Critical Thinking via the Abstraction Ladder

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Overheard among participants before the first session of a writing across the curriculum workshop: "Students just can't think abstractly anymore. I think it's because . . . ," and "Student writing is becoming worse and worse. And they [the English department] want us to assign *more* of it?"

Overheard, on the same day, among students who had just been given their grades on an essay exam: "I studied a lot, and I thought I did really well on this but obviously *she* didn't." "I don't see how she can take off points here; it's my interpretation."

How easily teachers and students alike slip into the familiar lines of complaint that their expectations have not been met. One way to get at a key aspect of effective thinking, writing, and evaluation which underlies all these complaints is to use S. I. Hayakawa's image of the abstraction ladder in *Language in Thought and Action* (1972, ch. 10), based on the work of Alfred Korzybski. Lately,

under the rubrics of critical thinking and writing across the curriculum, we have generated a great amount of discussion and constructive change in classroom practices, but if a picture is worth a thousand words, we would do well to take a new look at this image, which can help both faculty and students move beyond such complaints to effective action.

Hayakawa emphasizes that a look at language should begin with the connection between language and what language is about—the concrete world. As we use words we operate at various points along a ladder of abstraction, from naming the concrete thing (itself in a process of flux) to abstracting its qualities. Moving up the ladder entails looking at similarities and ignoring differences. Ladders may show a progression of simple naming (nouns and noun phrases) or they may show a progression of predications (sentences that make a claim). (See Figure 1.)
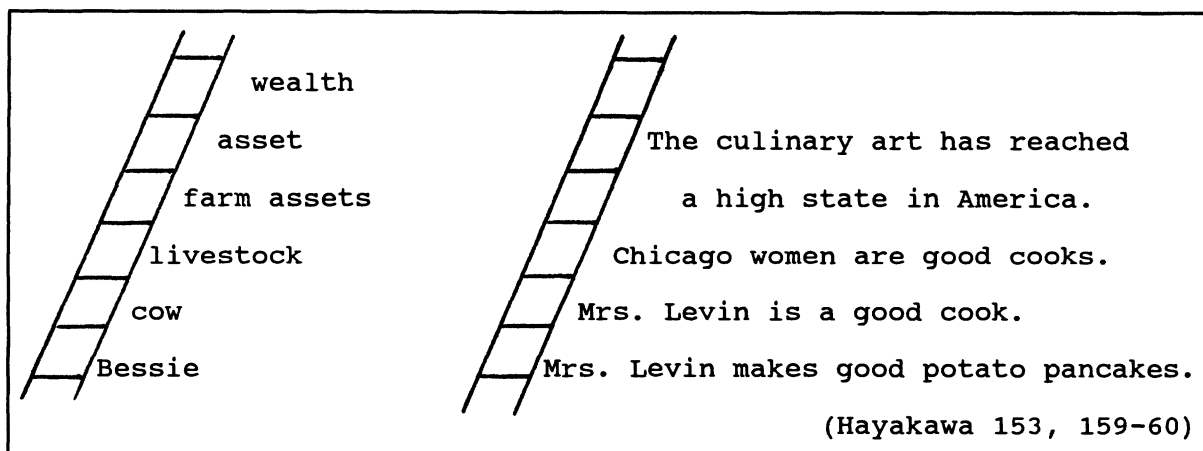
wealth
asset
farm assets
livestock
cow
Bessie

The culinary art has reached
a high state in America.
Chicago women are good cooks.
Mrs. Levin is a good cook.
Mrs. Levin makes good potato pancakes.

(Hayakawa 153, 159-60)

Figure 1.

Hayakawa notes that

> the interesting writer, the informative speaker, the accurate thinker, and the sane individual operate on all levels of the abstraction ladder, moving quickly and gracefully and in orderly fashion from higher to lower, from lower to higher. (162)

Becoming able to visualize language in terms of the abstraction ladder can provide a way to understand the structure of and to evaluate the language we hear and the language we produce.

More recent semanticists and rhetoricians have concurred. James Moffett (1968), for example, is

> convinced that a very large measure of what educators mean by "teaching students to think" is in reality making them conscious of abstracting but is, unfortunately, seldom viewed this way. (27)

William Perry (1970) relates an anecdote of a student's moving from unfounded opinions in one essay to a pile of raw data in the next, until finally realizing, with guidance, that "the ideas and the facts must go together" (32). Mina Shaughnessy (1977) emphasizes the need, in academic thought, of "ranging widely but in fairly predictable patterns between concrete and abstract statements, between cases and generalizations" (240).

I have written elsewhere (Seabury 1989) about the extent to which the abstraction ladder can help to focus a writing course; my focus here is on its usefulness not only in our literature courses but in other courses across the curriculum and in cross-disciplinary teachers' workshops on writing and critical thinking. With students, one can introduce the issue of verbal hierarchies with just a few informal comments and drawings on the board; a work-shop for teachers may profit from a more detailed discussion of some photocopied ladders, a page or two of excerpts from Hayakawa, and some sample sentences to order.

An initial use of this image helps students visualize how one develops an idea in a given discipline. We obviously hope that students take with them from our various class sessions not just a pile of details to memorize or some general ideas about

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the subject but a sense of the thinking process practiced, so that on their own they can "think like a biologist," "think like a movie critic," "think like a historian." But students can exit from a classroom analysis of an animal, a movie, a character, or a government, with pages of notes but little awareness or mastery of the structure of thought in what we did, so that they could create it themselves, applied to a new situation. Bringing into the open the hidden ladders, the scaffolding, which we have used to move between concrete and abstract can help demystify the process of thinking. One kind of simple board diagram created during a discussion might look like Figure 2.

The diagram differs from our usual jottings or even outlinings in its clear verticality, allowing students to *see* a hierarchy of ideas. By the way, it may
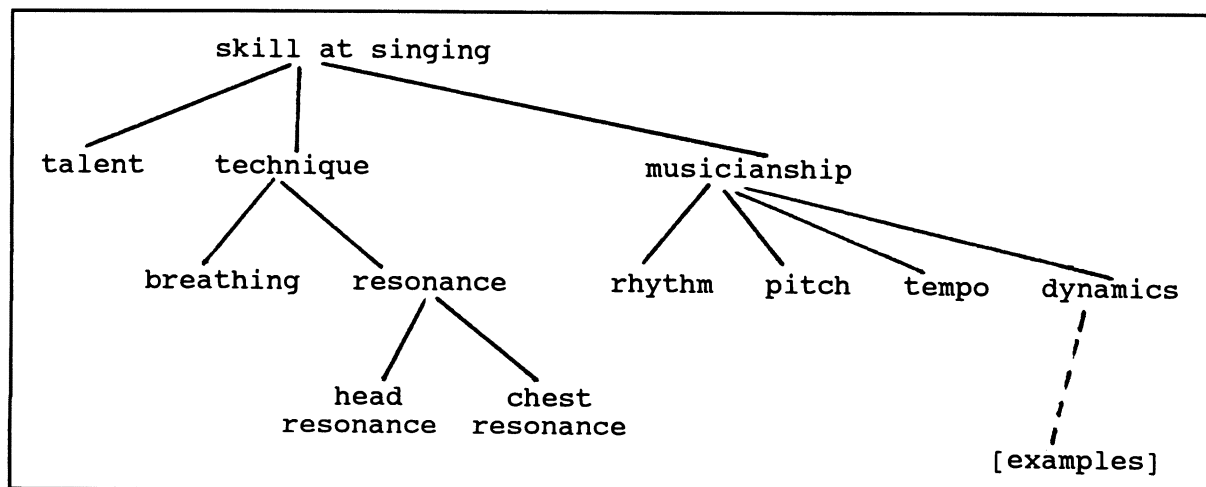
Figure 2.

Sample Answers to Exam Question

Exam question: Briefly suggest how the intermingled conversations early in <u>Brave New World</u> reveal one of Huxley's main concerns.

Sample Answer #1: People in the Brave New World are made on an assembly line. A Director takes students through the rooms and teaches them how and why it's all done. The Controller joins them and tells them that the new world is much better than the old. He explains some of the changes: for example that people don't suffer from old age anymore. Meanwhile there are other conversations going on, and the reader often switches from one to the other, sentence by sentence. Henry Foster and another man are talking about women. Lenina and her women friends are talking about going out with the men. You also follow along with the course of Bernard's thoughts; he doesn't like the tone of the men's conversation.

Sample Answer #2: The intermingled conversations early in <u>Brave New World</u> suggest some of Huxley's main concerns. Huxley is one of the important modern British novelists. In this novel he expresses his deep concerns about the way society is going. The people in this society have got their values wrong. They seem happy, but they've really lost their individuality. Huxley is arguing that we need to think for ourselves and act for ourselves. But how can you when you've been conditioned by all the pressures of the society that make people more and more alike? The conditioning he shows is apparent in our own society today. Far too many people don't really think and act for themselves. They think they're happy. But how can you be happy in a society where everyone is thinking alike and acting alike?

Sample Answer #3: While the Controller is declaring "history is bunk," the men are talking about entertainment. The Controller mentions there used to be religion and then we hear the women discussing clothes. While the Controller discusses old age, which used to bring time to reflect, we hear people hurrying off to play sports. So the mixing of the conversations only looks random. Huxley arranges them to suggest that people in the Brave New World keep busy and happy but they have stopped asking the important questions. And what about us?

Figure 3.

even help us catch ourselves when we get stuck at a particular level of abstraction, spewing forth absorbing detail upon detail without answering "so what," or impressive principle upon principle unanchored to specifics. Hayakawa calls this stasis "dead-level abstracting," a term from Wendell Johnson's *People in Quandaries*.

> The low-level speaker frustrates you because he leaves you with no directions as to what to do with the basketful of information he has given you. The high-level speaker frustrates you because he simply doesn't tell you what he is talking about. (Hayakawa 162)

Both Hayakawa and Johnson cite classrooms as likely places to hear dead-level abstracting, a kind of discourse tempting to the speaker but deadly to critical thinking.

We may especially realize the need for such board diagrams as we stretch ourselves into interdisciplinary teaching and try to master an unfamiliar pattern of thought. Upon listening to one member of my new team-taught course lead a class on a work in his discipline, and taking diligent but unstructured notes, I remember feeling more than a little uncertain in planning my discussion section on that material. The following semester, a new colleague drew a diagram on the board that gave both me and the students some structure and some confidence.

The abstraction ladder can then become a tool for discussing students' thinking and writing, showing them one clear criterion for judging a piece of writing relatively strong or weak. For example, in the handout shown in Figure 3, students can use Hayakawa's ladder to determine which sample answer is best, and why.

A similar handout could be compiled for stu- dents in any discipline and at any level; it could come before a test, using past year's examples, or after a first test toward improvement on the next. Students' first responses will likely be mixed. Many of my students like answer #1 because it shows the writer has read the book and studied hard. Many like answer #2 because the writer is talking about important issues, is confident and convincing, "really believes what is being said." And some like answer #3 just because it "sounds good." At first, then, the discussion seems to prove their unspoken suspicion that grading is subjective.

The next step is to try visualizing and diagramming each sample answer in terms of the abstraction ladder: Is the first sentence fairly high or fairly low? Does the next sentence move up, down, or stay about the same? The next? Students soon see the relative vertical stasis of these first two supposedly good answers: The first answer stuck "down low," detail after detail with no conclusions, no addressing of the question of how those conversations reveal one of Huxley's main concerns, no sense of understanding conveyed; the second stuck "up high" and jumped enthusiastically around, generalizations one after another with no addressing of how one sees any of those concerns in the conversations, no anchoring in the text (a student could write it never having read the book). Both #1 and #2, then, reveal dead-level abstracting, horizontal thinking which simply offers "more of the same" rather than the vertical movement of which effective critical thinking consists. A class-generated board diagram will show the connected vertical movement in the third answer. Figure 4 gives some examples of the conversations and indicates what they suggest. The structure of
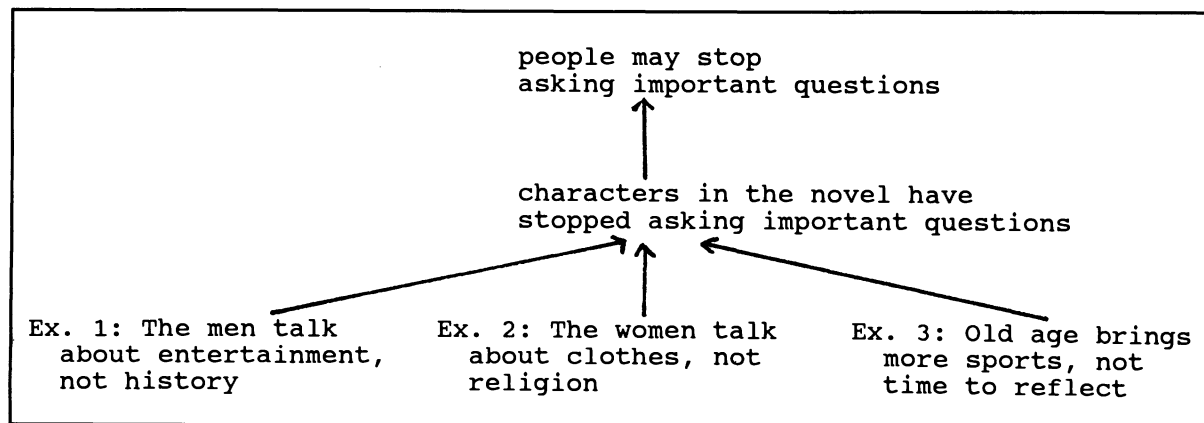
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                people may stop
                asking important questions
                         ↑
                         |
                characters in the novel have
                stopped asking important questions
                      ↗ ↑ ↖
                        |
Ex. 1: The men talk      Ex. 2: The women talk    Ex. 3: Old age brings
   about entertainment,     about clothes, not        more sports, not
   not history              religion                   time to reflect
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Figure 4.

the question indeed demands that movement. Many students, worried about writing "enough," are surprised that the best answer of the three, the one with the most movement, is the shortest. Examining an additional set of answers on a more open-ended question—"Discuss . . ."—could allow the group to explore the usefulness of movement on the abstraction ladder there as well.

Thus, students begin to see with more sophisticated eyes the characteristics of effective writing and thinking, and to catch themselves later when they begin blathering on, whether with details or with "BS." Nothing I have said over the years has done as much good as such a handout and discussion in actually making the next piece of writing better than the last. One can hardly sum up critical thinking in one image, but the ladder indeed remains in students' minds as a powerful catalyst.

Not only class notes and essay exams, but also student essays often move forward by the concept of "more of the same," despite the fact that various systems of prewriting such as webbing and outlining are based on hierarchies. Students often approach essay writing as bead stringing: Two pages required? No problem. Four? Just string on some more beads (just hope you can find enough of them). If the teacher offers advice during the process about the need to "support the ideas," quite often the student will revise by adding way up high, and ever higher, taking the essay up into a repetitive fog of generalities. But with the help of some visual imaging, the teacher can suggest not just where in the essay but where on the abstraction ladder the student needs to add: most often, "Here you need to come down." Other times the teacher can say to a student, "Your choice of topic has you beginning way too far up for a short essay, and you pretty much stay up there; even when you come down a bit to develop, the concrete realities are still distant. Begin lower, so that you can frequently be in touch with the concrete, the specific."

We can further encourage connected thinking by the way we word our assignments. During a recent cross-disciplinary teachers' workshop series on writing, we asked participants to bring in an essay or exam assignment that worked well plus one that did not. Following are some samples we discussed:

Psychology

1a. What is the nature-nurture question and how is it studied? What is the current consensus among developmental psychologists on the question?

1b. Let's say we play a game of Monopoly with different children one at a time. Each child represents one of the different stages of cognitive development (Piaget). Name each stage of development as well as the age range of each stage. Also suggest behaviors we could expect to see from the children (at each stage) as they play the game.

History

2a. Explain how feudalism in the West changed from the ninth to the twelfth century, based on your recent readings.

2b. Discuss how the classical ideals of the ancient Greeks reflected or did not reflect the reality of life then.

Art

3a. Discuss one of the following paintings as an example of Romantic art.

3b. Discuss one of the following paintings by considering its subject (literal subject + iconography) and then its formal qualities (composition [arrangement of things within the rectangle of the canvas], light, color, depiction of space, and handling of paint). Then go on to discuss your interpretation of its content or meaning, especially as it relates to the Romantic movement.

Teachers noted that some of their well-intentioned assignments elicited "rampant BS." At first, in attempting to draw conclusions across the disciplines, several teachers commented that the successful assignments were more concrete, while the unsuccessful ones called for abstract thinking which students could not handle. But as we looked further, we saw that the more effective assignments encouraged movement between abstract and concrete, helped to structure the students' thought-encouraging connections, for example, between theory and concrete behavior, between ideals and details of daily life. Whereas the wording of the first art history question left students ranting on with hosts of generalities about nature, the emotions, and the erotic, with very little confrontation of the actual painting, the second led them to look closely at the picture first, then to build any interpretations on what they had seen. A writing program director participating in the workshop commented accurately that students should become able to build the structures of effective thought for themselves without being guided so closely. But many students, well into college, still need help creating those structures, until the processes become internalized. As Elaine

Maimon put it in a recent writing across the curriculum presentation, we need to remember that certain habits of mind that we term "intellectual ability" are to a great extent teachable.

Even when we intend to offer close guidance, our assignment wording may hinder rather than help students. One experienced teacher brought to the workshop a detailed two-page assignment handout offering abundant advice but yielding poor results. When others asked what he had hoped for, his lengthy explanation led finally to the comment that he wanted students to set up a general framework and then apply it to some specific court cases. But we could not see that structure clearly in the wording of the assignment, nor certainly could the students. Another experienced teacher had given this assignment:

> Write a summary and opinion paper based on your reading of the following three essays in _____. First give a summary of each essay. Then give YOUR opinion on which essays are worth reading and why. How well did they tell you about how people lived? How well written were they? You may assume the editors of the book, which is for students, have asked for your advice on a new edition. Tell them what to leave in, what to take out, what to change, and why. There are no right or wrong opinions as long as they are *your* opinions.

The teacher built the assignment on the laudable principle, repeatedly emphasized by writing-across-the-curriculum advocates, of establishing a clear rhetorical situation, a sense of audience and purpose. But in the discussion, she saw the fatal last line as in fact fostering disconnected thinking: after summarizing, students believed they could simple switch to "I like it because it's really effective and interesting," or "I don't like it because it doesn't hold my attention" ("I'd give it a '5'"). Such a directive furthers students' belief that both their evaluation of others' writing and the teacher's evaluation of theirs remain subjective. Thus, pausing to become conscious ourselves of the kind of connected movement on the abstraction ladder we expect on a particular assignment, and verbalizing it clearly, can help students think and write better.

As we work increasingly with colleagues from other disciplines on ways of teaching thinking and writing, we may even want to keep Hayakawa's abstraction ladder in mind in structuring our workshop sessions. A co-organizer of our recent workshop series noted that she has sat in on far too many groups lapsing, albeit with the worthiest of intentions, into dead-level abstracting, either theory upon theory or classroom anecdote upon anecdote, without the kind of fruitful connection producing thought and change. Since we can and do err quite easily in both directions, alert moderators can work to assure vertical movement, to see when the theorizing needs tying to the classroom practice and when the "Do you know what happened in today's class?" comments need a broader perspective.

What indeed do we mean when we discuss teaching students to think? How do we do it? What, besides increased quantity, are we asking for when we encourage writing across the curriculum? Hayakawa offers one readily teachable skill that students can come to recognize and use in all their courses. He also offers frightening evidence of the dangers to us all as citizens of failing to distinguish between levels of abstraction, thus becoming trapped in our prejudices and vulnerable to a wide variety of propagandists with their strings of persuasive generalities. Giving students a way to visualize and judge the language they hear and create obviously serves them far beyond their years of note taking, exam taking, and essay writing.

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