Fallacy of Fairness: Implicit Bias in Academia
October 30, 2014

JO HANDELSMAN. Well, thank you for the kind introduction and welcome. It's a real pleasure to be here. I wish I could spend the whole day. But I'm afraid with the Ebola outbreak a few things call me back to the White House this afternoon. So, I'll only be able to stay for a bit after the session. But I was really delighted with the chance to talk to you today because I think the issues in economics are so similar to those in the quantitative sciences broadly. And it's, but economics is not an area that STEM specialists will often focus on. And so, I think it's great to bring the fields together because we have a lot to offer each other.

I wanted to say a few words about what I'm focusing on in the White House in terms of diversity and then talk a little bit more academically after that, but I think you'll see a little bit of a connection. So, I'm very interested in, of course, you heard, microbiology. I'm trying to promote insect guts in the White House. It's done well so far. It's, the science part is actually the easiest part in many ways because there's a lot more support broadly for science. But in our particular administration, there's also support for diversity in education and diversity and education, both separately and together. And so, it's a very exciting place to be working on the diversity agenda. I think that I've never been in an environment that is that interested in and conducive to changing the world as a place for women and minorities.

So, in my STEM education work, I've ended up focusing on four areas that I think are quite relevant to the discussion we just heard in the last session. So one is math skills throughout K-12, and I'm raising these now because I'm going to leave plenty of time for discussion. We can talk about any of this later and I'd love to hear people's ideas about this. Math skills in K-12 and particularly are focused on probability which I believe that if every high school graduate had even a rudimentary understanding of probability, the world would be a far better place. And I

don't think I could say that about any other principle in any field. The second is changing role

models and particularly images of women and minorities in the media. And so one of the efforts

that we're pursuing is trying to get Hollywood and the television industry to recognize the

important role that women and minorities play in the sciences and related fields, and then

represent them in positive ways. And so, with no disrespect to the Big Bang Theory, I know a

lot of people like it, it's not a show despite its popularity that induces women and minorities to

become scientists or engineers, maybe it doesn't have that affect on anyone. But the figures

aren't all that appealing just as people. And there's been actually some pretty interesting change

in some of the images that are presented in science and engineering and technology areas and

even in math on television. But we'd like to do a more sweeping change particularly in prime

time television. And there's a history of this. We've used television as a way of changing society

for about 50 years, both accidentally and in a much more deliberate way.

It started with an interesting event where I've, I don't know if people here are old enough

to remember Happy Days show, the '60s I believe. Well, there was a character on that called the

Fonz. And he has very popular with the girls and thought he was quite cool with the girls. And

in one of the episodes he left the room saying, one evening saying, "I'm going to the library to

pick up girls." And apparently, following that episode of Happy Days, there was a 500 percent

increase in application for library cards. So, people began to notice that there really is a

connection between the fantasy world of television and what kids do in their real lives. So, we

think it's a really important place to intervene because, as was mentioned a number of times, we

do have to start before the college level, particularly the middle school level is a time of

vulnerability for girls because they're making a false choice between being feminine and being

scientists, engineers, mathematicians, and related fields. So it's really important that we begin to

provide them the support and part of that support is seeing appealing images of women they

might like to be like one day in the disciplines that we want to draw them to. The third area is

the type of teaching methods that we use in the classroom. And so, we're working fairly hard on

trying to figure out ways to scale some of the methods that have been shown to be differentially

positive for women and minorities. And so, those include active learning which I think is now

established as clearly a better way to teach than passive lecturing. Despite the fact that there are

about 1,500 papers supporting this in the literature, it's surprising at least to me and it's a field

that goes way back even after all these years and well over a thousands papers demonstrating it, a

lot of college introductory courses are still taught in the straight-old lecture mode. And that's

particularly true in the sciences and the quantitative areas such as math and economics. And the

result is that, the people who don't perform as well in that kind of classroom environment are less

likely to pursue those areas. So, if we could change our introductory courses to be taught in a

way that appeals more and is, is more conducive to success for women and minorities, we might

have a powerful impact on their persistence in these fields. One particular approach in that is to

introduce research courses into the freshmen year. These have been shown to be a high impact

way of increasing persistence in the STEM fields for women and minorities, for all students, but

particularly for women and minorities. And I think it's partly because of the mode of learning

that it's a very active kind of learning based on discovery but also because there's a social process

involved of working with other people which turns out to be important for all students but

particularly important for women and minorities who are more likely to feel on the fringes and

excluded from the social group of STEM fields. So, those are a couple of the ways that we're

thinking about changing classrooms, there are a few others that we can talk about. The final area

that I'm working on in the White House is a long interest of mine in bias and that's what I'm

going to talk about today. We, I will get the slides. Oh, OK. Thank you. We've known for a

long time that there are two types of bias: explicit and implicit bias. We've dealt for many years

with explicit bias and have been very slow to think about implicit bias and how it affects women

and minorities in our academic system. So, I'd like to talk today a little bit about the background

for what interested my group at Yale in this, the experiment that we ran and then talk a little bit

about what we might do as a result. So some of the premises of what I'm going to talk about

today, may be obvious but I think are worth stating. And the first is that many academic

scientists and probably all academics generally think that we function in a meritocracy, meaning

that people have success because of the quality of the work they do and not some characteristic

of them themselves. And if you ask people and this comes directly from a study, unpublished

study that we did at the University of Wisconsin, the upshot is that people who are successful

believe or at least, I'm sorry, the study focused on white men. White men who are successful

believed, and they would say this, that they're smarter, and they worked harder, and in some

cases they'd say they were just a better person all around than people who didn't make it and

survive and get tenure and be a successful professor in the Wisconsin system. And we heard

dozens and dozens of comments like this that's kind of a summary of them all together, but that

was the theme, that success breeds a belief in one's own skills and attributes. No one wanted to

hear that there might be prejudice that was working in their favor. And it was very interesting

because the men were willing to admit that minorities, particularly African-Americans, might be

suffering a disadvantage because of prejudice, but they were unable to translate that to an

advantage of white men. And it's kind of a zero-sum game. And so it's not that hard to

extrapolate that if somebody has a very severe disadvantage, somebody else is benefiting and

that was not something people wanted to talk about. I would argue that fairness in our

evaluations is the basis of a meritocracy. And I think most academics would defend that we try

very hard to be fair. And if you ask people, most people think they're fair.

^M00:10:04 And I think a fundamental nature, the fundamental nature of by, of fairness is that

we judge people based on real characteristics not prejudices that we use to prejudge them or their

work. And so, that means judging them based on their accomplishments and what they do or

contribute rather than some characteristics such as that they're a woman or a minority or tall or

from the South or some other characteristic. So, I think that fairness and true fairness, not

believing that are fair, but really examining what we do and evaluating whether we are in fact

fair, is a basic tenant of being a meritocracy as we think we'd like to be, and to generating

diversity. And I think there's no question that explicit bias has played a very large role in

excluding women and minorities. But I would argued that now, implicit bias is having a very

similar effect today. Human diversity, as I think was already discussed, has a positive impact on

every type of group process. And in fact, every type of diversity that's been looked at, not just

racial and gender, but other types of diversity as well, have a positive impact on group process--

making groups come up with more creative solutions, they're more able to defend their decisions

or products, and they're more likely to arrive at a workable, feasible solution to a problem. So,

why do we need to worry about diversity? Well, first of all, if we want the most creative groups

and interactions in academia, we better diversify, because all too often, groups function without

any kind of racial or gender diversity, and they're missing out. We have to take advantage of the

power of diversity but we also have to take advantage of the power of those diverse individuals,

if you'll excuse the phrase, to contribute to the success of the future of academic STEM and the

rest of the academic enterprise. And so, I think we can enhance our academic endeavor by

making it more interesting, more rigorous, to make discussions more creative, and to make our

overall academic product, whether it's teaching or research or outreach or service to be of a

higher quality, and we can do that by diversifying. It's also true to the basic value of American

education. I think most of us would like to believe that we work in a meritocratic system, that in

fact people are rewarded for the quality of their work, not for the color of their skin or the

number of X chromosomes they have. And so, I think it's just true to fundamental values that

created our educational system and are fundamental to the United States in general. The other

last point that I think is worth mentioning just because I think there's a change coming on this, is

that diversity is also prescribed by law. And that's because we're not supposed to be prejudiced

in our decisions. We're not supposed to discriminate against various kinds of groups. And

diversity would happen if we were not discriminating. There is no question, we would have

more diversity and I'll show you data to support. And so, the question is, if implicit bias which I

would argue is the single biggest barrier that women and minorities face, is really driving the

lack of fairness and minimizing rather than maximizing our diversity, how does the law pertain

to that? And I think the answer is we don't know. There's been a little bit written about this that

perhaps there is a case to be made that discrimination because of implicit bias, which is

unintended, is actually still breaking the law. And Ruth Bader Ginsburg made a comment on this

in a speech about two years ago this month. And I haven't seem anything come up yet on the

Supreme Court, but I'm waiting because I think that's going to be a really interesting next phase

of gender and racial diversity law. So, the question that I've been alluding to but not really

answering is, are we fair, and how do we know, since I've implied that we're not. How do we

know that we're not? And there are a number of kinds of data. And so, I just wanted to list those

and then show you a few examples. So first of all, there are qualitative observations. And, like

anything in science or any academic pursuit, most hypotheses start with a casual observation and

a sample size of one. And then eventually get broadened to a larger trend, and then evaluated at a much larger population level. Then we start to see quantitative examples. So then, people start to gather data and show quantitative differences. But those data don't necessarily show cause and effect, they just show a relationship. And so, for most experimental scientists, the ultimate demonstration is in a randomized controlled trail, a laboratory experiment very often, that isolates variables. So, there's only one variable in the experiment, and therefore, you can assign causality to that variable if there's an effect of the treatment. The most powerful types of these randomized controlled experiments are field experiments. What I find is that people will often say that the psychology experiments done in the lab don't pertain to real populations because they're usually done with psychology students, so I guess they're not real populations. That says something about our attitude about our students, I guess. But when the experiments are done with the populations of interest, it's of course much harder to control variables but they can be very powerful in terms of influencing policy and changing behavior. So, this was a study that was done, this is the second type of data, quantifiable but not able to assign cause and effect, that was done at a major research university where the women in the department suspected that they were be underpaid. And when they compared notes they found that they each had someone they considered a counterpart, someone who had been there about as long and done similar quality work who happened to be male who they discovered was making much more money than they were. So, they asked for a review. And the way that the review was done was to have an outside group rate all of the faculties. They gave them rankings and then plotted their salary against the rankings. So, the outside group rated the men and it turned out that the salaries were reasonable proportional to the ratings or rankings that the man received. You can see there's a pretty good relationship. As the rankings were increased, the salaries increased. But when they looked at the

women's scores, and of course this is a small sample, it's one department, the women's scores

didn't really affect their salaries. And so, you can see that despite the fact that some of them are

way at the top here as high as the best men, their salaries were no better than those that were

significantly lower ranked. And so, again, a tiny sample, one example, there's nothing

statistically valid about this, but it does make you wonder if at least this particular example needs

to get a little bit more attention. The problem is that there are a lot of examples like this. There

are many places in academia that have done similar analyses and found that there is inequality.

When I was at the University of Wisconsin, the legislature actually assigned a pot of money at

one point to fix the inequality. And they asked the university to do a very careful analysis of

how men and women of similar quality and experience were being paid. And so, that analysis

was the most detailed I've ever seen on a very large population. It's done across the entire

university population and, or faculty population. And each woman--first, it wasn't that hard in

those days because there were hardly any women--but each woman was compared with three

comparables. And both the woman and the committee that worked on this agreed on who those

comparables were. So, they were people who had very similar years of experience usually

between one and two years apart, max, and had, you know, similar responsibilities and job

description. And then the comparison was made with those three men--comparable men and the

woman. And in all of the analyses across the university as I understand it, they never found one

where a woman was paid substantially higher than her comparables. They found some where the

woman was right in the middle of the comparables and that was very satisfying. And then of

course, there was a large group where the women were way down below their, her comparables.

And it just couldn't be justified based on publications or the quality of publications, grants, any

other teaching quality, any other feature of academic life.

And so, that was one very dramatic example where it was driven by the state legislature, but had, I think, a very jarring effect on the faculty, because many as you might imagine, many of the faculty, many male faculty participated in the process in order to do the rankings. And they were pretty shocked at what they found. So, this may be an isolated example in terms of data, but we know from many, many studies that there are other examples of these kinds of correlations. So, some data that were published from the National Science Foundation last year, really, I thought were quite striking. They looked at the median annual salary of US scientists and engineers. These are full-time employees. And across all ages, all experience levels, they found that there was this pretty significant difference in their average salaries. So, the immediate explanation was, yeah, but of course, you can imagine that there are many, many more women at the earlier stages and more men at the later stages when salaries are higher, so maybe it's just an artifact. So they pulled out the people under 29. So, they had graduated from college less than a decade before. In fact, the difference was even greater. And so, 20, though the men were paid 26 percent higher than women. And if you look at the earlier data, it's only 18 percent more. So, that would suggest that we not only still have a problem but perhaps the problem is becoming more aggregated at least in some of the STEM fields in the jobs that were analyzed here. There was also a study, a number of years ago, but I think it's still relevant, because people have found very similar results since then. And that was the Swedish postdoc study. And so, this was an analysis of the question of why were so few women in Sweden getting postdoctoral fellowships. So this was equivalent to our NIH fellowships for postdoctoral study. And so, two scientists actually had to subpoena the records. The Swedish government didn't want to give them up. But they subpoenaed the records of one year of fellowship awards. And they did a very simple analysis. They said, "OK, what's the best predictor of people's success in science at that stage?"

And so, the, they developed what would they call the total impact score. And the total impact score was based on the number of publications and the impact factor of their journals which may be a ridiculous analysis, but in fact, interestingly, for the men, that correlated very well with what was called the competence score, that the original raters, the people sitting on the Committee evaluating the applications, had given the candidates. And so, this is the competence score here and this is the total impact that the researchers calculated from the papers and their impact factors. So, with men, that seemed to be pretty close to the basis for the decisions that were made. They were in fact evaluated largely on the number of papers and the quality, or impact factors, of the journals. And so that made a lot of sense. But interestingly, with the women, there was very little effect of the impact factors of their work until it started inching up when the impact factor got over 99, a score of 99. They calculated that a woman would have to have the equivalent of three more papers in a journal like Science or Nature, the most highly cited and difficult to publish in journals, or 20 more papers in a disciplinary journal in order to get the same score as a man. So, there was clearly an impact of gender here. And whether you think impact factors matter or not, the point is simply that it clearly was a predictor of male scores and not of female scores, and provided pretty clear explanation for why the women weren't getting postdoctoral fellowships despite coming in with very strong records. So, when I, oh, so, there's one other type of study that I wanted to mention. And there is an enormous body of work and I'm not going to do it service here just because of time. But there's a large body of work where psychologists have taken examples of career paths, promotion materials, or applications for jobs, and asked for various kinds of evaluations by evaluators. And the only difference in the packages are whether they were assigned either a male or a female name or shown a picture, usually like a fake ID card for the employee, that had either an African-American or a white

person's picture. And so, in this particular study, they asked the reviewers to rate the candidate's

verbal skills based on a paragraph that the candidate had written. And they found that the skills

were rated lower if they were told that an African-American wrote the text or if they were told

that a man wrote the text. So that was kind of the surprise that in fact, there is this myth, I

believe, that women have better writing skills, better verbal skills than men. They, so, they,

there's obviously also a myth that African-Americans have lower quality writing skills than men.

So remember, the same text with simply a different person's image or name assigned. So, that

has nothing to do with whether men and women have different verbal skills and African-

Americans and whites have different verbal skills. It has to do with prejudice. The kind of study

that I think is probably the oldest in the literature of this type and done so many times that it's

almost amazing that people can still publish these, and I speak from personal experience on that,

myself included in that, what, is the kind where they take identical applications for a job and then

ask the evaluators who would you hire or would you hire a particular person? So it's often that

we'd see only one application per reviewer and it would have either a male, or female, or a white,

or African-American applicant. So, the evaluators looked at the credentials, usually a resume or

CV, and would rate whether they would hire that applicant or not. And over about 50 years of

doing this experiment in various ways with the various groups and various interesting variations,

every time, they've, people have found that the white or white person or the woman is, sorry, the

white person or the man is more likely to be hired by a fairly substantial margin. And one of the

interesting things in these studies is that they're very robust across the evaluator population. So,

it's not that a few people do this. It's that most of the population makes this kind of evaluation

that's discriminatory. So the result hasn't really changed in 40 or 50 years, even though we can

measure changes in explicit bias, I think we all know the world around has changed in terms of

the explicit attitudes that people will state. There's been essentially no change in the quantity of

bias that shows up in the implicit way. And one of my colleagues at Yale, Jack Dovidio, has

actually done a decadal survey where he tests bias over and over every 10 years with the same

instrument. And he finds that, yeah, the explicit bias is going down. And with that very same

instrument, he can show that there's no change in implicit bias. So, I tried to use some of these

data in the STEM fields talking to people who were making policy, who were running

institutions of, and particularly, STEM faculty. And for about 10 years, I talked about these

experiments in some detail and showed how robust this field was across many, many different

kinds of populations. But what I found was consistently, people would say that that didn't apply

to them. And so, I began to wonder, why do people think it's not them? So that raised an

interesting question that the literature has a very intriguing answer to, was why do people do this,

and how do they let themselves do it? So how do they rationalize when they're looking at a male

application and saying, it's better than they would have if it was a woman, or a white person's

application saying it was better than a minority. How did they get away with this in their own

mind since everyone says they want to be fair if you ask them? And so, one of my favorite

studies was done by Geoff Cohen who's going to be talking after lunch, who was at the time at

Yale. I went to Yale thinking I was going to be on the faculty with him and was very

disappointed to find out he'd already moved away. So, this hiring study was the classic. Who

would you hire? But the difference was, they asked why.

    And so, the same structure as in all the other studies and the same initial results that if

there was a man's name on the application, the evaluators were more likely to hire. But the

answer to the question of why would you hire that person was very revealing. And it turned out

that people said whichever trait in the man's record was stronger was the important one. So, if,

and they did, you know, the perfect reciprocal switch, so this is clearly associated with the gender. That if the man's application showed more education, they'd say, got to have education for this job, that's really important. If the man's application had showed greater experience, they would say, experience was the critical thing. So that kind of gave us a clue about how we let ourselves do this. And maybe it gives us some clues about what we can do about it. One of the significant factors in all of the studies is that they don't show an affect of bias of gender on the people who have the bias. So the evaluators, whether they're male or female, or in fact one study showed blacks or whites, they will exercise the same kind of bias in their evaluations. So this isn't a plot by white men to keep women and minorities out of the academy. This is something that we all do from a very deep cultural source, and it's something we have to attack at a very conscious level because we're probably not going to root out that cultural bias which has probably been building for centuries in our culture. So, we know now that there's tremendous implicit bias from a vast literature, and a very interesting literature that shows that men and women, and blacks and whites exercise bias. And we also know that, at least, one of the mechanisms of this bias of how people who think themselves to be fair get away with it, or let themselves get away with it, is that they pick on whatever characteristics the man has as critical. And I started to actually notice this among my faculty colleagues when I was at the University of Wisconsin, because I noticed that at the last minute in a hire, we would start hearing about elements of a candidate that made that person the right one that we never heard about before. So I was in a plant pathology department. And so, we were hiring a potato pathologist, yes, there really are potato pathologists in the world, and we had not designated what kind of pathology they were going to do, they just had to be a potato pathologist. And in the final discussion of candidates, all of a sudden there was this body of faculty who rose up and said, "But we have to

have a virologist, of course." Well, wouldn't you know it, the man that was among the finalists was a virologist, and the woman who is a finalist happened to be a bacteriologist. So that kind of thing happened enough that I said, I wonder if it would be possible in a discussion like that in some kind of non-threatening way to make people aware of the bias literature and say are we sure that we're really bringing back criterion to bear at this late date because it's important or is it because that's the characteristic of the male candidate? So, I started to talk pretty extensively about the bias literature hearing from people that they knew they were fair, that they didn't exercise that kind of bias. And I heard a number of reactions over, and over, and over. And I talked about this around the country. So I have a lot of examples. And these are real answers and I kid you not. So, they were very often dismissive. They'd say women and minorities are just too sensitive. Now, what that has to do with the bias literature, I don't know. But that was said to be an explanation. Then they would say, "It's not like that here." And so, I would often say, "So, you know, I've, so, where is that true?" And they would come up with something based on the literature I presented. So I showed them the Swedish postdoc study and they'd say, "Oh, it happens in Sweden, but it doesn't happen in the US." One I heard that really shocked me because I was living in the Midwest at that time was, "Oh, that must happen in Midwest, but we don't do that on the East Coast," that was an interesting answer. Then I heard it was done at Yale when I talked at Harvard. That was the line I heard from the Harvard deans was it happened at Yale. Well then, I went and I actually moved to Yale and I did a diversity discussion for the department chairs in the sciences. And sure enough, that was one of the things they said is "I'm sure this happens at Harvard, but, you know, Yale is not like Harvard in that way." And then finally, I've often heard that that that must happen in the economics department. So they make it completely outside of science. No, this doesn't happen to us, but those damn economists always

do that kind of thing. So, that's a way people externalize this. Yes, I'm sure the data you're showing me are true but it's not me and it's not the people I know. And then the last resort is that they begin to focus in on little details, and they'll spend the entire discussion arguing about a paper that they haven't read that I have read that where I've show them one figure or one table and they want to know all the details. And so, that of course diverts the discussion away from, well, what are we going to do about this because they're attacking the underlying basis of the work. And there is some weak work in this field, I don't deny that. There's also some really good work. And, if they read those papers, I think they would find that out. So, I came back from a diversity discussion when I was at Yale, in fact, the group that said it must happen at Harvard not here. And I was kind of discouraged because I had done this discussion with Jack Dovidio who's one of the leaders, in fact, one of the creators of this field who is a professor at Yale. And he has studied bias for, I think, it's about 35 years now and has published books and papers and has really set the standards of the field. And here was this absolutely brilliant statistician and psychology professor sitting next to him. And one of our colleagues said, "I don't believe any of the social science stuff." If you get a small enough sample size, you can prove anything, which first of all didn't make any statistical sense to me. If she can show the small sample size, well, maybe it's a robust result. But also, it was just so incredibly insulting to my colleague who actually teaches statistics, by the way, and obviously the person who said this didn't know a lot of statistics. And I went back to my lab where I have a, I had a postdoc who was studying bias, of various other types in my group. And I just, I was sort of exploiting her and saying, "What are we going to do, they're just always saying this is isn't true. If they can't attack the papers then they attack the guy who wrote them." And so, she kind of looked at me and was silent and I said, "Yeah, I know what you're thinking." We both said, "We just have to

do the experiment with this population of scientists at top universities. Otherwise, we're just going to hear this over and over." So, she designed an absolutely beautiful experiment in collaboration with Jack Dovidio to address exactly this problem that we couldn't address, that scientists were telling me we're data driven, we update all the time, and we don't make biased decisions about our data. Why would we do that about people? They really believed they were different. And I would say, but you do randomized controlled experiments with a blind element, right? And they wouldn't realize that that's a protection against bias, but in their own data. But that somehow didn't compute. So, we set up the study where we ended with a 127 biologists, chemists, and physicists at six top research universities. We sent the participants a description of a student's record and randomly assigned the record either the name Jennifer or the name John and these were pretested names that have very similar connotations to people. And then we asked them a series of questions about the student. And we ask first of all, how competent do you think the student is, and would you hire the student as a lab manager, would you provide mentoring to the student, and what salary would you offer? And we found that Jennifer was much less likely to be hired than John. And the competence score was similarly different and was actually the driver of the hiring. So, the belief that Jennifer was not as competent as John was the reason that she wasn't being hired as frequently. The salary differential is, and this isn't meant to be misleading, just to show you it's not zero here. So, it's not as bad as it looks. But it's still pretty bad. The salary differential was over $3,000 a year, which if you extrapolate out over a lifetime becomes a pretty significant loss. And what shocked me the most for just naive reasons was the mentoring offer. They were very significantly less likely to mentor Jennifer than John. And to me, that had implications beyond anything else in the study. And again, just like in every other study, there was no difference between the male and female professors, only their

evaluations of male and female candidates. So. And then another recent study showed that faculty do other things that are biased not just hiring. This was a study of 6,500 faculty members where they sent out emails that were identical emails asking for a place in the professor's lab or some other query and they put either a male, or a female, or a various kinds of ethnic sounding names. And they've found that there was substantial discrimination in terms of return. The rate of returned emails was low overall, which is a little disappointing, but the white men were much more likely to get a response. And I don't know what it means but they also found that there was more discrimination at the private universities that they looked at. So my concern with all of this is that the faculty act as gatekeepers in our universities. They have many impacts on our students in the classroom, in advising, in serving as role models, helping them get summer employment, looking at graduate school, deciding on their career path. And if you imagine now the kind of difference we saw between the salaries, the hiring, all of the elements, and the mentoring intent with Jennifer and John is extrapolated over to the hundreds of interactions that a faculty member will have with a student over the four years of college, you can imagine a cumulative effect that is quite powerful. If they get just a little less time when they ask a question after class, and a little less advising time, and the faculty were just a little less enthusiastic about them going to do a summer research experience, and maybe the faculty will be less likely to think of recommending graduate school, which is one of the things that's been shown over and over, women are less often encouraged to go to graduate school, then you can imagine, they come out of college with a very different level of confidence and belief in their skills. And so, I think that has lasting impacts far beyond college. We need to be thinking, of course, pre-college because the same things are happening at the K-12 level. But we need to be focusing in our own lives as academic scientists on how we can change our behaviors and ensure that women and, by

extrapolation minorities, because we're pretty sure the same kinds of behaviors are happening there, are not getting less value in their college education. And that we provide them an equitable and supportive environment for becoming scholars in our fields. So with that, I think I'll stop. And if we have time for questions perhaps, yup, OK? I can take some questions. Yes?

AUDIENCE MEMBER. I would you say--

[Inaudible Discussion]

AUDIENCE MEMBER. --allowed to raise this unorthodox challenge because we have a sociology within our field about who is allowed to challenge the orthodoxy. So, given your position of science at the White House and giving that you've done this research yourself, help us out, because obviously this is a field which has a big problem. And as I mentioned in the beginning, this has deep meaning because as I said, in about six, seven years, the majority of new job entrants are going to either be Black or Latino, white men will be the minority of new job applicants in about six years. And in a very short time, the majority of the workforce is either going to be female, Black or Latino. And if the orthodoxy continues to be that this is a sideshow, we don't need to explain it, we don't need to understand the implications of it, we're going to have people at the Fed, telling us that of course the unemployment rate is higher because women don't want to participate in the labor force, we're going to have lower labor force participation rates. Blacks are too stupid to work. And Hispanics, they're, who knows what. But they're not ready for prime-time either. And so, of course, we're going to have higher unemployment rates. And at the Fed, if we lower the interest rate in order to get jobs for them, that's not possible, because that will only be inflationary.

JO HANDELSMAN. Yeah, it's well said. That is the challenge that we've been struggling with. So, I think we have to start introducing the bias data earlier. So that it becomes

more of a social conversation across our society. And so, that's actually the question I have for

you. What, if the federal government could do one thing, you could wave your magic wand and

get us to do anything, what would it be in the bias area and how would you extend the

understanding of bias across society? Now, I'm not saying that if people understand bias, they're

necessarily going to apply it in their own lives. Because you're right, there's always that

argument that you left out variables, which is why I think we need randomized controlled

experiments. The complaint that I've heard actually beyond variables is the name that, and

which is the only difference, right? That there's something unappealing about the name Jennifer

and there's something appealing about the name John. And so, that we really should have done

the study with multiple names. So, you know, try to get faculty to participate in these studies

and get a big enough sample to look at one variable. But, so, you're right, people will try to

dismiss it. What I find is then they begin to accept that it happens, maybe it even happens in

their environment, but it's not happening right now in the job evaluation or the tenure evaluation

that they're doing at this moment. And that, I find extremely discouraging. I don't know how to

deal with that. I've seen that on student committees, in particular, where I'll sit on, you know,

four white male committees and graduate committees and they'll get all the support and were told

they're great, go ahead do what you're planning to do. And particularly the black women will be

mauled by their committees. And of course, that has long-term effects in their own self image,

and there's a downward spiral from it. And if.. And that these are from people who go to my

seminars and talk to me about bias and really believe in it. And they're still really exercising the

same biases. So that's what I struggle with. But I do think that if it becomes more part of the

conversation, so that every hiring decision or every evaluation is followed by the question, are

we being fair, and people don't get defensive, you know, they won't say, "Why? You're accusing

me of racism?" Because that's the first thing you hear when you ask that question. But it becomes something we know we do this. So let's take a look and just make sure that this was a fair evaluation. That might begin to help on all these individual decisions that add up to our employment profile.

AUDIENCE MEMBER. One quick thing, one thing you could do? The federal policy at least could do is, for example, not too far from you is Johns Hopkins University. I'm 53 years old. They've never had black economist. They never had a black economist on the faculty. They're also the largest recipient of federal funds from all sources, $1.7 trillion, a distance second is Michigan. Why not stop punishing universities that do not achieve diversity in the production knowledge. Why keep rewarding places like Johns Hopkins when they have no commitment to diversity in the production of knowledge? Why should they continue to get $1.7 trillion in federal funding? Cut off the money. Consider schemes that would defund them for not, for engaging this type of practice.

JO HANDELSMAN. That's something we talked about a lot. And the question is whether the kind of draconian practices that would be the immediate way of applying that principle would have so much backlash, you know, the classical approach of affirmative action or the way I think most people in academia think affirmative action is supposed to be exercised that you always have to hire the woman or the minority, whereas, I think where it really can play a role is that you give the women and minorities a chance. You even the playing field. And that's what I believe talking about bias can contribute to a bit. There are a lot of other things. So then the question is, what, if we're not going to say, OK, if you don't have, you know, 50 percent women and 20 percent minorities by next year, we're taking your funding away. How do we begin to introduce that in a less draconian way? And one of the things that I've been talking to

people about is whether we could institute more training on this. So again, to make bias and

implicit bias part of the conversation, and then to ensure that universities and colleges have some

sort of policy themselves. So that not dictate what the policy should be, but just have a policy.

So they have to about think it. Because I go on to websites of very famous universities and I

can't even find their sexual harassment policy. So if I can't, then presumably, their students can't

and their junior faculty can't and, you know. So, that's the kind of thing we're thinking of. If you

have other ideas about how to use the federal funding lever, I would be delighted to hear about it.

JANICE SHACK-MARQUEZ. We have time for one more.

JO HANDELSMAN. OK, one more.

AUDIENCE MEMBER. Do you know if there's any research on interventions that reduce

implicit bias in these kinds of situations?

JO HANDELSMAN. Well, I think Geoff is going to talk about that after lunch. The ones

that my group at Yale were working on when I left, and hopefully, we'll have some more data on,

were using artistic interventions and using fictionalized stories that demonstrate bias, coupled

with discussion to try to make people more aware of it, and then have some skills to deal with it,

whether the bias is against themselves, or they see it against someone else. How did they then

intervene very, in a very practical way in the situation. So, there are getting to be a few more

studies like that. There was a fabulous one at the University of Wisconsin that showed an effect

on hiring of training departments in bias. And so, I, that was in a medical school which is one of

the worst environments particularly for women. So that had an impact. Another thing I'm very

interested in that hasn't been tested at this scale is the concept of visual priming, which is where

if you show people images of a particular thing, their behavior will change. And, for example, if

you show people positive images of black leaders versus very negative images of visible black

people or negative images of whites, that will change a subsequent hiring decision. The problem

is that the effects of the visual priming field only last 24 hours. So that says we have to have

these images around us all the time, which is one of the reasons we're working on the television

and Hollywood. And I'm trying to get Yale to paint some murals about women and minorities in

science.

JANICE SHACK-MARQUEZ. Thank you so much.

JO HANDELSMAN. Thank you.

[Applause]