THE CREATIVE READER

What happens when readers go about decoding messages and creating meanings? The first thing to notice is that they just don't remember all the things we tell them. Instead of remembering all the details, readers do something much more creative--they draw inferences as they read and use the writer's ideas to form their own concepts. In other words, readers remember not what *we* tell them, but what they tell *themselves*. You can demonstrate this process for yourself with the following exercise.

Here is an excerpt from the "Personal Experience" section of Henry Morris' application for a summer job in accounting. As personnel director, you have been asked to evaluate six such applications. Your job is to read each one and come up with a set of distinctive qualities that characterize each candidate. How would you characterize Henry Morris from his statement below?

> During high school I managed the concession stand for our home basketball games. Later I worked at the nearby A & W Root Beer stand during summers, and for three years I kept the books at my father's local soda bottling plant. I have taken a number of math courses and have had two courses in acounting. I am currently taking courses in small business managment.

Before reading further, write down several sentences that you would use to characterize this applicant.

You now might want to compare your reactions to those of a group of students who were shown the statement. Then everyone proceeded to describe the Henry they had just read about. Here are some of the conclusions they reached about Henry.

LISA: He seems like a good bet for the job. First, he's had a lot of practical accounting experience. And then he's had a couple of courses on the subject, plus the math. On top of that, he seems pretty enterprising to have taken all those courses and gotten himself those summer jobs.

JOSÉ: It sounds as if he's had accounting experience all right, but all he's done is work at his father's plant. And maybe he only had the job at the concession stand because of his father's plant. He doesn't seem very enterprising if he hasn't gone out and found another accounting job to get more varied experience.

TIM: His accounting experience does look impressive: three years is a lot of experience for a young guy coming into a summer job. But his application is so sloppy. He misspelled both "accounting" and "management" in just that one paragraph. Accountants are supposed to be good with details. Maybe he didn't proofread the statement before he sent it, but in that case, he seems very careless or not really interested in the job.

Note that from even small details in the text, such as misspellings, the students had arrived at some sweeping conclusions. Furthermore, the chances are good that a real personnel director might have the same response. As you can see from this example, when people are trying to understand a passage, they constantly are drawing inferences and making their own meanings.

This experiment demonstrates two things. The first is that readers do not passively absorb a writer's information; they make meaning as they read. And secondly, the meanings they make are often surprising leaps of imagination. The obvious question, then, is why are readers so creative with our prose? Why must they draw inferences and form concepts?

One reason for this phenomenon is the limitations of the human short-term memory, which forces us to "chunk," or group, information in order to understand it. When it comes to reading, or in fact processing any kind of new information people are remarkably inefficient. This is because our short-term, working memory, or conscious attention, can only handle a limited number of inputs at one time. This is in contrast to the apparently unlimited storage capacity of long-term memory.

Imagine yourself sitting in a lecture. All incoming information--the voice of the speaker, the words on the blackboard, that idea you were trying to remember, and the person smiling at you across the room--all this information clamors for a portion of your limited conscious attention. We are often caught like jugglers with too many balls in the air.

To test the limits of your own short-term, working memory, multiply 12 x 14 in your head. Now try multiplying 789 x 678 in your head. Do it now.

Notice how hard it is to keep track of your partial answers, carryovers, and the current multiplication task at the same time. You can see why one of our major limitations as thinkers and problem-solvers is the nature of our short-term memory. Although we must deal with highly complex problems, we are unable to actively hold in mind and consider more than a few separate items at a time. Cognitive psychologists set the critical limit at 7 + or - 2 bits of information.

Furthermore, in comparison with other processing systems, such as a computer, we are neither particularly fast nor accurate. As a communication channel, the human voice can process 25 "bits" of information per second, whereas most electronic channels are designed to process between 10^4 and 10^5 bits in that same second. According to cognitive psychologist George Miller, it is a charity to call us a channel at all. We are more like a bottleneck.

The Power of Chunking

Fortunately, we human beings have another trick up our sleeve that makes us remarkably good at thinking. This is the ability to "chunk" information: to look at a whole milling array of facts and perceptions, all shouting for immediate individual attention, and to reduce that throng down to a single chunk. ("Oh, that's one of those whatchamacallits again.") A chunk may be a concept, a category, a term--anything that enables a person to organize miscellaneous data. Telegraph operators use this process when they learn to perceive a string of rapid dashes and dots as meaningful chunks such as words and phrases. You and I do it when, instead of thinking "There are 48 individual cars (in Aztec Red, Seafoam Green, Harvest Gold, etc.) jammed up around the 5th and Penn Avenue intersection honking their horns at 5:34 pm Tuesday afternoon...," we simply think to ourselves, "rush hour traffic jam," and go on with our conversation. In order, then, to compensate for the limitations of short-term memory, people sort information into chunks they can manage. In the act of processing new information--such as your job application--they actively organize it into chunks or categories such as "good accountant."

But what determines *how* the reader will chunk new information and *which* inferences they will draw? We naturally like to think that readers carefully mine our prose for *the* meaning we intended. But much recent research in psychology shows that it is more accurate to think of readers as hard at work using our information like a set of tinker toys to build an idea structure of their own. And if our writing doesn't help them build it, that final structure may or may not resemble our own. In attempting to read and understand a message (i.e., to make meaning), a creative reader:

1. Tries to fit new information into an old framework he or she already knows. ***Therefore: The writer should supply that framework by creating a context for his or her ideas.***

2. Develops expectations and uses them to actively process and understand the text. ***Therefore: The writer needs to create (and then fulfill) accurate expectations that will help the reader anticipate the writer's meaning.***

3. Sorts and organizes information into an unconscious hierarchical structure built around a few key concepts or chunks. ***Therefore: The writer needs to make the hierarchical structure he or she has in mind clear to the reader.***

Let us look at these three processes of the reader in more detail.

Readers need a framework, or context, for new ideas

In 1938, Orson Welles threw thousands of people into panic with a radio broadcast reporting a Martian invasion of England. Why? Because his audience had the wrong framework. Those who tuned in during the middle thought they were hearing a news broadcast, not a mere radio drama called "The War of the Worlds."

Readers make sense out of new information by putting it into context. When they aren't given a clear context for such information, they are likely to do two things. The first is to supply their own: a worried reader, anticipating disagreement and afraid that no one likes him, will interpret your helpful suggestion as yet another criticism. A second possibility is that the reader will not understand you at all. Even the simplest information may be hard to understand and impossible to remember if the reader has no context for making sense out of it.

To demonstrate this for yourself, try this experiment. Read the following passage through once (and only once).

> The procedure is actually quite simple. First you arrange things into different groups. Of course one pile may be sufficient depending on how much there is to do. If you have to go somewhere else due to lack of facilities that is the next step, otherwise you are pretty well set. It is important not to overdo things. That is, it is better to do too few things at once than too many. In the short run this may not seem important, but complications can easily arise. A mistake can be expensive as well. At first the whole procedure will seem complicated.
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> Soon, however, it will become just another fact of life. It is difficult to foresee any end to the necessity for this task in the immediate future, but then one never can tell. After the procedure is completed, one arranges the materials into different groups again. Then they can be put into their appropriate places. Eventually they will be used once more and the whole cycle will then have to be repeated. However, that is a part of life.[1]

Now shift your attention for a minute or so by saying the alphabet backwards or reading a page at random from this book. Then without looking at the passage again, try to write down all you can remember about the passage.

How much did you remember? When psychologists John Bransford and Nancy McCarrell ran this experiment they found that their subjects did very poorly, even though the passage describes a very common activity for which everyone has a framework: washing clothes. When another group of subjects was given the passage and told at the beginning that it was a description of washing clothes, the subjects had an immediate framework. Not only did they appear much less frustrated with the task, but they remembered much more of the passage. By creating a context for their readers, Bransford and McCarrell were able to more than *double* their readers' comprehension and recall.

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[1]John D. Bransford and Nancy S. McCarrell, "A Sketch of a Cognitive Approach to Comprehension," in *Cognition and Symbolic Processes,* ed. Walter Weiner (Hillsdale, N.J.: Erlbaum, 1974).

Readers develop expectations and want those expectations met

General context, as we have seen, gives readers a rough idea of what is coming by setting up a framework with empty slots waiting to be filled. Sometimes the very type of article or paper arouses firm expectations. For example, whenever I read a movie review, I expect to find some discussion of the theme or plot, some background on the actors, and an evaluation by the critic--but not a description of the ending. If you depart too greatly from your genre (whether it is a stockholders' report, a highly structured essay assignment, or a resumé) you are likely to confuse or disorient your reader.

Although you can sometimes use expectations readers already have, as a writer you also have the power to create expectations in the reader's mind. Exam graders, for example, are strongly influenced by a dazzling first answer or a weak beginning. If an article or paper begins in a vague fashion, the reader's expectation may be: "this paper sounds as if it's going to be full of hot air, so I can skim." Perhaps the writer is building slowly up to a point or plans to save his best ideas for last, but it is hard to overcome the powerful effect of a reader's initial expectations.

Cues in the text, whether they are key words you introduce, "teaser" sentences that suggest interesting material to come, or simply a preview to the contents, help generate expectations. But cues can backfire too. In Henry Morris' accounting application, some readers saw Henry's misspellings as evidence that he would be a poor accountant. Readers often generate expectations from relatively small, and sometimes inadvertent, cues in the text. These expectations may be so strong that the reader simply won't see what you have to say.

Once a reader's expectations are aroused, they actively clamor to be fulfilled. So it is important to follow through on what your initial paragraphs promise. A reader quickly becomes impatient with wandering prose that seems not to be moving toward the points initially previewed.

Setting up and fulfilling expectations also serves another very important function--they make people remember things. The best way to make your point vivid and memorable is to set up a strong expectation and then fulfill it. Expectations are a valuable way of circumventing short-term memory. If you know what you are looking for, it is much easier and faster to process all that information. Plus, by giving the reader a context and building up expectations, you are equipping her with a set of hooks for retaining what you want her to know.

Readers organize ideas into natural hierarchies

A final way readers understand and remember what you tell them is by organizing your discussion in a general hierarchical way. If you don't do it for them, they will do it themselves--and the result may be far from what you had intended.

The important things about hierarchies, as you know, are that they create a focus by distinguishing major points from minor ones and they show how ideas are related to one another. In general, a reader will want to get a feel for the structure of any discussion very quickly; it is hard to hold many unrelated ideas in mind for long. A writer, on the other hand, might want to present all the facts first and then reveal his point, hoping the reader will keep everything in mind until he does so. Unfortunately, when readers don't see the focus and structure of your ideas, they will probably just build an organization of their own to comprehend the discussion. And the structure they build may not be the one you had in mind at all.

To demonstrate for yourself just how creative readers can be, try the following "headless paragraph" written by a student on the topic of "The Writing Problem of College Students." Without a topic sentence and without the transitions and connections between the sentences, it is hard to see just how the ideas in this paragraph were organized. Read the six sentences and then jot down, in a sentence or two, what you think the main point of the paragraph was.

The Headless Paragraph

*Students aren't practicing.
*College atmosphere produces tension.
*Students are afraid of getting a "D."
*Writing is time-consuming.
*Writing is usually done under time pressure.
*Writing courses are not required, so students must take a heavy course load to learn how.

When this experiment was conducted with a group of 18 college sophomores the results were surprising to the student who had written the paragraph containing these ideas. Out of eighteen readers, no one came up with the same organizing idea she had had in mind. Three had concepts that accounted for much of the paragraph, such as: "Students have difficulty in writing due to the pressures imposed upon them by grades, time, and the tension of college life." Three other readers focused on an inclusive or high-level idea, pressure, but neglected other points such as practice.

Altogether, only six of the eighteen came up with an organizing idea that could incorporate most of the information in the paragraph. Of the other twelve readers, four came away with concepts that accounted for only a limited part of the paragraph, such as "Students don't have enough time." And seven ended up with ideas that were not contained in the sentences at all: For example, these readers thought the topic sentence should be "Students aim to please teachers," or "There is too much competition in college," or "Writing should not be required," or "Writing should be required in college." These readers simply took the writer's information and hooked it onto a framework of their own. They used it to support something they already believed. The final reader in this group of eighteen even dropped the subject of writing altogether and said that the major idea of the paragraph was that "Students are more interested in grades than in learning. Their selfishness produces artificial pressures." This statement came as quite a shock to the original author.

As you can see, some readers created a focus or structure that was at least close to what the, writer had intended. Their topic sentence created a tree that was able to account for most of the information. But some of the readers, in their need to create some sort of organization, interpreted the paragraph in unexpected, even drastic ways.

Here for comparison, is the paragraph that the writer finally developed after receiving input from her classmates. Note how she employed a topic sentence to create expectations and used cues along the way to show how the ideas were related.

> Students often have trouble writing in college because of a combination of bad habits and high pressure. To start with, students don't practice. This is partly because of time limitations: learning to write is time-consuming, and since writing courses are not required, students have to take a heavy load in order to learn how. Some students do have the time to practice but fail to do so because writing in the high-pressure atmosphere of college produces anxiety and tension. Many students are so afraid of getting a "D" that they avoid writing altogether-until the day before the paper is due. Furthermore, college papers are usually done under time pressure, which simply increases the tension of writing.

Anticipating the Creative Reader

We can sum up this discussion of the creative reader in this way. Because of the characteristics of the human mind, readers must actively construct meanings from the messages they receive. In order to make meaning, readers rely very heavily on expectations and on structure. In fact, these two things are so important that if the writer doesn't provide expectations and a clear structure, the reader will make up his own. And the framework the reader builds may not be the one the writer intended. In order to help the reader read efficiently and comprehend your meaning, you need to do three things:

1. Put your ideas in a framework that will help build expectations and make your points forceful and memorable. Set up expectations all through your paper so your reader will know what is coming.

2. Try to organize or chunk your information around clear, explicitly stated ideas or concepts. If you want your reader to "see your point," make that point explicit. Don't expect him or her to automatically draw the same conclusion or come up with the same topic sentence you would.

3. Organize your explicit concepts and their supporting information into a clear hierarchical structure for the reader. Decide which ideas are major and which are minor, and show how you want them to be related.