TAFT BROOME: So Carl Jung was a student of Freud. And one of the things that he was interested in was dreams. And one of the things he's famous for is what he calls artifacts in dreams. Can you see OK? And what an artifact for him is an object in a dream that is independent of space and time. No matter what country you are in, no matter what period of life you live in, there will be certain characters in your dreams that everybody has. And one of them is the dragon.

There might be slightly different meanings. But he looked at these artifacts. Joseph Campbell is a mythologist, or was a mythologist. He recently passed on. And he learned very much from Carl Jung. And Joseph Campbell discovered that there are certain dream structures which he-- I'm sorry, not dream structures. There are certain mythologies that are present in all cultures over all time. One of them is the hero's journey.

And this mythology, he says, you can find in various forms in any culture over pretty much any time. This particular one is Raphael's *St. George and the Dragon.* St. George is the patron saint of England. And it gives a good idea of what the myth is trying to do. In this particular myth, it's trying to be a metaphor for the biggest problems you will have in your life.

The metaphor says that in order to solve the big problems in your life, you have to come to a feeling, and I mean that literally now because we're not talking scientifically here, wherein you are willing to put your life at risk, even offer up your life for a higher cause then self.

And that in order to be successful, you have to go from the daylight, the white horse, into your subconscious, the dark, and find a dragon down there that is hiding some truth that is in-between where you are with your problem and where your solution lies. And you have to face that dragon and slay it.

One of the things I tell students is that when you get out, you're going to be big and successful. And the president, CEO, says, we're going to make this-- have this big contract association tomorrow. The Japanese are coming in here with a billion dollars in their hands. And we need that money. We want you to lead the negotiations.

You go home that night. Your significant other has a nice hot bath, a nice cocktail ready for you. And the phone rings. You sent your kids to the in-laws. Your significant other's mother says that your 12-year-old has been hit by a car down in Texas. It looks pretty bad. Do you go to Texas? Or do you go to negotiate that problem? Of course, I don't have the answer.

The method is to find out if there's anything in your unconscious, there's any truth in your unconscious, that you need to be released. For example, your ambition, you'll need to conquer that before you can solve this particular problem. So you go down and you find your ambition. You slay it. You bring it back. And you share the goods with everybody. That's the anatomy of the hero's journey. And we say that we find that-- Joseph Campbell says, and I believe him, that we find that in all cultures.

Noam Chomsky, whom all but two of us here know better than-- know very well, said that the brain is hardwired. Thank you. I did this once before. The brain is hardwired for certain language structures independent of culture, independent of time. Jerome Seymour Bruner said, taking up from Noam Chomsky, that if you want to get understanding from language, then that's one thing that Chomsky is talking about.

But if you want to get meaning from language, you have to see what you have talked about in the context of a story. That even when you write the descent of man, it has story turns. There's a beginning, a middle, and an end. There is a causative sequence. There's a point of view. A point is made. There is a mood. And he says, these structures of the brain are hardwired in the brain.

Last semester, I met William [INAUDIBLE] right over in ESD. And he is a major in the Air Force. He was doing a sabbatical up at Harvard. He's an ethicist. His collaborator was a brain and cognitive scientist. And what they were doing was mapping out the parts of the mind that are active when a story is being told.

They were interested in how the story is manifest not so much in the mind, what I am interested in, but in the brain. So the hard science of stories is being picked up now. And Cynthia Winston is interested in the story. She's a psychologist. She's interested in the story in terms of therapy.

Now my best way of describing what she does is to use a metaphor. I learned from a psychologist once who did therapy using art. She had different populations of children. One population of children had deep problems with insecurity and could not voice their problem. Another population was what I guess you could call ordinary children. They didn't have a particular-- exhibit those particular symptoms. She had them paint pictures of themselves.

And what she found out was that the insecure population would paint a picture of themselves without arms. The hands would come straight out at the body. So you can learn something about a person and about what's in their unconscious by looking at the, five minutes, looking at the way they paint pictures. Cynthia Winston is in the business of doing very much the same thing, but having them tell a story. And she can synthesize many things out of the way they tell a story, things that they don't consciously know about.

This is a good segue way to Segun. And I will hazard a few burning questions if you have them now. And otherwise, I will expect any other questions to come up at the end of the Q&A period. Is that fair enough? So if you have something, put something on the table with me now. Then thank you very much.

[APPLAUSE]

I need your USB drive.

[SIDE CONVERSATION]

GUEST SPEAKER 1: You want to get set up, Dr. Gbadegesin?

SEGUN GBADEGESIN: Right.

TAFT BROOME: He was-- you want to use your-- all right.

GUEST SPEAKER 1: While they're doing that, I'll just-- I have the pleasure of introducing Dr. Gbadesgesin to you all. Dr. Gbadesgesin told me this morning that he fell in love with philosophy in his second year of college when he took a philosophy course unexpectedly. And since then, it's brought a world of opportunities and scholarship to him.

He completed his PhD in philosophy at the University of Wisconsin-Madison. And then, he went to Nigeria and was a professor there for nine years, a professor of philosophy in Nigeria and then journeyed back to the United States to Howard University and was a department chair of the Department of Philosophy at Howard for 11 years, and is now a professor there, professor of philosophy. He specializes now in cross-cultural ethics and bioethics. And that will be the topic of his talk today. So welcome, Dr. Gbadesgesin.

SEGUN GBADEGESIN: Thank you.

GUEST SPEAKER 1: Thank you.

TAFT BROOME: Yeah.

GUEST SPEAKER 1: Let me just--

TAFT BROOME: We're going to-- he's going to copy this on a USB drive and plug it in. In the meantime, I've worked with Segun before. And the things that he is going to tell you about will be not just differences in an ethical understanding in various cultures, but how underlying the differences, there are similarities.

And that the way to deal with ethical differences is to first appreciate the difference, but then see the similarities. That really, we're talking about ethical situations in which are very much like our own when you get down to a certain level. And he's one that can pick out that level and tell us about it. So just be patient with us for about two minutes while he uploads that.

SEGUN GBADEGESIN: Let me say how honored I am to be here and to be working-- no, that's not it. Yeah, so working on this project with Taft has been an honor for me. And I'm looking forward to further work on this issue. I want to talk about the moral weight of culture and ethics.

I am not going to talk about differences as such. I'm going to talk about what brings all cultures together, in other words, the foundational principles that seem to me to be at the basis of our cultural traditions. And that, I think, is a nonrelativist approach to cross-cultural ethics.

In other words, my view is that in spite of the surface differences across cultures, there are certain unifying principles at the bottom of all cultural traditions. And these principles are what I would focus on and what I think bring a common humanity into focus. I start, I'm not an engineer.

[LAUGHTER]

So I am a forerunner to what Taft is going to say. But I start with some cases in Engineering Ethics. I do this mostly for about ethics, cross-culture about ethics. But I have brought these various cases, three cases in all, what I consider to be cases that I can lean to issues in Engineering Ethics.

This is a case of an African country that has no rules against giving gifts to public officials. It's a country of anything goes. The president of Nigeria actually had an article on this sometime, because in the country of anything goes. So you can take Nigeria as an example. That's where I come from anyway.

So a US-based company is interested in a project that promises to be profitable and, of course, professionally satisfying. And there is an Indigenous engineer who promises to facilitate the business with the proviso that, well, the company must be prepared to give something to the public officials. That's what's expected.

But of course, that deal will be kept secret. No one will know about it. And everyone will be happy. The US company is supposedly to be covered by the provisions of the Federal Corrupt Practices Act and the NSP Code of Professional Ethics. So the question is, should that company give in to the Indigenous engineers' promises or proposal for facilitating the project?

In bioethics, there is a similar issue. Namely, well, there are differences within ethical traditions. African countries and other third world or developing countries have their own ethical traditions. So they should not be imposed upon by the regulations that govern US restrictions, that have here restrictions.

And people go in there sometimes with that mindset. And of course, what they cannot do in the US, they do it in those countries, again, under the pretext that different ethical traditions hold. If we look at this, and we'll look at it later on, I would love to know what views about that case.

Now the environmental degradation and multinational conflicts, this is especially the case again. And here is a prime example, where in the Niger Delta area, many was not aware of that because of the militants roaming about the place kidnapping people and sometimes killing people, because they are upset about the environmental degradation that is caused by oil companies drilling their various lands.

This is the land that they live upon. Most of the Niger Delta people are fishers, fishermen and agriculturalists. With pollution, they cannot catch fish because the fish are no longer there. And of course, they have no land to farm. So the question, of course, is whether these conflicts coming from other countries to do drilling for petroleum engineering and so on, they have legal standards in their own countries. They have professional associations with strong codes of ethics.

Should the weak ethical systems of the local cultures in which they operate be the guidelines that they should follow? Or should they follow the guidelines, ethical guidelines, that are in operation in their own countries? Again, similar to what happens in bioethics, many of the multinational companies operate on the basis of anything goes in those other countries. Is there a professional ethical issue here?

Now from modern nationals, professionals from other countries to Indigenous contractors, the same issue. This is a case of a private building company which secured a contract for putting up an apartment complex. The owner of the company, an Indigenous building contractor this time, received 50% payment, down payment. But of course, typical, he used substantiate-- substandard materials.

I've already seen this. So potentially, a part of the payment is the use of standard materials. And the building collapsed, killing many people. This is also not mythical. It is rare. There are engineers, professional engineers, in the employment of the company. They raise issues. But of course, the conflict [INAUDIBLE] overruled. Go and do your best. And they did their best. And of course, the building collapsed. Should they have raised alarm instead of going along with the project?

So these three cases led us to the question, what is culture? When we talk about cross-cultural ethics of different cultural traditions, what is culture? And later on, what is ethics? I have two accounts of culture. One is that culture is an activity of tending. It's like tending a plant, getting it to grow, and of course doing everything possible to make it grow and become a lovely plant.

Of course, when we do that, any activity of tending can be subject to evaluation. Is it done well? If the plant grows, and it's lovely, and it blossoms, of course, that activity is well done. If it doesn't, then of course, it's not well done. So we can evaluate activities or the outcome of products of activities on the basis of the tending activity that we put in. And that leads to the idea that there could then be a hierarchy of cultures, cultures that grow well, cultures that don't grow away.

This is what Alain Locke, the former chairman of my department, the first African-American Rhodes scholar, had to serve a cult. It is the capacity for understanding the best and most representative forms of human expression, and of appreciative and of expressing oneself, if not in similar creativeness, at least in appreciative reactions and in progressively responsive refinement of taste and interests.

So Luck is here talking about culture as an activity of tending, culture as something that can be related, culture as something that is defined. Here, we can talk about the hierarchy of cultures. This is the way in which some eurocentric scholars and practitioners understand culture.

In the early days of anthropology, this is the way that culture was understood. And that is the beginning of the idea of the white man's party going into other countries because they are not doing it well, because we want to help them do it right. That is an idea of culture as an activity of 10, as refinement.

It is not the only idea. There is the idea of culture as a life form. Any form of life, any way of life, value systems, belief systems, practices. Culture in this sense, it's organic. It's authentic. It's incomparable with any other culture because it stands on its own. There is no basis for evaluating life forms. Each life form is on its own.

So there is an equality of life forms. This is the way in which we can understand Tyler's definition in primitive culture, the complex of values and practices, including knowledge, belief, art, morals, law, custom, and any other capabilities acquired by man, of course, and woman, as a member of society.

So in other words, it is what we have as a people. Our belief systems, our value systems, our cultural-- our customary practices, conventional values, these are what constitute culture in this sense of culture as life form. This is the sense in which the government idealist also understands culture, how that in particular understands culture as a life form. That's why I negate the idea of hierarchy of cultures.

Now if we look at culture in the sense of a life form and more as a part of the constituent of that culture, as is evidenced by Tyler's definition, then, of course, we would come to the understanding, or conclusion, or inference that morals, of course, belonging to culture as a life form will be different from one culture to the other. But it need not.

There's no reason why it has to be. Of course, it could be. But morals may also be common to all these cultures even in their specific life forms. There may be a commonality of moral ideas across life forms. But the way that people have interpreted the idea of culture as life forms seem to lead to the notion of relativity of life forms and therefore relativities of values.

But again, as I would argue, it need not be so. But that's the argument. If there is no basis for evaluating life forms as inferior or superior, good or bad, it follows that every life form is equal. And every life form is as good as the other. And then, the assertion is made, there is no basis for evaluating life forms. And of course, the inference is drawn. Therefore, every life form is equal. And every life form is as good as the other. And therefore, every life form has equal moral weight.

Now without going to the other conception of culture as hierarchical orderings, even remaining within the context of culture as life forms, I would argue that this inference is premature. I would argue that even if we conceive of culture as life forms, there may still at best be a basis for evaluating life forms, especially from a moral perspective. And that's what I do.

But first, what is ethics? There are two accounts of ethics that I want to present to you. One is by my former teacher Michael Singer over at the University of Wisconsin-Madison, who was the former President of the American Philosophical Association, [INAUDIBLE]. And it was in this presidential address that he gave us the 1986 Presidential-- APA Convention.

That he gave three accounts of morality. One he calls customary morality, which is the accepted morality of a group. We can also call it conventional morality or positive morality. Worst, we could accept as moral or morally right. Then there is personal morality, which may or may not be different from the conventional morality of the group in the sense that what my personal morality is may be influenced by the morality of the group.

But there are cases in which individuals have their personal morality different from the conventional morality of the group as a result of various things. Maybe as a result of outside influence. Maybe as a result of conscience. There are people in the period of enslavement in this country who, in fact, lived in the south. And they were opposed to enslavement because of their personal morality.

Apartheid South Africa is also an example. There were whites in South Africa who are opposed to apartheid because of their personal morality. So a person's ideas of right and wrong will be based on personal principles. Then rational morality is that morality which is based on reason. It may be critical of personal morality, different from it in the sense that personal moralities may also be based on prejudices.

Rational morality is derived from reason. And it's presupposed in any criticisms that people have of conventional or personal morality. Now of course, obviously, people would ask, but where does that reason come from? Isn't it the religion of individuals? Yes, it is. But it's that high-level of reason, which, of course, is not based on personal prejudice.

The second account is that of Harry Redner in a book called*Ethical Life, The Past and Present of Ethical Cultures.* And I find it very interesting because he complements what Singer has to say. And I think even though there is an apparent difference, they all come to the same point.

Harry Redner makes a distinction between ethos and ethics. Ethos is that portion of the culture of a group that deals with its conduct. This is similar to the conventional morality or customary morality of Singer. It's this product of civil institutions. Each culture passes through a number of civilizing moves.

There's the temple civilization, which is mostly religious; [INAUDIBLE] civilization, which is mostly kingly-- kingship; city; civil society; and of course, they're the paradox of officialdom in any culture. Now conventional morality in this sense or ethos in this sense is pretty critical. And ethos is that portion of the culture of a society which is concerned with everything to do with the conduct and behavior and, in general, with what can be called the lifestyle or the style of life of a people.

Then the second sense that Harry Redner brings out is what he calls ethics proper. And this is what we would call rational morality in a single sense. It is critical ethos, which is the product of critical scrutiny of the civil ethos, in other words, the rational critique of the civil ethos.

It subjects each code of civility to higher critical, namely rational standards. According to Redner, an ethics in this second sense arises out of a pre-existing civilized ethos. When the church traditionally accepted and unquestioned codes of civility, the divine sanctions of law, the morals, the customs, the manners, the conventional duties becomes subject to higher critical standards.

Now, so these ethics proper, according to Redner, is the same as rational morality in single sense. So there is that equivalence there. And I want to argue that every culture has these rational morality perspective or critical ethos perspective. In other words, when the founders of every culture are contemplating what to do, they go through some critical ideas about what is good for the community.

Now we may query the level of standard of their critique or rational critique. But that doesn't mean that it's not there. This is the same thing I say when people talk about traditional philosophy versus modern philosophizing. If you go into any culture, if you look carefully, you'll have philosophers, Indigenous philosophers.

They don't put their philosophizing and writing, maybe because they are not literary. But there are sages who go through critical thinking about their society, even contemplating ideas about the world view that they inherit from their own ancestors. There is a project in Kenya which was started by the late Odera Oruka called Sage Philosophy. And that project was to investigate the philosophies of traditional Kenyans.

These are people who don't go to school. They are people who don't read Socrates or Plato. But they have philosophical ideas. And the question is, do we know about those ideas? So for every culture, there are people who think critically about issues that we think only philosophers worry about. That is, only Western philosophers or modern philosophers worry about. So this is what I mean by the universality of ethics. Sir?

AUDIENCE: I don't know if this is a question better to ask now or to come to you later. It's up to you.

SEGUN GBADEGESIN: Certainly.

AUDIENCE: But you're describing the critical ethics as being embedded in institutions.

SEGUN GBADEGESIN: Right.

AUDIENCE: And over time, institutions change.

SEGUN GBADEGESIN: Certainly.

AUDIENCE: Slowly, but they change.

SEGUN GBADEGESIN: Sure.

AUDIENCE: Looking both in African institutions, and critical ethics, and in Western, and others, is the rate of change of thinking in the critical ethics domain exactly equivalent to the rate of change in these societal institutions? Is it faster? Is it slower?

SEGUN GBADEGESIN: Right. Yeah, very good. Very good question. Let me deal with that right away. And I'm glad you bring these up. In fact, this goes to the point of my own position with respect to cultures, the dynamism of culture, vis-a-vis what people, especially philosophers, ethicists in the west, think about other cultures.

AUDIENCE: And just to add a piece. My own thinking and writing lately has been that as technology accelerates its rate of change, institutions are changing at a more rapid rate.

SEGUN GBADEGESIN: Yes.

AUDIENCE: And so that's the underlying motivation to what--

SEGUN GBADEGESIN: Yes, very good. Yes, I agree with that completely. Now how does that play into what I'm saying? When people are aware of that, then there is a limited reason why people would want to go into other cultures because those other cultures seem to be pristine.

People look for what is exotic. And they think they can find it in other cultures because Western culture has lost it. Well, those other cultures are also changing. So what was there 50 years ago, 100 years ago, you won't find it now. I tell people that if you go to Lagos now, it's as if you are in New York.

AUDIENCE: Right.

SEGUN GBADEGESIN: So people talk of community, communalism. Things change because if they don't change, the cultures will atrophy. They have to change with the times. You brought in capitalism. You don't expect communalism to exist side-by-side with capitalism. But the aspects that you are looking for, community, all right, coincides with communalism. So why would it be there anymore?

We talk about individualism versus communalism. I think one culture is all individualistic. And the other is all communalistic. But that's not the way things go. So I agree with you completely. Now with respect to the rate of change, yes, it may be slower, all right, than the institutional changes. But it has to catch up. Otherwise, again, the cultures would just collapse. And those who are involved in thinking about this don't have a choice because it is not as if they deliberately think, well, we have to change now. It is forced on them. Yes? Sorry.

AUDIENCE: One thing I was thinking was that just the rate of change, there's the direction of change.

SEGUN GBADEGESIN: Yes.

AUDIENCE: And part of having a basis of values is because we consider one action is right to be consistent with our values towards a particular intent. So first question is, is there a common direction of change which each of us individually is either programmed, or learned, or whatever we think, want?

And second, my personal feeling is there is such a direction of change. And the direction of changes, preservation of a community and what changes over time, is the definition of that community from being an individual. That a couple of 100 years ago, it was OK to destroy a community, where community was equal to a kingdom. So another kingdom, so long its people.

SEGUN GBADEGESIN: Yeah.

AUDIENCE: But to preserve one's own kingdom. Today, it's OK to destroy a country for preserving one's country. But probably if you extrapolated, tomorrow, it might be OK to destroy another planet for the preservation of Earth.

SEGUN GBADEGESIN: Yeah.

AUDIENCE: And I don't know what's your views on that.

SEGUN GBADEGESIN: Well, yeah, that's probably true. But I would modify it. When you talk about direction of change in terms of helping the community to survive, I'm not too sure that it's always that way, that that's always the mindset. It depends. Individual preservation is also a crucial element in contention.

When individuals are forced to think about their own preservation, they go along with that. Of course, if that is also then going to help the community to survive, so be it. And I have examples. Traditional rulership or kingship in many non-Western countries is changing. But the traditional rulers are supposed to be the symbol of the community. All right?

In bioethics, international research, there is this idea that, well, informed consent is different in other countries because, again, these are countries which are governed by communal values. So if a researcher goes into a community, he or she has to consult with the traditional ruler or the chief.

And once the consent of the chief is received, he or she may not need to go for consent of individuals because that may be considered as just an insult to the traditional ruler. Well, that is not true. I don't know of any traditional country that you go to, traditional community that you go to in Africa, and you say, I have sent the ruler. I don't need to take consent from you. But I want to do research with you.

And you'll expect that person to say yes. Again, values have changed. People have been open to diverse values. And so they are no longer restricted or confined to the traditional value system. Individual preservation is extremely important. And so the universality of ethics is based on this idea.

I think this is where I want to revise the earlier inference that we have with respect to the relativity of life forms. The core of morality for me, and I think for many ethicists, is the promotion of human flourishing. So a critical standard for evaluating a civil ethos, conventional morality or customary morality, is the extent to which it promotes or negates human flourishing.

And this is where I agree with [INAUDIBLE] in human flourishing and universal justice. Though disagreements about what human flourishing consists in may prove ineradicable, it may well be possible to bypass them by agreeing that nutrition, clothing, shelter, and certain basic freedoms, as well as social interaction, education, and participation, are important means, means which just institutions must ensure for all.

In other words, if we agree that human flourishing is the core of morality, it's what we have to concern ourselves with, then any conventional morality, or customary morality, or civil ethos that negates human flourishing must be considered to be less of importance than others. And that is the basis for the provision that I have of the relativity of life forms.

So we would now say that every life form decides the prima facie equal consideration. All right? We're not going to dismiss any life form just like that. But if there is a conflict in the practices of life forms, we must appeal to a principle of adjudication and a principle that is adequate for adjudicating between life forms and the principle of human flourishing, the promotion of human flourishing.

Does it promote human flourishing? Does it negate it? A life form that negates human flourishing therefore does not deserve equal consideration or equal treatment. And so when we ask the question of the moral weight of culture in ethics, how much weight should we assign to culture when we are talking about ethics?

I think this is the principle. If a cultural practice negates human flourishing, its moral weight is light. If a cultural practice negates-- promotes human flourishing, its moral weight is heavy. And again, if you ask why, but what if there is differences in our conception of human flourishing? We have that settled, at least [INAUDIBLE] to some extent, namely that these are basic things that consist in human flourishing, shelter, food, basic freedoms, and so on. These are the essentials.

Now, so ethics and engineering now, going back to those cases. We have to make a distinction between cultural practices-- cultural differences in engineering practices or any technological practices. How do different cultures approach engineering practice? Now it's not been the case that all cultures have engineering practices in the way that we now have it.

But all cultures, one time or the other, have to build bridges over years. They have to build houses for shelter. And so I consider this as part of technology, as simple as it may be. What are the practices? Those are the cultural practices. How do people build their bridges? How do they construct their dams and so on? Then differences in ethics of engineering. And this has to do with what different ethical problems are raised by the different cultural practices in engineering. Those are two separate questions. What are the differences in the practices?

Well, obviously, the way in which an African community builds bridges over its river is different from the way in which 20th-- excuse me, 21st century America built its own bridges. So there are those differences. What ethical problems or issues are raised in these practices? This is where the cases come back to us. And just for the sake of time, each of these cases, I think, can be handled in various ways. It depends on how we critically appraise the case.

One thing that I think we cannot afford to disagree about is that it cannot be left to specific cultural traditions to determine what is right or what is wrong since, again, they all come, these cases all come, in the context of interaction between cultures, either representatives from each culture interacting with representatives from another culture. So if you have two cultures interacting, you cannot say the case or the problem has to be resolved by paying attention to what happens in one culture. It is not a case of if you are in Rome, do like Romans. Thank you very much.

[APPLAUSE]

TAFT BROOME: I'll get it. You've got a burning question here.

AUDIENCE: No, I didn't have a question. But just, your conclusion, you might even need a bumper sticker which says, act locally, think globally.

SEGUN GBADEGESIN: Think globally.

[LAUGHTER]

Exactly, yeah.

TAFT BROOME: How about another one?

SEGUN GBADEGESIN: Yes.

AUDIENCE: I believe we heard from two of you this morning, one talking about narrative, one talking about ethics. The title of the seminar is Narrative of Ethics. Did someone put the two together?

SEGUN GBADEGESIN: Correct.

TAFT BROOME: Yeah, that's what my talk is about.

SEGUN GBADEGESIN: Good question.

[LAUGHTER]

Yeah, that's why I said I'm a foreigner like John the Baptist. So he's going to do that for you.

[LAUGHTER]

Thank you.

TAFT BROOME: There they are together. What you're looking at here is part of the painting by Rubens,*Prometheus Bound.* This is the great bird plucking away at his liver. And this is a great mythic narrative. The story talks about how it is that Prometheus gave fire to human beings to use to keep them warm and then to do other things, cook and do other things with them.

It talks about how he was punished for doing that by great powers of authority. I want to use this picture to be an image of all of the themes that I want to address, because if we talk about Prometheus giving technology to human beings, then I want to look at Prometheus as an engineer, because engineers like to think of themselves as those who give technology to societies.

I also want to talk about how it is that an engineer can be punished by a higher authority for stealing technology, so to speak, and giving it to the other peoples. That brings engineering in with ethics. So this is my image of some of the major themes. The narrative is, for me, mostly going to be mythic narratives.

There were some issues in the early '70s and going into '80s that began to make us think about ethics and engineering. 1973, then Vice President of the United States, Spiro T. Agnew, was accused of taking bribes from engineers. We had the Challenger case here, where it aroused ethical passions because there was such a thing called the O-rings that could have prevented or should-- or say that the flight should not have been taken at all.

We have the issue in Bhopal, India. 3,800 people were killed by a chemical accident from Union Carbide there. And I'll undertake that later. And then, there's the issue of Three Mile Island, which occurred in, I think it was March of 1979. I went to work for the Nuclear Regulatory Commission in June of 1979. So we can talk about more of that later.

Then came what we call the STS voodoo. STS stands for many things depending on who you're talking to. It can be science and technology as a side. And what I'm going to do is say that engineering ethics came out of this movement. So I'm going to talk about engineering ethics as an engagement of two learner disciplines, engineering, and ethics.

And we have other divisions of the STS movement. And I would even include, of course, technology and public policy as part of it. I would include BSD as part of it. And the history of technology and others came in with this particular movement. I am going to talk about STS as being an abbreviation for science-- I'm sorry, for society and technology studies.

I'll talk about it as the field of study in which problems intersecting the social and technological worlds are addressed by engagements of two or more learner disciplines. And the two disciplines, of course, that I'm going to start with our ethics and engineering. Now thanks to Segun, we've talked a lot about ethics. And you can talk a lot about it from the Greek tradition. This is Raphael *School of Athens.* I guess you can see that. I have a soft part in my heart for Raphael and those pictures in the Vatican.

A point that I'm going to make in the next slide is that although we have all of our Greek scholars right here from antiquity, this is Aristotle, Plato, Socrates, Diogenes. They're all here. The engineers in the room will understand that this is a Roman vaulted ceiling and that no Greek had ever seen that structure.

That is part of the painting. This is part of the wall of the Vatican on which the painting is made. The idea here is that in the period 1503 to 1513, when Julius II was Pope and commissioned this painting, that Greek philosophy now has a place in Christendom.

Aristotle is pointing out with his hands down like this to signify that he's interested in science and the physical world. Plato has his hands up, his finger up, because he's pointing to issues in philosophy-- I'm sorry, issues in ethics. Aristotle also had an ethics. And the ethics tradition that Segun talked about, being rational, follows from this particular tradition.

Plato had a different idea. Plato had the idea that there was such a thing as an ethical person. Better stated, there's such a thing as a virtuous person. For him, those were Greek virtues. It was a warrior society. Nonetheless, there's an ethical person. And the ethical thing to do is what an ethical person would do.

It's not a deductive process of reason. So you find an ethical person when you get into a situation. You put that person in your mind into your situation. And as an improvisational play would do, you let that person work themselves out in that position-- situation. And then, the good thing to do is to imitate what that person would do. There is the narrative in ethics. You tell a story.

Two things about what Plato, I think, handed down to us from science is that ethics from the rational point of view does much of what science does. There is a branch of rational ethics that says, well, a thing is right if it conforms to the right principle. And you can arrive at those principles through a rational process.

Don't steal. You can reason that out, that one should not steal. In science and in mathematics, there's such a thing as rational science. And mathematics is, for the most part, rational. One plus one equals two. You don't have to test that physically. You reason that out in the mind.

There's another tradition in ethics which is empirical. It's called-- one of the famous pieces of that is John Stuart Mill, Jeremy Bentham with utilitarianism. A thing is right if it tends to produce good consequences. So that looks like empirical science, where we're talking about we know something when we can test it through our sensory apparatus.

Now there's a very important point I want to make here. And that is that just because science has the rational and the empirical approaches and ethics has rational empirical approaches, I am going to take a position. That doesn't mean that science and ethics are the same thing. There's something different that we add to that.

I am going to say that part of it is what Thomas Coon talked about when he said that each individual discipline has a Gestalt, has a point of view, a way of looking at the world, and that a scientist and an ethicist can look at the same thing and see different things.

And I'll say a little bit more about that. I think that when we're talking about the humanities, we can talk about two great divisions of the humanities. I'm sorry, we can talk about humanities and the sciences as two great dimensions of our intellectual tradition.

And there are two things that are going to be very important to talking about learner disciplines. One is specialty. That is, what special learning do people have when they claim to be scholars? And the second thing, which is a little bit subtle and tends for most places to be a little bit mean-spirited, and that's what I call forte.

If you are a scientist, then you claim to have a forte, a special claim on the cognition, the production of knowledge from that part of our minds that we call the cognition. If you're an ethicist, then you claim to have a special claim on the affect, that you can bring feelings into the rational domain and mix-- and make value judgments, not knowledge claims, but value judgments. That is important because when we talk about engineering, I want to talk about a different specialty and a different forte.

I'm not here to teach religion. But I think that the answers to my question were perfected in the medieval universities. And I'm only talking about Western society. I will introduce other parts of the world towards the end of my talk. But in the Western universities, the medieval universities, the 500 universities in Western Europe, that there was something that was perfected there.

And we cannot just leave out the fact that most of those institutions were institutions that were sponsored by the clergy. And what did they say? And what did they leave us? All right. And one of the things that the clergy was interested in in the Western world, Western world after Constantine had made Christianity the state religion of the Roman Empire and moved the garrisons from Rome to what we call Istanbul, that the Western society had a major interest in mind. And that was social order.

This is another painting by Raphael in the same room where the first painting was. And all of the principles, the three principles of social order that they talk about in those days and they still talk about, are represented here. That a society is held intact if the individual members of society see that it's in their personal interest to be a part of the society.

The second principle is that there has to be a principle that brings them all together as one, that is a higher principle in itself in as much as the people are willing to die for it. This symbolism is here, where they all are looking at something that is higher than self. It's actually a performance of a miracle they see in here. And that one is willing to die for it. I call that the priestly principle.

The third principle of social order is that a society is held intact by force. And that instead of having a high priest at the head of that particular principle, you have virtually a king. And the king has powers over military and police forces. And what I want to argue is that what we call learner disciplines are actually organized around these principles, these three principles of order.

And what I wanted to say in the end that the Greeks brought to us, mainly through the sacrifices of Socrates, the principle that the individual and reason is what is the goal of the popular principle of order. But there are two other principles of order that come out of this tradition. And we'll find engineering in one of them.

What I want to say then is that when we talk about engineering, what we want to talk about is not the production of knowledge, not a claim to have a special claim on the cognition. That we are not going to talk about values, a specialty in values. And we're not going to talk about having special claims on the ethic.

But what we're going to talk about is having a specialty on the prosecution of what is called the commitment pathway for wishes to wants to intentions to action. It's different. I want to say that we are able to move from wishes to wants if we get hope. That we're able to move from wants to intentions if we have high self-esteem. And just pause for a second.

Some of what I have to say about self esteem I take from John Rawls and his theory of justice. And I want to talk about, just take a second here, about self-esteem. First of all, I want to talk about self-esteem in four dimensions. Think of it as a matrix. So two rows, two columns.

In two rows, I want to talk about self-esteem being an evaluation that a person has of him or herself. The second row is an evaluation that a person has of what other people have about him or herself. What do the other people-- I may think of myself as great. But nobody else thinks that way. That is the second dimension. Those are the rows.

Let's look at the columns. If we talk about self esteem, we can talk about self-worth. If I think that I am not worthy of gratifying my wishes, I probably will not proceed to the dimension of intentions. And the other one is self-confidence. Do I really think I can pull this thing off? So self-esteem is important in moving from wants to intentions.

When we move from intentions to action, there is the intersection, the intervention of the will. If you really don't have a strong sense of willpower, then you will not make this transition. I want to say that engineering belongs to the category. Whereas, the specialty is in being able to move along this commitment pathway. And that our forte is a special claim on what is called the connection, which includes the will, self-esteem, hope, and some other parts of our abilities to learn.

Now I want to talk about how to engage two learner disciplines. And in order to do it, we're going to need a language. We're going to need some grammar. We can use natural language. We're going to use natural language. But I want to apend to that language something that engineers call systems diagrams.

Now if you relax, you'll get it all. If you get tense, it'll escape you. But if you relax, you will get it all. And I will tell you why I'm going to do that in just a minute. But let's do it first. If I say that boss pressured Kermit, then I can represent that sentence as two circles and an arrow. Two circles represent nouns. An arrow represents a verb. The arrow points from the subject to the object.

So this is the boss. This is Kermit. And the P means Pressure. I can say Kermit falsified data. Kermit falsified data. I can also say, boss pressured Kermit then Kermit falsified data. And there, I can represent that as the connection. Well, I want to do that because I want to do something that is very important to what I have just said. And that is I want to see the pictures.

I said, if a person in two different learner disciplines see the world differently, how can I tell you what they see? Well, one of the things I could do is create a metaphor for what they see by analyzing their words in terms of the picture. And I'll do that. Now one mode in which you can engage engineering and ethics is to talk about ethics as a social system. So all of my circles here are people.

GUEST SPEAKER 2: Taft?

TAFT BROOME: Yeah.

GUEST SPEAKER 2: Sorry to interrupt you.

TAFT BROOME: Yeah.

GUEST SPEAKER 2: Help us to place the diagram that you showed with the picture that was behind it.

TAFT BROOME: That one?

GUEST SPEAKER 2: Yeah.

TAFT BROOME: Place that picture with the one that I just put up?

GUEST SPEAKER 2: With the words that we've just heard. Why did you pick that diagram?

GUEST SPEAKER 1: That painting.

TAFT BROOME: Oh, these particular words?

GUEST SPEAKER 1: That painting.

TAFT BROOME: Oh, this painting?

GUEST SPEAKER 2: Yeah.

[LAUGHTER]

TAFT BROOME: This painting was painted in 1650 by a man named La Hyre. And he entitled it *The Allegory of Grammar.* And what he-- my interpretation of this painting is that here, this woman is performing an act and capturing that act in words.

GUEST SPEAKER 2: Nice.

TAFT BROOME: So that moves me as a-- hopefully, it'll move you.

[LAUGHTER]

GUEST SPEAKER 1: [INAUDIBLE]

TAFT BROOME: We can talk about what a person-- we can talk about how to engage ethics with engineering. And we can say, first of all, represent a social system using systems language. And we're also not giving up on their natural language. We're still going to use words. And these arrows show the interactions of those people. And we can use ethics to talk about whether these interactions are good or bad.

We can also talk about a technological system. But I did not represent in this mode what we call an analytical or an analysis of the technology, because in the case, for example, with Agnew bribery scandal, then we involved engineers and engineering. But we really don't have to know a lot about it. So this is cross-disciplinary in the sense that the tools and methods of ethics dominate the discussion. All right?

And the second mode, when we're talking about the challenger and the O-ring, and when we're talking about the Bhopal instance and chemistry-- and a chemical plant, we're going to have to know something about the technological system. So we look at it analytically. These black circles are being parts of the technological system. All right?

And we can talk about the interactions of those. And now, we're in a good position to talk about the consequences of our actions because we know how the system works. We can say that we act as a society in a certain way on the system. The system acts on the environment again. And then, feedback feeds back to our society.

Now we can talk about how the system hurts people as a consequence. And this is, I call, the multidisciplinary mode because no one discipline dominates the discussion. Ethics does not dominate this discussion. Engineering does not dominate this discussion. They are brought together.

I'm going to talk about two cases of the interdisciplinary mode. And this case here is particularly interesting, I think, compelling, on graduate students doing doctoral dissertations, because what I want to talk about now is the engagement of two disciplines where in order to solve your problem, you may have to give up or violate one of the first principles in one of the disciplines.

So if you're writing a dissertation on engineering ethics, and you think that in order to solve the problem you're going to have to do something that ethicists don't do, and there's an ethicist on your committee, how do you deal with that person? This is interdisciplinary. And there was a case that I would like to tell you about. But I'll tell you about it in whatever Q&A period we have afterwards.

But it's a case when I went on a job, on my first job as an engineer, actually. And I had to solve a problem by putting a person in my situation, working that person through the situation, and then imitating that person. Now where I broke away from all that we have talked about with ethics is that I did not put a virtuous person in this position. I didn't do it because the situation was of a typical kind that engineers face.

Number one, I had to make the decision right away. I did not have reflective time to think about which person to choose and what that person would do. Secondly, the situation was complex. That is, it was novel. You cannot practice for a lot of situations that engineers get into because the systems are too complex. Think of Three Mile Island, for example. Nobody was prepared for anything like that. And thirdly, the situation was potentially lethal and had a high-potential for high-lethality.

What I did was put up-- I went first of all to literature. I went to Africa first. I didn't physically go. But I went there to get some ideas. I wound up going to Jerusalem. I wound up going to Estonia. And I found a cultural tradition outside of the West in which you put a person in your situation that you want to imitate who will not necessarily do the right thing. But after they've done it, they tend to get forgiven for it.

Now we do have some models for that in Western society. First of all, first of all, if you like basketball, then you know there's such a thing called the good foul. You intentionally break the rules. You want the referee to punish you for doing it. And after you've done it, your opponent will give you five, say, good five. Martin Luther King broke the law, went to jail, and got a Nobel Prize for it.

So what I'm talking about now is being able to solve-- I was able not to solve the problem. I handled the problem in such a way that I put a person in my situation and was forgiven for what I did. That particular case worked out OK. But if it had not worked out OK, I still would have been forgiven. I still would have got my old job back.

And that is what I claim. And Segun and I have had some discussions on this matter. And we're going to continue to have discussions on this matter. But we think that at this point, this is either an extension of Western ethics. And my question is, is it something different from ethics altogether? And the important thing is that if I wrote this paper as a doctoral dissertation, I would hope that Dr. Gbadegesin would be the ethicist on my committee. There's not a lot of other philosophers that I know about because we're breaking the rule. All right?

There's another case that hasn't-- that came about as an intrigue for me from a man that I had the privilege of meeting once named Jacques Ellul. I don't if you know him, E-L-L-U-L. He wrote a book. And the book was translated into English by Alfred Knopf in 1964. And the title of the book was *The Technological Society.*

The intrigue for me was that I had thought after reading that book, or after I read 1/2 of the book, that Ellul should be called the father, the founding father, of STS. He never achieved that status outside of France. Nobody ever proposed that he achieve that status because, number one, he conceived of society as not being-- I'm sorry, he conceived of the world as not being two societies, not being two systems, a social system and a technological system, but one system in which human beings and the technologies are the components.

I thought that was a great idea. But he never became the father of STS, founding father of STS, because he said that by being a part of the system with technology, you cannot control technology. You can't see the hole. You're blinded by being in it. And the whole point of STS is to control society and technology.

Well, I labored over this. And one day, I was looking at*The New Yorker* magazine, which my wife and I subscribe to. And I just couldn't put down the cover. And I asked my wife, what do you see? And my wife says, well, she said, what I see are people using technologies that looks like a little technological society.

And she says, I certainly see this picture from the child's point of view because from the child's point of view, adults have small heads because their heads are far back and way up. And their feet and legs are big and menacing not only because they're close up, but because they're dangerous. They can step on little kids.

And so it's certainly-- and she's in the foreground. And she's the only one with bright colors. It has to be the statement that the child is the only one still in touch with nature. I talk with a lot of people about that. Everybody agrees with that interpretation but me.

[LAUGHTER]

What I saw was the child doing her best to imitate the adults.

GUEST SPEAKER 2: Right.

TAFT BROOME: But that had helped me because now, I said, can I look at the society, and now step back from it, and be able to get a Gestalt of it? Can I represent the society as one person? Can I represent French people as one person? Can I represent Americans as one person? No, it takes a few more.

But the point is, can I now get a Gestalt of this as one person? Because if I can, I can control it. Ellul was wrong. You can control it if you can get that Gestalt. I got it immediately. It didn't take but a minute. And that was out of a science fiction story called *Circuitry Man.* And this character is called Plughead. And that he is wired to the net.

[LAUGHTER]

Anything he wants to know, he Googles it. Any music he wants to hear, he downloads it, an MP3 right into the brain. He is wired. If I can understand this man as a character, I can put him in our story, work him through the story, and understand my society without going outside of it and looking back. I can stay in it.

How do I get a picture, now the question is, that you share and you share with me? I can get it if we have a mythology because that's what mythology does. Mythology is able to create not just one character, but not 10,000 characters, maybe 20 or 30 characters that you can use to understand an entire culture.

Do we have a mythology in the United States? Do we have a mythology for the technological world? Frankly, I think we do. And we call it science fiction. And this is my last slide, my next to the last slide. And that we can now make stories for our technological system by using this, kind of, character, heroes, technology, and other characters.

And this now is what I call my replacement of Ellul's. And now, we have a special thing to say. So my closing statements that I want to leave you with, and I've been on sabbatical here. And this is my last lecture here. So this is my last will and-- not my last will and testament.

[LAUGHTER]

I'd like to leave something to MIT. And that is, number one, that a field of study that engages two or more learner disciplines can, in fact, have its own specialty and its own forte and, in a sense, have all of the necessary things that we talk about as a learner discipline in itself. The point is that it can stand on its own. It does something that none of the disciplinary parts can do alone.

The second thing is that engineering, though we study engineering science quite a bit, is a learner discipline sui generis. We have our own specialty, which we do not borrow from the sciences. And we have our own forte, which we do not borrow from the cognition. We have our own. If we do not understand that, we'll always think of engineering as a second class science. And we'll never have a position for it in the general education of freshmen. Thank you.

[APPLAUSE]

Technically, the colloquium is over. But I am prepared, Segun is prepared, the students are prepared, to carry on the Q&A for the duration. As it goes past 1/2 an hour, somebody has to go out and get the coffee.

GUEST SPEAKER 1: Yeah, I just want to make sure they don't [INAUDIBLE].

TAFT BROOME: So I'll turn it back over to the students.

GUEST SPEAKER 1: Thank you. Thank you, Dr. Broome. Thank you, Dr. Gbadegesin, for your comments. I think that was a really interesting summary of commonalities in different cultures and different disciplines and give us a lot to think about. Do you have a question? [INAUDIBLE]. Any questions? Go ahead.

AUDIENCE: [INAUDIBLE] because the question is directed towards--

TAFT BROOME: For me?

AUDIENCE: Yes. Especially the last slide, when you went to-- there were two disciplines can have their own forte and language and create this new discipline.

TAFT BROOME: Yeah.

AUDIENCE: Yesterday, I attended a meeting of Center for Bits and Atoms, which is another interdisciplinary research program. And yesterday's topic of discussion was Energy and Computation. There were some great research projects presented which were part of towards solving the energy problems. And one comment was made by Professor Gershenfeld that all these projects which we saw yesterday were funded by fumes.

TAFT BROOME: So what does that--

AUDIENCE: Were funded by fumes.

TAFT BROOME: Fumes.

AUDIENCE: Because none of them really fit into a discipline. And we had the Undersecretary of Energy who was also present, who suggested that part of the problem is because you don't have your own set of these different projects. They don't have their own forte and don't have their own language.

TAFT BROOME: Right.

AUDIENCE: I was wondering, can the discipline of forming new disciplines be itself a discipline? Or would it be too narrowing it down?

[LAUGHTER]

TAFT BROOME: Actually, I'm going to use a word that applies to me and does not apply to you. And that is entangled. I got entangled with that question. I started talking about meta learner disciplines. And I had just thought that-- to think about a meta learner discipline is something inevitable that we've got to do. And I just hope that question didn't come up today because I haven't done it. But yeah, I have thought about it, mega-- a meta learner discipline.

AUDIENCE: And a more specific question is, how can policy, since you mentioned [? TPP, ?] how would it make policy so that it allows funding opportunities as people try to develop their own forte and language when none exist in the past? Because currently, most of the funding mechanism is based on specific disciplines per se.

TAFT BROOME: Yes.

AUDIENCE: And they don't really fund interdisciplinary work.

TAFT BROOME: Well, they claim they fund interdisciplinary work, many of them. But I do agree with you that it's still either cross-disciplinary or multidisciplinary. They're really not talking about interdisciplinary work. And I think that the-- I call them the-- what do I call them?

There's a word I can use. Well, the established learner disciplines, deservedly, have a strong hold on the academy and most of our intellectual thought. And that any pretense of coming up with something totally different has to have a battle to fight. And frankly, I don't resist that idea because we need to fight for what we believe in.

Let's give the scientists credit. A lot of them were persecuted in the inquisitions. They put their lives on the line for what they believed in. And over hundreds of years, they are still being attacked by religion. But nevertheless, they fought for what they believed in. I think it's time engineers began to fight for what we believe in. Yes?

AUDIENCE: I'm not an engineer. But I'm a social scientist in an engineering world.

TAFT BROOME: Yes.

AUDIENCE: So I frequently--

GUEST SPEAKER 3: Could you--

AUDIENCE: I'm sorry. I'm not an engineer.

GUEST SPEAKER 3: Thank you.

AUDIENCE: And I'm a social scientist in an engineering world. So I frequently run into this interdisciplinary situation.

TAFT BROOME: Yes. Yes.

AUDIENCE: And while I am trying to absorb everything I've heard today and not be critical or evaluative, but--

TAFT BROOME: Be?

AUDIENCE: Well, but that was part of what we were talking about today. And I in one real sense see the cultures of engineering, the cultures of social science, the cultures of mathematics. Each of these things has their own culture. And I don't want to denigrate anyone's culture.

However, I would like to be able to tell a story that would allow the cultures, and this has to do, I think, with what you were just asking about, tell a story or follow a process that allows those cultures to come together. Do you have a clue? Or can you give me a hint? Or can you give me a process or help me with that?

TAFT BROOME: Yeah.

AUDIENCE: Because often, this is something you see happening. I can see that they're missing each other.

GUEST SPEAKER 2: [INAUDIBLE]

[LAUGHTER]

TAFT BROOME: Yes.

AUDIENCE: And I can see, but I can't tell them what I see, about the synergies that I can see them trying to make.

AUDIENCE: [INAUDIBLE]

TAFT BROOME: On that same point?

AUDIENCE: Because I've been [INAUDIBLE] for many years. And I've seen the change where there is now a tendency to call on people from different disciplines and [INAUDIBLE] where we came from [INAUDIBLE] I find them to be counterproductive, because it's either you're opening it up and everybody's welcome, even if they can't get inspired by one similar draft.

This is how it works. I'm a physicist. To me, it's a click somewhere. And then, it starts. I can't control it. I just go and then listen. So also, I think it has to change. When you say olden day value, it means everybody. Don't say, where did you come from? Come educate us. Just give people the way it was. Like you said, it will go from place to place. And listen to all the lectures.

TAFT BROOME: Let me comment on both. I--

AUDIENCE: I have something quick to integrate into that.

TAFT BROOME: Yeah, go ahead, Al.

AUDIENCE: Because I have a query which parallels yours or an observation, which is that we're talking about these different categories. I was concerned about the general categorization that you could propose and that you were also attempting to address. In my own personal history, I've gone through a few [INAUDIBLE] A major proponent was Piaget, who offered stage theories and never offered any way of getting from one stage to another.

But I think the challenge is, and I think this is similar to what you're saying, is that when you speak of customary morality, for example, personal morality and rational, that this is the first state. But now, the major effort has to be to look at, what are the devices? What are the mechanisms for going from one to the other?

And also for recognizing, as ultimately psychology did, that the stage theories were not really linear. But oftentimes, things were skipped. And there was reverberation. There was feedback. And it was important. So I think this is the challenge. Not the-- the first is to specify. And then after that, say, how do you get from [INAUDIBLE]? What's the mechanism? So excuse me. I think--

TAFT BROOME: No.

SEGUN GBADEGESIN: Yeah, just a quick--

TAFT BROOME: Yeah.

SEGUN GBADEGESIN: My categorization is not in stages. I don't categorize customary morality as an earlier stage of some progressive idea. No, in fact, all these categories of morality can come together in a particular culture at a particular time. The people who have conventional morality, one of them has his or her own personal morality.

And presumably, that same person or another person thinks critically, steps outside the group to query their rationale behind the conventional morality. So it's not a stage-by-stage affair where you move from the lower state to the highest state. That's not what I have in mind. But at the same time, you can see the differences between the categories of morality.

Conventional is customary to the group. It's what they have in common as maybe traditional. But of course, as I said earlier, only traditional. So it changes from time to time. That doesn't mean that the customary morality changes. That doesn't mean that the customary morality remains the same. It also changes with age. Whatever people have in common as part of their traditions will be considered as conventional, or positive, or customary morality. All right?

TAFT BROOME: Yeah, back to your initial question, which started this whole thing, which is what I'll address. And that is that I had thought I'd finished my engineering studies in 1972 when I got my doctorate. And I got my STS in 1985. And I've been very active in the professional society of business with STS.

It took 12 years for me to publish a piece on this interaction that I'm talking about. And once it came out, it came out in a peculiar way. I wrote about this Concrete Sumo. And we had philosophers that made comments on it. And then, I made a reply to the commentaries. And there was another philosopher that introduced the whole thing. We published all of the papers in one journal together. And not all of the commentaries were gracious. But it made for a really good debate.

The point that I'm making is that as long as we do not have a general education that gets all people to appreciate all of the disciplines, it is going to take a long time before you are going to be able to get people in one discipline and another to stop talking past each other, except maybe when it comes to a particular problem, maybe in the cross-disciplinary mode. To be able to do it in interdisciplinary, it's going to take some individuals to do it. But everybody else is going to talk past each other.

Now that's my experience. My instincts tell me something as to the reason for it. On the surface, everybody talks about different specialties. I don't know social science. You say you don't know engineering. So we talk past each other. I don't think that's really the problem. I think it's the forte. I think once we graduate and get this feeling that we have a special claim on some higher order function of the mind, we can't listen to anybody else.

[LAUGHTER]

That's what I-- it's an arrogance. And I think that that's what prevents it. And I think it operates below the level of consciousness. I don't think we're mean-spirited people. But if I am sitting here trying-- and I'm figuring out the basic nature of atomic structures, and I've got this special claim on cognition, if you start talking to me about knowledge, I think I've got all that knowledge. We're going to talk past each other.

Or if you start talking about, well, knowledge is not everything, there's something about values, we're going to talk about it past each other. When I'm sitting here talking about, well, it's not knowledge, it's not values, it is prosecuting that commitment pathway with the will, you don't start talking past each other.

You're going to say that, I really don't have a claim on the higher functions of the mind. And I'm sitting here saying, I do. So I think that it's almost as though, with the exceptions of individuals, that we're just going to have to purge the system and try to get these problems solved at the fundamental level that the freshman dabble in? Yeah?

AUDIENCE: One final point here.

TAFT BROOME: This will be the last one?

GUEST SPEAKER 2: Correct.

AUDIENCE: And just actually, I wanted to follow up on the conversation [INAUDIBLE] was having earlier, which is if you're going to talk about, in a sense, a meta discipline, what do you see as the role of translators or interpreters in executing that discipline?

TAFT BROOME: Yes, I have given that thought. Wherever my answer fails, it will not fail because I haven't given it thought. I've given it a lot of thought. And my response to it is culture, is I contrast specialist expertise with generalist expertise. There's got to be a language that transcends all of this stuff. It's not pedestrian, this stuff you get in the barbershop, necessarily.

But it's what the lawyers call plain language, that you should be able to talk about all of these things in plain language. And one of the tools for doing it that, I think, is most effective is metaphor. I might not be able to understand what you do. But if you can give me a metaphor for what you do in the area that I understand, we can talk at that level. And we don't need to go deeper into specifics. So I call it generalist expertise.

GUEST SPEAKER 1: Everyone, thank you so much for coming. Anyone who said anything, I think, needs to sign a release form. But other than that, thank you. Thank you. Thank you.

AUDIENCE: [INAUDIBLE]

GUEST SPEAKER 1: Yeah?

AUDIENCE: Thank you.

AUDIENCE: Thank you very much.

TAFT BROOME: Oh, [INAUDIBLE].

[APPLAUSE]

And this news.

[APPLAUSE]

[SIDE CONVERSATION]