

# Critical Thinking in Every Domain of Knowledge and Belief

**The 27th Annual International Conference on Critical Thinking -- July 23 -- 26, 2007**  
Keynote Address -- July 23, 2007

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Berkeley, CA — "Good morning! ...

My remarks center this morning on critical thinking in every domain of knowledge and belief. And my subtext is something like this. Intellectual work, deeply conceived, conduces to significant changes in intellectual skill and understanding. Critical thinking, if somehow it became generalized in the world, would produce a new and very different world, a world which increasingly is not only in our interest but is necessary to our survival.

But, what is critical thinking? ... There are many ways to initially define it. Sometimes I've thought of it as a system for opening every system (that exists). It opens up business. It opens up Chemistry. It opens up sports like tennis and basketball. It opens up professional practice. It opens up Ethics and enables us to see through ideology. It enables us to put things into intellectual perspective. A system that opens up systems is one way to think of critical thinking.

Here's another way. Critical thinking is thinking that analyzes thought, that assesses thought, and that transforms thought for the better.

Here's a third way to talk about critical thinking overlapping and related to the other two. It's thinking about thinking while thinking in order to think better.

Everyone thinks. We have no choice about that. But, not everybody thinks about their thinking. And not everyone who thinks about their thinking thinks about it well. You can worry about your thinking. You can think badly of your thinking. You can be embarrassed by your thinking. You can focus on it in a dysfunctional way --- that is not critical thinking.

This morning, let's think about it as a way of thinking that enables a thinker to think regularly at a higher level (than most people are capable of thinking). In other words, critical thinking, as I am conceiving it, transforms thinking in two directions. You think more systematically as a result. And you think more comprehensively as a result. And in thinking more comprehensively, you think at a higher level. Not because you are at a higher level as a person, but because you are able to put thinking into the background and see it in a larger, more comprehensive framework.

For example, we need to discover the extent to which our thinking is bound by a culture. Cultures are good in many ways. But, to the extent that they lock us in to one way of looking at the world, we need to transcend them. We need to think beyond them. Why is this important? It's important because we, as creatures, are deeply determined -- in our life, and in our behavior, and in our character, and in other ways -- are determined by our thinking. We have no choice but to be governed by thought. The question is, do we govern the thought that governs us? Ideas control us ... Do we control them?

Reversing the process so that we're in the driver's seat -- so that we're doing the thinking we need to do as well as we can -- is what critical thinking is about. Our future as a species is dependent on whether we can develop the wherewithal to raise our collective thinking so as to produce positive changes in societies across the world.

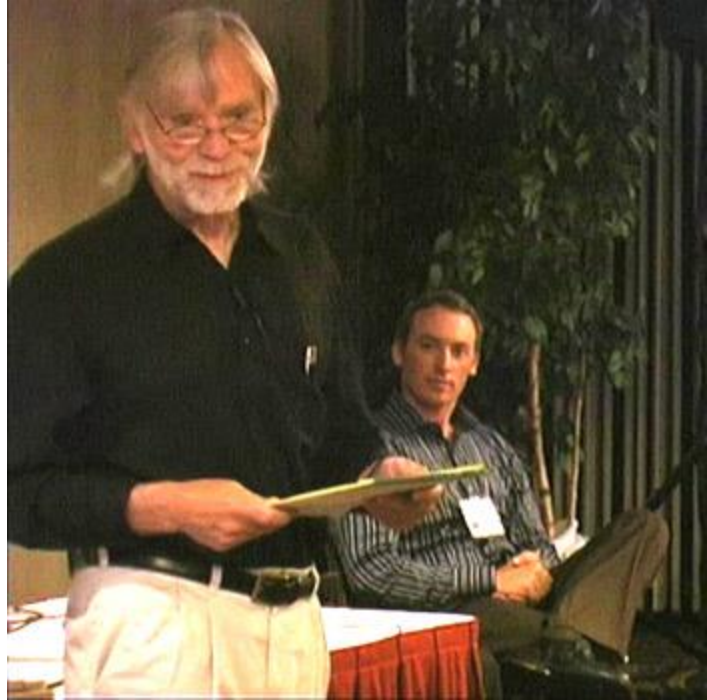


The task before us collectively is a Herculean one. That of developing critical societies. The idea of a critical society dates back many hundred years, but it was very pointedly called for in 1906, by William Graham Sumner, the great anthropologist, who emphasized in his seminal book, "Folkways," that if a critical society existed – that is, a society in which critical thinking was a major social value – if such a society were to emerge, it would transform every dimension of life and practice. We are far from such a society, but we need to think about it. It needs to be part of our vision. The structure of this conference suggests some of the most important dimensions of this vision.

The conference has a four-part structure. The first is titled: "Overcoming the Barriers to Critical Thinking." If you think about the task of developing critical thinking, do not think that task is going to be accomplished easily without facing barriers to critical thought, amongst which are the following. Human egocentricity, our tendency to think with ourselves at the center of the world. Sociocentricity, our tendency to think within the confines of our social groups. Self-delusion, our tendency to create pictures of the world that deceive us and others. Narrow-mindedness, wherein we think of ourselves as broad, deep, and in touch with reality when, if only we understood, we would see ourselves as narrow and limited.

Or, think of the barrier of fear. Fear undermines thinking, fear drives us to the lowest levels of thought, fear makes us defensive. It makes us little and petty. And then there is human insecurity. And, then human habits, our tendencies to go through the same old patterns of thought and behavior and be dominated by them; our inability to target our negative habits and replace them with positive habits. Then there is routine: Ordinary routine. When you go back to your home environment, ordinary routine will click in and many of you will find that the things you intended to do, the changes you intended to make, somehow are swallowed up in the ordinary routine of things. And connected to routine there is a huge obstacle: bureaucracy. We have created all kinds of levels of monitoring and testing and controlling and limiting and sanctioning, ordering, defining our behavior and our thoughts. And, very often the bureaucrat forgets the purpose for which the institution exists. Bureaucrats rarely think about questions like what is education? Are we truly educating our students? Are we serving their long-term development as thinkers? Then for us who are teaching, student resistance to critical thinking is an obstacle, because critical thinking asks those students to learn in a new way. And it is a way that is not comfortable to most of them. Our thinking is limited by mistaken notions, by ignorance, by our limited knowledge, and by stubbornness, our activated ignorance. And finally, our resistance to doing the intellectual work necessary to critical thinking.

We need hundreds of millions of people around the world who have learned to take and internalize the foundations of critical thought. This can be done only person-by-person through a process, which we call intellectual work. Think of the "Elements of Thought:" Each element plays a crucial role in thought. What is our purpose? What questions are we raising? What information are we using? What assumptions are we making? What data are we gathering? What data do we not have? Given the data that we have, what is it telling us? And, when we come to conclusions about the data, what do those conclusions imply? Within what point of view are we thinking? Do we need to consider another point of view? Where can we get access to such points of view? Questions like this are questions that embody the elements in very important ways. They are crucial questions. But, are we in the habit of asking them?



Ask yourself, how many students have ever said to you, “What is the purpose of this course, and what are the questions we need to answer in order to be successful?, What data do we need and how are we interpreting the data?, What assumptions are we making, or what assumptions are made, within the textbook?, From what point of view is our textbook being written?, Are there other points of view from which it could have been written?, What points of view are you taking in the course?, Are there some points of view you might have taken that we might hear about which you're not utilizing?”... Students don't ask questions like these, and very often teachers don't either so that the logic of the process is left in obscurity — somewhere in a back room of the mind.

We think, but we're not taking charge of our thinking. We don't know how to pull the system out of the thinking to see how purpose drives the thinking; how it leads us to ask certain questions and not others; how when we pose a question one way it calls for specific data to be gathered. On the other hand, if you pose it in another way it requires other, different data.

There's a wonderful book on historical thinking by Carr. The title of the book is "What is History?" This book was written I think in the later '30s, or possibly '40s, of the last century and, in it, Carr argues that there is no longer such a thing as "our history." There are only "histories." To construct a history is to tell a story about the past, but, as Carr reminds us, there are infinite numbers of stories that could be told. Which story is important? The construction of history requires value judgments. It requires that we consider whose story needs to be told. And, when that story is told we need to critically consider what it is telling us; what is it teaching us. In which case, then, if we understood Carr, we would realize that we are all historical

thinkers. We're not all historians, but we all have a history. And the history can dominate us, or we can use it to our advantage. Our thinking produces it.

Consider the phenomenon — which is worldwide — of patriotic history. Patriotic history -- at least in my conception of patriotic history — consists in telling the story of our past in such ways as to make us look much better than we are and to take those who have come into conflict with us and represent them as worse than they were and are. In other words, patriotic history is dishonest history that makes us, unjustifiably, feel good about ourselves. This is what most societies want of their historians. Tell us about the past so we can see how heroic we are. Fine and good, but what does that imply about others. If we are the chosen people, then everyone else is not chosen. If we're number one, then everyone else is below us. If we're the most important, then others are unimportant or of lesser importance. And so, to penetrate history critically — to see its dangers, and to see its values, and to be able to think with a different sort of framework — is certainly crucial to our wellbeing.



Here you see before you the diagram which we used as the central organizer for the previous year's conference. In the center of the diagram we see the Elements of Thought, the Standards of Mind, and the Traits of Mind. So far, I've only mentioned the Elements of Thought as structures we need to become conversant in. But, think for a moment of intellectual standards. Try this experiment. When you're with a group of students, ask them the following question:

When someone presents you with a belief -- "I believe this is true," or an argument to persuade you to accept a viewpoint or a premise or a belief — when somebody presents you with such a case,

how do you know whether to accept it or not? What standards do you use to assess your thinking and the thinking of others?

Now I've tried that many many times with students, and sometimes with faculty. I've found that very few people can answer that question in an intelligible fashion. Most students will say, I don't know what you're talking about. What do you mean standards of assessment in thinking? I've never ever had anyone respond — whether student or faculty — with an answer like this: "I use the standards of clarity, accuracy, precision, relevance, depth, breadth, logic and fairness. I seek to be clearer. I seek to be accurate. I seek to be precise. I seek to stay focused on the issue. I

assess my thinking for relevance. I try to deepen my thinking and notice when I'm being superficial. I try to broaden my thinking to make my thinking more comprehensive. I try to notice when other people's thinking is narrow and superficial rather than deep and broad. I check my thinking for how logical it is. Does it really make sense or am I contradicting myself/? Am I following through the implications of my thought in a consistent logical fashion? Am I focusing on the significant questions putting the insignificant questions, the peripheral questions, in the background? And, am I able to assess other people's thinking fair-mindedly even though they disagree with me? Can I be fair to them? "

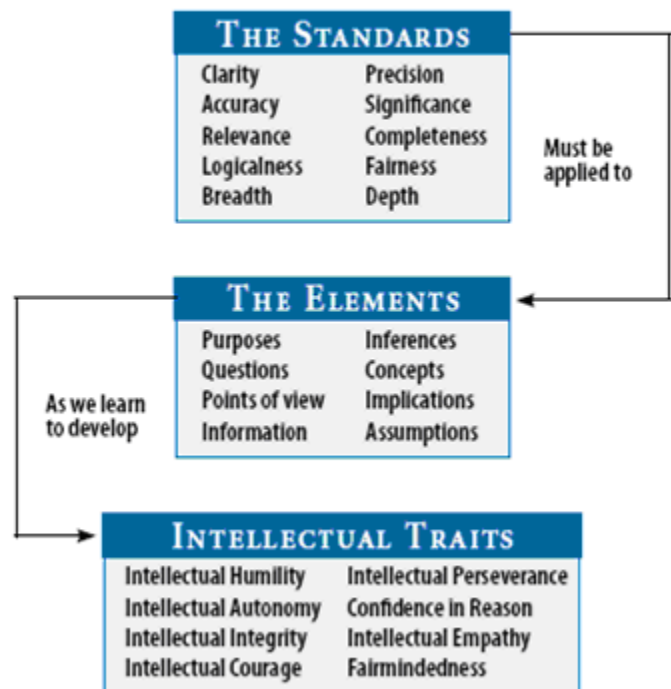
I used to have students in some of the courses I taught write dialogues in which they would take a belief that they felt committed to and then discuss that belief in a dialogue with a hypothetical person who took the opposite view. And I noticed — and of course I tried to help my students notice — how systematically they undermined the opposition to make the person who disagreed with them look bad. Something like this: "Okay, you want me to summarize that stupid position. So, I shall do so."

And then finally, Traits of Mind, which Gerald Nosich mentioned. To what extent are we teaching and cultivating in students' intellectual character? Think of intellectual humility. Intellectual humility is not humbleness in the ordinary sense of the word. It is not thinking, "Gee my thoughts are not very important ... I'm not a very important person ... I'm just poor old me in a modest position ... I always remember how unimportant I am." That may be ordinary humility, but it's not intellectual humility. Intellectual humility is crucial knowledge. It is knowledge of our ignorance. It is knowing how little we know; how limited our search for knowledge has been.

If you look, for example, into the array of disciplines at universities, and you studied how various disciplines portray themselves — for example, in college catalogs, what they say about what wonderful things students are going to learn — assess the students at the end, at graduation. How many of these wonderful things have the students learned? And how often are there petty disputes between scholars, how often do they represent themselves in self-serving ways? And how often do prejudices exist between fields .... Petty disputes, narrow thinking often rule academic discussions.

During the preconference workshop, a friend of mine from my high school days attended the

Critical thinkers routinely apply the intellectual standards to the elements of reasoning in order to develop intellectual traits.



session, and he also is participating in a program at Stanford. And this program brings distinguished leaders in the field he works in together and is supposed to showcase for the participants emerging knowledge and insight within the field.

Well guess how the program is structured. Lecture, lecture, lecture, break ... lecture, lecture, lecture, lecture. And he said, again and again the experts are saying, "I know I'm over time, but I've just got to cover this and this and this ... and you've really have to know this and this and this." My friend said, "THE AUDIENCE IS LOST!" Professionals cannot follow what these experts are saying and the experts are totally oblivious of the fact. They live in a world unconnected to the world of the student who has to somehow, magically, enter into complexity and make sense of it.

If these experts were thinking critically, they'd think about how they're teaching. And they would see that the manner in which they're teaching contradicts the goals that they say they're committed to.

Every discipline says it's focusing on critical thinking. The Foundation for Critical Thinking did a three-year study that focused on 28 private universities and 38 public universities, including Stanford, UCLA, Caltech, Berkeley and so forth. We interviewed faculty. We found, when asked this question, "Is critical thinking a primary objective of your instruction, a secondary objective of your instruction, or neither?" the overwhelming majority of the faculty said, "Primary. One of my primary goals is to foster the critical thinking of my students." Then we asked them, tell us a little bit about your concept of critical thinking and how you go about teaching students. Here the characteristic answer was either exceedingly vague — and you can't teach a vague concept — or highly limited, in which some would say, "Oh, well I foster critical thinking by reminding students to notice their assumptions." Others would say, "I foster students considering other points of view." And a third might say, "I warned them on how important the data are."

Let me give you a logical parallel: Suppose I claimed to teach carpentry and explained how I did it as follows: "Yes, I do teach carpentry. I emphasize the hammer." Or, "Yes, I do. I focus on the skill saw." Critical thinking is not one isolated skill. It is not even a random list of skills. It's an orchestrated way of thinking that enables you to decompose your thinking at any moment. It encompasses basic structures integrated together into a whole. It assesses thinking for its quality, for its clarity, for its accuracy, for its precision, for its relevance. It raises thinking thereby to a higher quality. It makes it better. Critical thinking is a way of teaching, a way of learning, a way of being in the world in which the thinker self-monitors and self-assesses.



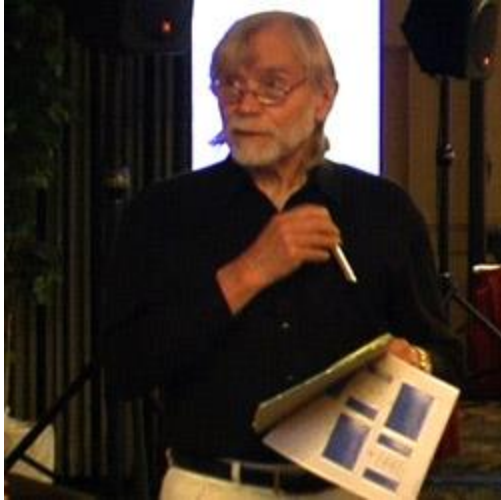
We asked the faculty, "Do your students come to you with adequate intellectual standards?" The overwhelming faculty in the study said, "No! Students come to me without adequate intellectual standards." Do you teach students intellectual standards? Virtually all respondents said yes. We then asked: "Could you enumerate some of the intellectual standards you teach, and give us some examples of how you encourage their use in the classroom in the assignments and in the tests." ... "Oh, well that's a hard question. I would need to think about that."... "Well, if critical thinking and intellectual standards are something that is of importance to faculty, they think about them. They know what they are. They can explicitly explain them. Thus, self-deception exists at the universities. Faculty commonly deceive themselves as to what their students are learning. Frequently, they cannot see, truly, what the process of schooling is doing to the minds of students.

Consider this fact: We have armies of people who hate math. In other words, we commonly teach students math in such a way that they come to hate it; in such a way that they don't want to take another course in math if they can possibly avoid it.

And so the lecturing continues — chapter one, chapter two, chapter three, concept, concept, concept .... And in the mind of the student, all these various concepts are simply there as something to remember. "What did you say we do on this problem? ... Invert and multiply, invert and multiply ... Why do we invert and multiply ...? I don't know, you didn't say what." And so, what we do is give the students standard formulas, standard questions that can be answered with standard procedures and move on even if they don't understand the procedures they do. It is enough that they can give a correct answer. But if you modify the problem so that it's slightly different, the student can't do it. Furthermore, if you test them one month, two months, three months after the class is completed, you'll find that very little of what was covered in the class is still in the mind of the students.

But, for those who think within the field well, this is what the field looks like: They see the parts relating to the whole, and realize that to understand the part, you first need to look at and understand the whole. They look at the whole from the point of view of the part. They look at the part from the point of view of the whole. Making sense? Okay, let's add another idea. Here's another part. Let's see how it fits into the whole. Now let's look at what the whole looks like with this part in it. Whole ... part ... whole ... part ... whole ... part.





Now let me juxtapose for a moment the ordinary design of textbooks. Intro to Biology: Chapter One, Introduction ... we get a little bit of the whole. Then we get, Chapter Two, a part of biology. Then we get Chapter Three, another part of biology. Chapter Four, another part. Chapter Five, another part. Here's the structure that dominates textbooks: Whole, part, part, part, part, part, more to memorize, more to memorize, more to memorize ... What happened to the whole? It's gone. Meanwhile the student is desperately trying to figure out. . . "Is this one going to be on the test? Do I have to remember that one over there?" They're down-shifting into rote memorization.

There are two kinds of students in our classrooms, even at elite universities. The first are "the intellectually disabled students." These are students who don't know how to beat the system. They don't know how to identify the points to memorize. They don't know how to manipulate faculty through flattery. And so, they don't succeed. They fail. They're frustrated. They despise it. They wish it was over. And, on graduation day they say with deep feeling, "Thank god it's over. No more classes. How wonderful, I'm free, free at last. They don't say, "Wow, now I can read all those books that I've been piling up, all those wonderful books I did not have time to read." No! Now that they have their degree, they will never again read serious books because they have learned to dislike books and intellectual work. They are the intellectually disabled.

But, that's not all. There's the rest of the students; the rest of the students who thrive on memorizing the bits and pieces that satisfy professors. These I call the "elite disabled." The ordinary disabled — not able to perform in the system — often fail as a result, or just barely get by ... The elite disabled have some intellectual ability but use it mainly to do the required minimum in order to get a diploma, to get a job and move on. What a loss of brain power! What a price the public pays!

The American Medical Association did a large study that was published four years ago on unnecessary deaths due to the failure of medical practitioners to do what is called for in standard practice. How many Americans died unnecessarily because their medical practitioners — their doctors and nurses — did the wrong thing and people died as a result? According to the American Medical Association, somewhere around 50,000 every year. Why are so many people dying through malpractice? They're dying because of the way we have educated medical practitioners. They are not learning to think critically about what they're doing. They are not learning to monitor their behavior accordingly. They are failing to follow basic good practice. They are oversimplifying, jumping to conclusions, making faulty inferences, misconceptualizing, etc.... Some diagnosis is put into the record and then a patient is trapped by anyone who subsequently examines them because "They have a diagnosis!" Virtually no one says, "Forget the standard diagnosis in your case, it's obviously not working, you're still having problems ... let's rethink the case." That rarely happens. There's a good book out on this subject, entitled something like, "How Doctors Think." It points out how there are patterns of thinking

amongst doctors not in the interest of patients, and there are very many basic things that doctors, in subconscious states of intellectual arrogance, are failing to do.

But, doctors are just one; the medical field is just one area. I mean my remarks to apply to every single area. Let's take one further example.

I was educated as a philosopher. Philosophers think of themselves as helping people to live something like a rational life: Living the examined life. College catalogs tell us about this. To be Socratic. To be a questioner. Okay. So, I took a course that I was teaching — an upper division course for philosophy majors — called Philosophical Reasoning and I gave the students an essay by John Austin at Oxford — very clear writing, very clear thinking — and I said, "State the purpose of the essay, state the main question that Austin considers, state the information he uses in answering these questions, give us his basic conclusion, identify his assumptions, then characterize his point of view." (The Elements of Thought. Standard turf in critical thinking.) Then I read the student papers. What did they do? They argued with John Austin, disagreeing with him, before they understood what he was saying. So I went back to the department and said, "Look, we're turning our majors into sophists. Our majors aren't learning to think with discipline. They're learning to be argumentative. They're learning to be arguers. And furthermore, their understanding is impeded because they're stereotyping authors they are reading." What did the department do? "Thank you very much Richard. Your thoughts are always provocative." Nothing. Nothing. Nothing. Seemingly, they didn't care. They didn't care what the evidence was. They questioned rather whether I had followed the protocol for research. But this wasn't research. This was reporting on departmental performance of a class ... "Oh no, they said, it became research when you did this and this ... and, by the way, you didn't get the student's permission for this" ...

What did they want to do? To shut me up, of course. And, they successfully did. For, I thought, "Is it worth it? ... No! This piddley department ... it's not important. It's the big picture that's important. It's the way the field does this systematically. It's the way faculty are transformed into cultivators of argumentation rather than cultivators of fair-minded critical thinking.

So, let us now come to what we're asking you to do in this conference as a result of the structure of the conference. The answer is Intellectual work, wall-to-wall intellectual work. Every session: intellectual work.

Every one of our sessions, in every part of every session, is designed so that you must do intellectual work to take command of the fundamental concepts of critical thinking. We begin with the need to internalize the foundational concepts. Everyone here needs to do the intellectual work to come to terms with the Elements of Thought, Universal Standards of Thought, and Traits of Mind. Intellectual work is the only way that it can be done.

Now let me give you an example of how a simply well designed intellectual strategy can help bring students into the process. A very simple thing: Take a deck of 3 X 5 cards and put one student name per card. Show the students the cards and say, "Every so often I'm going to stop and ask you to summarize what I've just said. I'm going to call on you to summarize my main point; to state it, to elaborate it, and to exemplify it in your own words with your own

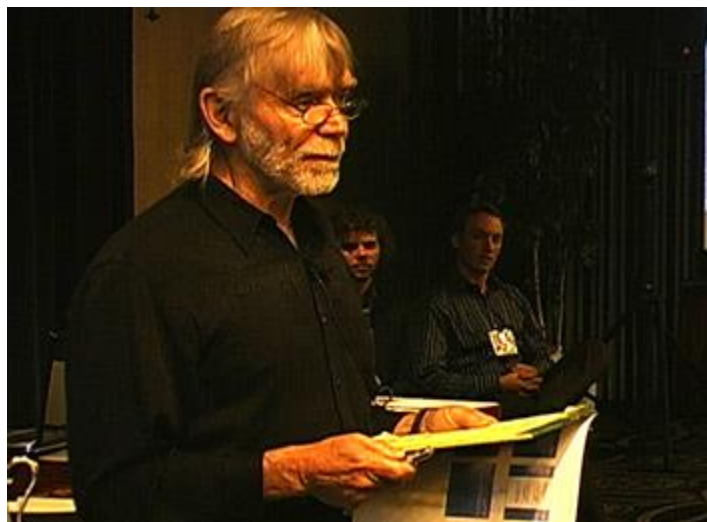
example." State. Elaborate. Exemplify. Every so often I walk over and I pick up the deck of cards. What happens? The whole room comes to attention. Why? Because now "I, the student, may be on stage. I may be called on to perform." Now they listen. And so, if I have to pick up the cards five times in the class I'm going to do that. I'm not going to just stare at minds being dimmed, drifting off.

Or, consider this move: At every point in a class, at every moment of instruction, there is a question on the floor. Why? Because if there's no question on the floor, there's nothing to think about. If there's no question we're trying to answer, why are we thinking? Now, two possibilities: At any point in time you either know what question is on the floor, or you don't. If you don't know what question is on the floor, then what we're doing is irrelevant to you, because you're not connecting with any question, issue or problem. If you do know what the question is you can state it in an interrogative sentence that is clear and precise. So, periodically, I'll stop and I'll say, "Okay class, what is the question on the floor right now? I'll give them a few moments to think. They'll think about that. Then I'll pick up a card, "Joan Rivers, are you there? There you are. Will you tell us what was the question on the floor? Joan says, "Well I think it's this (she states the question)? Let's call on someone else. "Frank, do you agree with Joan or do you disagree with her?... I disagree with her ... Well, she's right. Now, let me explain why she's right" .... So, by calling on students unpredictably, drawing them into the intellectual work, they're much more apt to do intellectual work.

Now let's look at the spectrum of things we need them to do. We need them to read critically, write substantively, speak (with apparent decision), listen actively (what I've been talking about on how to foster active listening). We need to bring our intellectual work into tests ... maybe have students write out, "What questions would you put on the test and why?... We need you to write out one exam question for the unit we just covered, indicating why you think it's a good question, then I'll collect all the questions and I will include at least one question from you on the exam." Then, questioning. Learning how to ask questions. Questions drive thinking. If you have very few questions, you have very little to think about.

We live increasingly in a world of accelerated change. Things are not only changing, they're changing faster and faster and faster. And not only is the world a world of accelerated change, it's a world of intensifying complexity, and of increasing danger. If our students are not learning to think critically, how are they going to know how to change their thinking in keeping with the changes of the world? ...

But what we're saying to students is we'll teach you how to think — which usually means what to think — and then you go out into a world where what you thought is no longer what is. New things are present, new ideas,



new technologies, new dangers, and old thinking is being used to deal with these new problems, because those engaged in that old thinking don't know how to operate with thinking as their object. They don't know how to analyze thinking, assess thinking, reconstruct thinking. They don't know how to enter and learn new systems.

Critical thinking requires you to work on your thinking continually, to make your thinking the object of thought; to make your behavior the object of your thinking; to make your beliefs the object of your thinking.

For example, take your religious thinking: All over the world there are very many religious belief systems. And, for each belief system, there are a certain number of true believers. The true believers are convinced that their particular slant on god is plugged right into god. So, if you're raised in one area where Buddhism is most common, then you become a Buddhist. If you're raised where Hindu is most common, you become a Hindu. Christian, you become a Christian. According to the Encyclopedia Britannica, you have about 500 choices.

Now, how many people study alternative religions before they pick one? What brings them into the religion? Usually it's because of a place of birth or because they were brought into a group that treated them well. But, because someone treats you well doesn't mean they're in possession of the truth. Rather than making people questioners and skeptical, the people become true believers even more persuaded that they're plugged into god. Is this not intellectual arrogance? If there is a god, are you and I capable of understanding him, her, it? And consider the various things people say god wants ... "cover this up, no cover that up ... don't wear these clothes ... no this is the holy thing ... and this is the true holy place, not that. God wants you to eat his flesh and drink his blood. No, says someone else. That is not so. God wants you to join a holy war against infidels ... no not that one this one" ... if we looked seriously at the chaos that religious beliefs represent, we would recognize it's a cognitive minefield. And, unfortunately, it's a minefield literally for some who will die rather than question their beliefs. So, the number of people thinking critically about religious belief is small. The uncritical believers are many.

Two final questions: Do your students need critical thinking? ... The second: Are you truly cultivating it?

Thank you very much.