowledge of specialized vocabulary
    - genres/forms of the discipline or topic
2. Synthesis: putting the text together with other texts or sources
    - drawing inferences and conclusions
    - following lines of argument
    - comparing and contrasting to other texts or information
3. Evaluation:
    - judging Accuracy, Currency, Relevancy, Tone, Bias/objectivity, Authority
    - appraising appropriateness of the text for audience, topic, purpose
    - assessing use of sources within the text for appropriate presentation and citation
4. Application
    - extracting key points

- use of text material in other writing, speaking or practical situations
- solving problems or answering questions

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Notes

[1] I am indebted to an anonymous reviewer for *ATD* for suggesting the need for this quick overview of reading research to make clear where the meta-reader theory fits into broader analyses of reading. I am indebted to both *ATD* readers of an early draft of this article for their help, to Professors Cynthia Haller and Deborah Mutnick for thoughtful readings and additional feedback, and to *ATD* editor Michael Pemberton for his careful editorial advice and consideration of my work.

Contact Information

Alice S. Horning
Department of Writing and Rhetoric

Oakland University
Rochester, MI 48309
Email: horning@oakland.edu

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