



**Presidential Commission**  
*for the Study of Bioethical Issues*

## **TRANSCRIPT**

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Meeting 22, Session 2

September 2, 2015

Washington, DC

## SESSION 2: FLUENCY IN SCIENCE AND ETHICS

We are now turning to the topic of fluency in science and ethics, and I have the pleasure, the distinct pleasure of introducing our very own Executive Director, Lisa M. Lee, to begin our panel.

Prior to joining us at the Bioethics Commission, Dr. Lee spent 14 years at the Centers for Disease Control and Prevention, CDC, where she held several leadership positions, including the agency's Assistant Science Officer and the Director of the Office of Science Integrity.

Dr. Lee is Adjunct Professor at the Center for Biomedical Ethics Education and Research at Albany Medical College where she teaches ethics. She's also the recipient of one of the great awards in our field of bioethics, the 2014 Pellegrino Medal for Excellence in Bioethics.

Thank you for putting on a slightly different but closely related hat this morning, Lisa, and joining us to discuss this important topic.

DR. LEE: Thank you so much, everyone. It's a pleasure to be here in this other capacity.

I'd like to spend the next few minutes talking a little bit about some data analysis that my co-author, Dr. Frances McCarty, and I did. It is in press at the Hastings Center Report, but we really were interested in looking at kind of the current state of bioethics degrees and programs in the U.S.

As we all know, bioethics has grown rapidly since its birth in the '60s. In 50 years we have gone from a clear focus on clinical ethics, clinical ethical questions, research ethics to now a robust literature both in peer reviewed literature as well as books, hundreds of books on varied topics, things like genethics and neuroethics, nanoethics,

public health ethics, lots of different topics.

From the beginning there's been a lot of discussion, perhaps debate, regarding whether bioethics is a discipline, a field, or something else entirely, a professional perhaps. From the very beginning, the person Van Rensselaer Potter, who is generally considered the person who coined the term "bioethics," said that this was a new discipline combining biology and human values.

Now, what he meant by "discipline" is unclear because he often described bioethics as a bridge between these many fields. So whether this was a multidisciplinary field or an actual discipline is unclear.

Hellegers and his colleagues at the Kennedy Institute also at that time talked about bioethics as a discipline, again combining science and ethics. So whether discipline as we currently define it, that is, with a unique and agreed upon method for knowledge acquisition or an agreed upon epistemology, a common epistemology, whether that's what they meant is unclear.

Again, Callahan then in the very first issue of the Hastings Center Report, which at the time was called the Hastings Center Studies, wrote an article called "Bioethics as a Discipline." He was unconvinced at that time that bioethics had met the necessary requirements to be considered a discipline. Perhaps he was optimistic. Some people have read that he was optimistic that at some point it would get there, but at the time not so.

One thing we know for sure from the beginning is that teaching competency has been a concern. When we talk about what is a bioethicist or what does a bioethicist do, we want them to do that well. The question really is what is that.

But in the very early beginnings of our field, the Hastings Center brought

together an esteemed group of our colleagues, and they produced a report called "The Teaching of Bioethics," in which they describe the current scope of what was going on then. This is the mid-'70s, and really they observed a small handful of small-scale philosophy and religion departments incorporating training on ethics or bioethics.

At the time they thought that a terminal degree like a Ph.D. or even a Master's degree was not necessary to do bioethics, but they did leave the door open for the creation of more formal degrees and degree programs.

So there have been lots of efforts over the past decade, especially to develop this common set of methods or this common theory for bioethics. This group has called for integrated training of ethics, bioethics, and science to promote this dual competence that the Hastings Center Report also talked about in the mid-'70s.

And we have seen many new programs enrolling bioethics majors, and so one of the questions we have is what is this. We see all of these popping up, all of these programs popping up, and what are the number and types of degrees that are being conferred in the U.S.?

So we took a look at some data. The Integrated Post-secondary Education Data System, or IPEDS as I will call it, is a data set that is housed at the National Center for Education Statistics. This is a federal statistical agency and they have a very big carrot for reporting these data. That is it's a requirement for all higher education institutions who receive or participate in a federal financial aid program. So it's a very complete data set.

We looked at two degrees coded by the CIP System, and the Classification for Instructional Programs is a system that came to be in 1985. It has had four revisions, the most recent just in 2010, and that's an important piece of information because bioethics

as a degree, as a CIP code, was introduced in the year 2000. So we know people have been doing bioethics before 2000, but this degree as a degree was coded in 2000.

And then the other one we used was Applied and Professional Ethics, which was introduced just in 2010.

So I want to just spend a couple of minutes on the next two slides, which are the results of what we found. Here you see on the X axis is time and on the Y axis is the number of post-secondary degrees conferred.

We looked at 2000 to 2003, and you'll see on the graph we -- I mean to 2013, which is the last year data are available. You'll see on the left side of the graph we start in 2003 because there were no degrees conferred with the CIP code in 2000 to 2002.

Overall there were about 2,300 bioethics and applied ethics degrees conferred over this period. In 2003 there were about 44 of those conferred, and by 2013, about 400, slightly over 415. Most of these degrees were coded as bioethics with a handful after 2010 of each year being coded as the applied, applied ethics.

I want to take a look just by degree for a minute, by level of degree or degree type. The top line with the triangles there you see is the line for the Master's degrees, the number of Master's degrees that were conferred. Overall there were over 1,700 that were Master's degrees. We see that compared with the bottom lines where we see about 150 doctoral degrees over the period, just over 170 Bachelor's degrees in bioethics, and 262 certificates, so post-Master's or post-baccalaureate certificates, and it's clear that many more times master's degrees were conferred over the entire period.

I want to step out here and just take a look at rather than number of degrees, number of institutions granting degrees because we've seen a lot of new programs, and so one of the things that we're interested in is aren't all of these degrees coming from a

powerhouse program or what's happening?

So we looked at the number of institutions, again, time on the X axis and number of institutions on the Y. And clearly most degrees here, most institutions are conferring Master's degrees. There were four programs in 2003, and 30 Master's programs by 2013.

We see a small increase in the certificate numbers right around 2006, but that is the next most. Most programs, institutions are giving those, for one certificate program in 2003 and 14 by 2013, and then we see a handful of institutions offering the Bachelor's degree in bioethics or applied ethics, and also doctoral degrees. So six institutions offering doctoral degrees and ten offering Bachelor's degrees.

So before we talk about the implications of these data, I just want to mention a couple of limitations. The data likely underestimate both the number of degrees as well as the number of programs in part because it takes a few years for the uptake of new codes, but the data are quite complete, but it does take some time for universities to implement the codes. They've estimated around one to two years.

A really important point here is that these data do not represent the number of bioethicists out there, right? Training of persons who consider themselves bioethicists varies dramatically. Some have an actual degree. Some have interest, et cetera, but I want to be clear that we're not talking about a number of people who consider themselves bioethicists or who we would consider bioethicists.

One of the things we're very interested in -- I spoke to this earlier -- is what does it mean when one is a bioethicist. What do they do? What do they learn? What do they know how to do?

And we weren't able really to assess this consistency across programs. I'll talk a

little bit about why in a minute.

So since the turn of the century, that is, 2000, the number of degrees and programs who grant these degrees has grown both at the undergraduate and the graduate level. The undergraduate was a bit of a surprise to me, but I'm happy to see that the data bear out growth in both.

The greatest growth is when in the Master's degree and the certificates, post-baccalaureate or post-Master's certificate which can indicate that persons who are choosing to go back for an advanced degree in bioethics are prepared in other primary disciplines. They have a terminal degree. They're adding a Master's credential. It mirrors what we've seen in the pre-2000s where people who have -- who are practicing a particular discipline want additional training or competency in bioethics. It's just that now that there are degrees, they can augment that with an actual degree as opposed to additional training that isn't degree'd.

I think a couple of things that are really important here in terms of take-home messages, one is clearly the field is growing. Growth is primarily through this complementary training. So people who have, for example, these terminal degrees in science, medicine, law, what have you, other disciplines studying philosophy or ethics, and we see this overlap, and this Venn diagram is really where most of the growth has come.

One important question though is: does bioethics have the features that it takes, that is, an agreed upon method that is unique for knowledge acquisition to be considered a stand-alone field, and that little purple circle represents that. These are the Bachelor's degrees and perhaps the Ph.D.'s, people who go to school to become bioethicists without another discipline.

So the question is: do we have what it takes to consider ourselves that yet?

And then maybe the bigger question for this group is: should we strive for that? Is that something we feel is an important set of skills that people could learn without having had a primary discipline or training in another discipline?

Given that, I just want to state a couple things that I think we can talk about during the discussion or consider later, which is we might consider accreditation standards to ensure that we have consistency across these growing programs. What can one expect if they're going to return for a post-secondary training in bioethics?

And in terms of consistency, what does it mean if I have a Master's degree in bioethics from Emory? Does that mean the same thing if I have a Master's degree in bioethics from Penn? And should it mean the same thing?

This gives us an opportunity really to reflect on what it means to be a bioethicist. We're calling ourselves that. People who call themselves that, what does that mean? To consider what do bioethicists actually do? And we know that that's becoming increasingly varied.

And then most importantly, how do we train people to do what it is we think they should do?

So I'll leave those questions on the table, and we can continue our conversation. Thanks.

DR. GUTMANN: Thank you very much.

And next we turn to Seth Mnookin, who co-directs MIT's Graduate Program in Science Writing. His most recent book, "The Panic Virus: the True Story Behind the Vaccine Autism Controversy," won the National Association of Science Writers, 2012 Science in Society Award and the new England Chapter of the American Medical



Writers Association Will Solimene Award for Excellence.

Mr. Mnookin's essays and reporting have been featured in the annual Best American Science in Nature Writing anthologies. His journalism has appeared in many publications, including the New Yorker, New York Wire, New York Times, Washington Post, Boston Globe, Slate. I could go on.

He is also currently a member of FDA's Expert Working Group on Medical Countermeasure Emergency Communication Strategies, and as you know from my previous comments, his work is very closely related to the deliberations we had in a previous report, the one that I've called the most challenging report. He writes on many of the most challenging questions.

Thank you. Welcome.

MR. MNOOKIN: Thank you so much.

Let me just start out by saying it's a real honor to be here. My work mainly deals with issues of trust in science and the intersection between expectations and reality, and so having the opportunity to talk to this Commission is a true honor.

I'm going to touch on three basic broad areas. I'm going to start out with an anecdote about how far we still have to go to bring evidence-based recommendations in discussions and debates about public policy. So I wrote a book about vaccines and autism, not knowing before I started what that would involve emotionally or psychologically, but when it came out, I immediately started getting invitations to workshops and conferences where the emphasis would be on vaccine hesitation, competence in vaccines, addressing this issue and what to do about it.

And after about a half a dozen of these, I started to really resent these invitations and not just because I have misanthropic tendencies. It was because what happened was

there were a group of experts sitting around a table discussing why parents were using their instincts instead of evidence to make decisions about vaccines, and we were all giving our instinctual answers as to why they were doing that and not providing any evidence. And I was struck by all of our sort of collective blind spot in that area.

So a couple of years ago Barry Bloom from the Harvard School of Public Health and Mark Hughes from the University of Washington and I put together a conference with the American Academy of Arts and Sciences intending to design a research agenda that would provide evidence to answer some of these questions.

I think we all thought it was a successful conference. We've not seen a lot of new research proposals in that area. So I wanted to start out with that.

Next, not to be too much of a downer, I want to talk about the paradox that I think is presented by simultaneously energizing the public to take part in discussions and also having informed discussions. So I'm going to talk about that in the context of a time when this went poorly with the hopes of illuminating how it might go better.

So in 1999, the FDA Modernization Act required that all federal agencies give reports on the levels of mercury that were in anything that they oversaw, and I believe this started in 1997. So there were two years that agencies had to prepare for this. Thimerosal, a mercury-based preservative, had been used in vaccines for decades. So this didn't sneak up on anybody.

And yet the CDC, along with the American Academy of Pediatrics waited until literally the weekend before they were going to need to give this report to decide what recommendations to make about the fact that there was a larger level of thimerosal; there potentially a larger level of thimerosal in childhood vaccines than was considered safe for a different type of mercury, so not the same type of mercury, ethylmercury

versus methylmercury. I make the comparison between ethyl alcohol and methyl alcohol. One will get you nicely buzzed and one will kill you.

And so what the CDC and AAP decided to do is recommend that thimerosal be taken out of vaccines recommended for children, despite the fact at that point there was no evidence about whether the total quantity was safe or not safe.

The most disastrous aspect of this was the statements that they drafted to explain this to the public. The CDC said that there was no data or evidence of harm, and to people who are versed in the language of science, that's sort of the most you can say because of the null hypothesis, the basic tenet of science.

But to the public I think that sounds like there is about to be data or evidence of harm. So that was not reassuring.

The American Academy of Pediatrics in their statement said that their goal is to make safe vaccines even safer. As a parent if someone tells me something is safe for my children, I assume that that is not a sliding scale and I'm going to learn later that it was "safe-ish" but not exactly safe.

And still when this happened in 1999 initially, there was not a huge response to this until a Congressman named Dan Burton decided that there was a connection between thimerosal-containing vaccines and autism, and that launched, gave birth to a parent-led activist movement that continues to be very vocal and very active to this day.

And the reason why I think this presents a challenge to bringing an energized public into informed discussions is because now despite the fact that obviously we have lots of evidence showing that there is no connection between thimerosal-containing vaccines and autism, despite the fact that thimerosal has been removed from standard pediatric vaccines for well over a decade, you still have this very organized, very vocal

group of parents that believe that thimerosal specifically and vaccines more generally cause autism.

And because they are so engaged, for years they have been considered stakeholders in the vaccine debate, and so they are oftentimes included on commissions. There have been members of this community on NVAC in the past, on the Interagency Coordinating Committee on Autism, and my personal opinion is that's an enormous mistake.

You're taking a group that has indicated that they do not accept the scientific consensus and making them part of the conversation. A couple of illustrations as to why I think that's a mistake in taking, quote, stakeholders is the latest data, the latest good data on this is that there are about 20 percent of parents that suspect or think that there could be some link between vaccines and autism.

That same poll found that 29 percent of Americans believe in aliens; 28 percent believe in the New World Order; 21 percent believe the government is hiding UFOs in Roswell, New Mexico; 14 percent believe in Bigfoot; and seven percent believe the moon landing was faked.

Curiously, in the U.K. 25 percent think the moon landing was faked, and one percent think that Buzz Lightyear was the first person on the moon.

(Laughter.)

MR. MNOOKIN: So obviously there is a significant portion of the population that at the very least has concerns about this. My own view is that one of the reasons why they have concerns is because this very, very small group has been allowed to join the conversation for the past decade.

I think one of the real risks in that, and there is some research on this, is that

merely by stating a controversy or framing an issue of fact as a debate between two sides, even if you frame it as there's a debate about this, but this side is clearly correct; there's a debate about vaccines and autism, but there is no debate in the scientific community about whether there's a connection.

A certain percentage of people are going to come away from that believing that vaccines actually cause autism. There was a very stark illustration of this a couple of years ago when a paper by Andrew Wakefield, who launched the modern day anti-vaccine movement in the U.K., was the person who linked the MMR vaccine with autism. He lost his medical license and that paper that he published was retracted, and there were a not small percent of people that had never heard of this debate previously to reading reports about how Wakefield had lost his medical license and the paper was retracted that ended up after that believing that vaccines cause autism.

There is another really interesting study done out of University of Michigan where graduate students were given a list of 20 statements, ten of which they were told was true and ten of which they were told was false. There were no interpretive issues here. Their recall one minute later was very, very high as to what was true and false, but as soon as an hour later, it had dropped by 20 or 30 percent, and a day later it had gone down closer to 50 percent.

So the last thing I want to talk about is what I think is a systemic challenge in how we discuss science in society. I know this might be out of the purview of this Commission, but in terms of the fluency of science and society, I think this is an important issue, and it gets to both the practice and the funding of science.

So some numbers I know a lot of you are already familiar with. From 2004 to today, there was a 25 percent decrease in real dollars and NIH funding. Thirty-three

percent of proposals roughly got funded in 2004. Today it is less than 16 percent, so a big drop, and according to Francis Collins this is not because the research proposals are not as strong. In fact, they're stronger. He says they're stronger than ever.

A result of this is that throughout the scientific food chain there is an emphasis on extremes and extreme outcomes. You talked about the height machine and sound bite science earlier on, and you have a huge emphasis on sound bite science from starting with graduate students and going all the way through because to get recognized, to get funding, to get outside interest requires that you say, "I'm going to cure cancer," or, "if you let me do this brain research, then I will have to answer to schizophrenia."

A recent example of this, I think -- and because that is almost never true, that inevitably leads to disappointment -- a recent example of this is the Precision Medicine Initiative. When President Obama announced it in January, he talked about delivering the right treatment at the right time every time to the right person, and how precision medicine gives us one of the greatest opportunities for new medical breakthroughs that we have ever seen.

In cancer, one of the things that we're supposed to do was target driver mutations. So instead of carpet bombing someone with cancer, you would identify the mutation that's causing the tumor to grow and then use a drug that had previously been identified to attack that mutation.

Unfortunately, the reality has not worked out that way because cancer mutates really quickly, and it can be hard to tell what the driver mutation is, and so just last week we had a front page story in the Boston Globe that said in cancer treatment precision medicine is less precise than promised.

That's not because precision medicine is failing. In fact, I think individualized

precision medicine is clearly going to be where a lot of breakthroughs are going to happen, though probably not going to be the breakthroughs that we think are going to come today. Anyone who has studied cancer knows that there is actually a long history of silver bullets that are going to cure cancer. I think it was about a decade ago that we had the angiogenesis inhibitors that were going to cure all cancer.

So the fact that precision medicine less than a year after this initiative, that it's, quote, not fulfilling its promise should not be a surprise. We have a track record as a society and as human beings of overestimating what can be done in the short term, and especially in terms of science, and vastly underestimating what can be done in the slightly longer term. So I'm talking about a five-year span as a short term and a 50-year span as the long term.

So I'm going to wrap this up so I can come in on time. One of the possible solutions to this in my mind, and I think there are ways in which it's not very appealing because it's a solution that takes a lot of time to implement, but we need to emphasize the incredible returns of basic research and introduce the language of wonder and amazement into scientific discoveries that happened instead of talking about what is about to happen.

One of my favorite examples is a bacteria called *thermus aquaticus*, which was discovered in the hot spring in Yellowstone, and it was discovered because a University of Indiana Professor and one of his students were curious about what could grow in hot springs, and that ended up being one of the real keys to the modern day sequencing movement. We found a polymerase from that that allowed the duplication of very small pieces of DNA and very quickly.

I'm currently involved in several projects that emphasize basic research and try

and produce stories highlighting that sense of wonder for the public, but it is something that I think requires a larger shift in the way that we talk and think about science.

DR. GUTMANN: Thank you very much.

We're going to take about ten minutes before we adjourn for lunch so we can engage with some questions. Let me begin with Lisa's findings and comments on them.

So one of the most striking findings, and it's important to have it, empirically have it, there has been tremendous growth in degrees and in institutions that offer degrees, particularly the Master's, but also tremendous growth in all of the degrees, the Master's being the most dominant for the reasons you've offered.

The other part of your discussion focused on whether bioethics is or should be a discipline, and let me ask my question by way of a comment for you to react to.

The comment is that universities are organized, you know, into departments and degrees, and those departments and degrees don't all or even most reflect disciplines. Sociology is not a discipline, and my own field, political science, isn't a discipline. I mean, there are multiple disciplines combined. Philosophy, which is the root of most bioethicists, isn't a single discipline. There are many different methods. I mean, if you're defining "discipline" as an agreed upon method.

Genetics isn't a discipline. My, you know, friend and colleague and former President of Princeton, Shirley Tilghman -- I once made the mistake of calling genetics a discipline, and she immediately corrected me. Most people who are trained in genetics have come from biology or chemistry or physics, now many disciplines.

So I'm not sure it's a hallmark of what we should be calling out for degrees that something be a discipline. So I ask you. So I will ask this question. What about its usefulness in understanding important issues, its usefulness in vocations or, you know,



professions since many established fields and departments are combinations of disciplines?

When I began -- that is the question, but I just reflect personally because it's on something practical -- when I began in academia anything that was interdisciplinary or multidisciplinary was considered suspect, and I happened to major as an undergraduate, not knowing this, I majored in something that was a combination of economics, history, political science, anthropology and philosophy. It was called at Harvard -- it still exists. I spoke at a 50th anniversary -- it was called social studies and it was an honors major.

And I didn't know how well that would launch me actually at the time, but faculty, except the faculty in this program, looked askance at it. There were reasons for it being created, because they were very eminent faculty, and the institution -- they got together and they created it.

And now, you know, there is the opposite issue. It's a buzz word, interdisciplinary and multidisciplinary. Everyone wants to be.

I think it is important to have discipline in what one does, but to be a single discipline I think would not be a good thing for bioethics any more than for genetics or political science. It would be narrowing.

Do you agree or not?

(Laughter.)

DR. GUTMANN: I mean, comment on, really.

DR. LEE: Yeah, my comment on it is that you are not alone.

DR. GUTMANN: Yeah.

DR. LEE: Many, many people agree with you, and I tend to. I would refer you all to a great paper that was written by Bernie Guyer in 2004 about urban health, and the

same question. Are we a discipline or are we a field and, most importantly, does it matter?

And I think, you know, the points he brings up in that were quite analogous points. I thought a great deal, Francis and I both thought about this analysis, which is there is strength in diversity of method, and this is one of the strengths of bioethics.

DR. GUTMANN: Yes.

DR. LEE: So should we push ourselves to think about that purple circle as a stand-alone discipline? Perhaps not. Perhaps the strength that we get as bioethicists both as scholars and practitioners is from that multidisciplinary approach.

I will say that reconciling that with consistency in preparation is something that I've thought a lot about, which is if we're not going to push toward calling ourselves a discipline or achieving discipline status, that doesn't mean that we shouldn't attend to competencies --

DR. GUTMANN: Right.

DR. LEE: -- to, you know, consistent approaches to training.

DR. GUTMANN: It doesn't mean anything goes.

DR. LEE: That's exactly right. That's exactly right.

DR. GUTMANN: There are sets of skills and knowledge base that are essential and others that are very helpful to knowing.

DR. LEE: I also think that as a developing field, this is similar to my other profession, which is as a public health professional. We've gone through the same kind of thing where public health is a multidisciplinary field that also is not a discipline per se, but people are very interested in calling it that for reasons not so much about the purity of its academic standing but for financing and other things.

But I do think that it's really important to recognize that now we know when somebody comes out of a School of Public Health with a Master's in public health as an M.P.H., we know that they're getting consistent training. They've had an epi course. They've had an environmental health course. They've had, you know, the kinds of training, Biosat series. They have the kinds of training that we could assume that they were competent in certain things.

DR. GUTMANN: Yes.

DR. LEE: And the question really is with this massive growth in the last 15 years in bioethics programs, it's early. We have time. We're just kind of finding our feet as a field in terms of the training. Do we want to think about what we expect to come out at the end of that and should that be similar?

DR. GUTMANN: Well, I think the next step and your next article ought to be what the requirements are in bioethics programs.

DR. LEE: I'll get on that.

DR. GUTMANN: Because the requirements, they will tell you what students are expected to do in order to get the degree.

DR. LEE: And there's been a great deal of reflection within the field about what it is we do and who we are and what we profess to be able to do, what skill set we bring to a situation, and I think those kind of things need to continue before we can rush to judgment about what it is we should know how to do.

DR. GUTMANN: Great, great. Christine.

DR. GRADY: Yeah, Lisa, I wanted to follow up on one thing that you said and it builds on this discussion.

The Master's programs, my understanding is that some of them are people who

have degrees in other fields and then come and get a Master's, and some of them are undergrads. Do you have any data on how many?

And doesn't it make sense that maybe the content of what they learn might vary a little bit depending on what came before, I guess?

DR. LEE: That's a great question. There are no handy data to look at of whether people with Master's had a terminal degree. I do know that several programs, bioethics Master's programs, require or preferentially admit people with a terminal degree. So that's been more the case in the earlier ones.

Some have eased up on that requirement, but often that has been a requirement.

The point about -- regardless of whether a person has a terminal degree or a Bachelor's, with a very few Bachelor's programs in bioethics they're trained up in something else. It might be, you know, a multidisciplinary field like social studies. It might be biology or something else, but they haven't had bioethics, you know, Bachelor's through.

But to answer your question, there are not data. I mean, I imagine we could get to that, but they are not handy.

DR. GUTMANN: Raju.

DR. KUCHERLAPATI: So, Lisa, I think maybe I can make an observation from my own experience. Now there are lots of biologists trained as biologists or people trained in medicine, and there are people who are trained as the ethicists and not too many bioethicists.

DR. LEE: Un-huh.

DR. KUCHERLAPATI: With the exception of people like Dan here, not too many people who really bring those two disciplines together, and this is one of the

biggest problems.

As many people, the ethicists think that, you know, important decisions should not be left to the scientists, societal decisions based on what their discoveries are, and the medical professionals or the biologists think that ethicists just want to say no. So this is a serious issue, and if we truly want to be able to change and educate the people, we need to be able to bring these two disciplines together.

And I think this is partly what Amy is talking about in terms of what are the kinds of things that we need to teach these people to be able to bring those together. Are there efforts underway to think about, you know, what those things should be and how you could truly bring these -- oh, I don't know -- whatever disciplines together?

DR. GUTMANN: Yeah. So can I ask, since you mentioned Dan, ask Dan to say something?

DR. SULMASY: Yes. No. First of all, on this topic if you haven't looked at it yet, the first chapter of, you know, Sugarman and Sulmasy on "Methods in Medical Ethics," we come down pretty significantly in favor of saying it is a field and not a discipline, a field to which many disciplines have things to contribute.

DR. GUTMANN: Right.

DR. SULMASY: And that probably for the future, persons who do have some kind of dual training, who have expertise, I think, in one field like sociology or biology or anthropology and also are trained in ethics, would be a better way from my view to move the field forward.

I think Alexander Pope is still correct that a little learning is a dangerous thing and that programs that give people, you know, one course in sociology, one course in philosophy, you know, one in law and call it a Master's are doing a disservice to the

field.

DR. LEE: I'll answer your question in a second, Raju, but it's interesting you bring that up, Dan, because I do think that part of the concern about consistency across programs is just that. Are we going to have programs who just teach topics, right? And some do. "This is your topic; this I your topic. These are bioethical issues. Now you know about bioethics. Go do good."

So I do think that that issue is a huge one in this growth in programs.

In terms of efforts to develop competencies, the furthest along are the clinical ethicists, and at ASBH, there has been a great, you know, movement to actually kind of make sure that people who claim to be clinical ethicists are well trained and have the core competencies and there's now in the second revision of what those competencies should be.

One of the things that's challenging our bioethics as I mentioned earlier is the explosive growth in the field from, you know, a geneticist and a neuroethicist and a nanoethicist. Those aren't clinical ethicists. Even a public health ethicist, as I call myself, that isn't a clinical ethicist.

What does that mean? Those are all open questions, but there are some efforts and the process does exist. So there are potential for others.

DR. GUTMANN: That's great. I'm just going to give an anecdote. It's a true anecdote that sheds some light on those programs, assuming there are programs at the undergraduate level and others that are not as fulsome as we would prescribe, ask to follow.

So I remember a dear friend and colleague who we were just chatting over a meal many, many years ago, and he's a very, very renowned and wonderful philosopher, and

as academics do, we're trained to be critical, right? And he was saying, "Oh, how embarrassing this colleague of his is who teaches Introduction to Philosophy, dresses up as all the philosophers, and he's not very rigorous."

And then he stopped himself for a moment. He said, "Oh, I just realized it was his course that got me interested in philosophy."

(Laughter.)

DR. GUTMANN: And I've never forgotten that story. You know, if we think bioethics like philosophy is important, some of these programs aren't going to be the most rigorous, but they're going to get student interested in bioethics who are not going to go on to teach it. They're going to go on to be interested in pursuing it.

And so, again, we should remember what the alternatives are. We shouldn't let the perfect be the enemy of the good. At the same time we should reflect on what would be better.

So I'm not saying this to say that we should be complacent, but I am saying that it's a good thing that more and more students are interested in this issue, and it opens the door.

So now because we have to adjourn soon, I want to ask something to Seth. Okay. So we'll both ask you and then let you have the last word.

What you do and what you said I think, there's a lot of fertile truth in it. So I want to focus being critical on one thing that I want you to clarify because it worried me a little. I'll try to clarify it the way I would make it positive, but I wanted to make sure I understand you right.

So you broadly seem to be critical of, and you used this, the people who are absolutely committed ideologically against vaccines; you actually, and I quoted you,

that they shouldn't be allowed to join the conversation.

And my reaction to that is you can't ethically prevent them from joining the conversation, and if you don't, if you don't want them to join the conversation, it's going to be worse because they will have, just as it's not the crime, it's the cover-up; they will be martyrs because they're trying to be pushed out.

What I understood you to say more positively is if you're creating a commission --

DR. MNOOKIN: Right.

DR. GUTMANN: -- or a body that has selected people to deliberate, don't go out of your way to pick people who are not open to deliberation. You can find people who disagree who are open to constructive deliberation.

Am I right? Is that --

DR. MNOOKIN: Yeah, that's exactly correct.

DR. GUTMANN: Because you should be very clear about that.

DR. MNOOKIN: That's an excellent point. I'm most definitely not saying pretend that there's not any disagreement at all.

DR. GUTMANN: Or pretend like there aren't 20 percent of people who think that.

DR. MNOOKIN: Yes, right, right. At the same time, one of the most important lessons that I think I teach to graduate students who are going on to become science communicators and science journalists is that the correct way to cover a controversy is not always to cover it. Sometimes the correct way is not to cover it.

And you end up getting sort of a chicken and egg issue where, you know, with Andrew Wakefield, for instance, I don't view him as the sort of original source of this



controversy. I consider the U.K. press that treated his and it wasn't even his paper, but his press conference that he gave, treated that as if you had a 50-50 split among researchers and scientists.

DR. GUTMANN: Yeah. And some journalists, as you are, coming out very clearly against it, but there is a vast majority of journalists who treat controversies as 50-50 splits, and there's one position on this side and one position on -- as if they were equal, and that we should be very clear about.

However, there is no alternative in this case from covering it, I mean, and if respectable journalists don't cover it, it will, especially now, it will be covered in the worst possible way.

DR. MNOOKIN: Yeah. I wrote a whole book about it.

DR. GUTMANN: Right. No, I understand, but since not everybody --

DR. MNOOKIN: Right.

DR. GUTMANN: -- who listens to you here will read your whole book --

DR. MNOOKIN: No, no. Of course.

DR. GUTMANN: -- and you have to, as a journalist it's --

DR. MNOOKIN: Right. Not, it's an excellent point.

DR. GUTMANN: That's all I wanted. I just wanted to clarify it for the sake of understanding.

DR. MNOOKIN: And you're 100 percent correct.

DR. GUTMANN: Okay.

DR. MNOOKIN: Yeah.

DR. GUTMANN: We could leave it there and adjourn, bit Christine and Nelson, could you do quickly, and then we'll -- did you have something you wanted to say?

COL. MICHAEL: Yes. It's probably going to be, you know, asking the choirs to weigh in on something ecclesiastic, but I assume based on your comments that you would endorse putting communications training into bioethics education?

DR. MNOOKIN: Yes.

COL MICHAEL: One of those core competencies?

DR. MNOOKIN: I would actually endorse putting it both in the bioethics --

DR. GUTMANN: And science.

DR. MNOOKIN: What?

DR. GUTMANN: No, go ahead. I'm sorry.

DR. MNOOKIN: Yes. And science, you know, doctoral degrees in science and in public health.

Anecdotally what I have seen is an incredible hunger for this among the generation of scientists that are coming up through the system now. At the Graduate Program in Science Writing—that has always been for journalists—there has been an enormous uptick in science Ph.D. students who want to enroll in that program simultaneously, which both shows what MIT students think they can handle to master two graduate programs simultaneously, and that's because they recognize communication as being a crucial part of their job both in, you know, grant proposals which now need to be written in English and not just in science, but also in sort of selling what they do to a public that at the moment is very skeptical of science.

DR. GUTMANN: Yeah, but you've got those who are most interested. I would just emphasize that while this may be somewhat only indirectly related to what we're arguing, teaching good writing early on in education is really important, and it is a very rare skill.

Christine, last question and last answer.

DR. GRADY: It's related to the others in a certain way. I mean, I was struck by your description of the extremes, you know, people reaching for the extremes in order to get funding or attention or whatever, and yet it seems to me that a lot of that can be attributed to the way journalists cover it.

And so I wondered if you had a solution to that problem.

DR. GUTMANN: Sure, right.

DR. MNOOKIN: I think it's something that's a problem throughout the system, and I think it's difficult if not impossible to parse our cause and effect. An ongoing issue and I would say a serious issue in journalism, and I talked about this with my colleagues all the time, with my colleagues in journalism, not in academia, is, you know, the 'if it bleeds it leads' attitude.

And so incremental, positive information does not usually end up on the front page of the paper.

DR. GUTMANN: Yeah.

DR. MNOOKIN: But it's not that it never ends up there, and one of the things I'm trying to explore with these stories of basic science is I think there are ways to make those positive stories as exciting and as engaging, as narratively rich as, you know, the disaster that's going to end up on the front.

But, yes, it's something that requires a sort of attitudinal adjustment all the way through.

DR. GUTMANN: On that positive note, I want to thank Lisa and Seth, and we will reconvene at one o'clock.

(Whereupon, at 12:21 p.m., a luncheon recess was taken.)