

Eric Jensen: [In Spanish: *Una parte del contexto que debo decir: casi todas las universidades en Inglaterra son públicas, entonces es parte del contexto que necesito* | A part of the context that I should mention is that almost all universities in England are public, so this is part of the context that I need]. So I'd like to begin. The first part of my presentation is going to focus on the role of universities and there's been some interesting things happening in recent years with the role of universities in the United Kingdom, where I work. I'm originally from the United States, but I live in the U. K. I moved to the UK to do my PhD and I've been there for almost eleven years now.

And with the kind of spread of neoliberalism in general around the world, one of the effects has been on universities and the idea that universities cannot be a kind of good in themselves, they need to justify themselves in terms of the benefits they hold for society, especially the economic benefits they hold for society.

So, this is a kind of general move that has affected countries around the world. It's kind of affected them differently because of the different economic structures in different countries, different political realities in different countries, but I think the U. K. story is an interesting one. And what's happened in recent years is that UK universities have had to face the question of justifying their existence because they are almost all publicly funded and they use government resources, they get funding from the government.

They need to justify themselves, and what good they're doing for society to deserve this money from the public.

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So the kind of..., I mean it everybody is this term neoliberalism translates, right? Everybody's familiar with neoliberal [...]. Basically, this is the kind of the impetus of neoliberalism and the problem is that often the kind of concern to justify institutions like universities has focused on economic impact. But one of the interesting developments in the U. K. is that there's been a broader definition of what kinds of value universities could provide for society. So, the focus is not only about an economic impact, but also on social and cultural benefits from universities.

But this also raises questions because you can't just say "the universities are having social cultural benefits, that's great, keep funding us" and everybody's happy. (In Spanish: *Necesita evidencia, entonces hay más problemas* | They need evidence, so it means more problems). So, the first issue is kind of what's the relationship between universities today and the kind of good that they serve for the public.

There are different kinds of goods that have been discussed with relation to universities: One is that they promote human and social development: [In Spanish: *primeramente sobre los estudiantes, el desarrollo de los estudiantes* | Firstly, on students, student's development]. So, that's one area. Another is the kind of knowledge that they produce through society, for society. So that's through research primarily. And then, the thing that is the kind of less talked about the most by the government is the value of universities for economic development and for creating employable flexible workers.

So, the thing that kind of makes this a public issue is that government money is at stake and so universities need to be able to justify themselves, not only to the students to say that they'll benefit students who come to them, but they also need to be able to justify themselves to the public in general and to the government, to justify the contribution. And research on public opinion about universities suggests that, at least in the U. K., people tend not to think about universities that much, but when they do they do expect that there should be some kind of public benefit, that universities don't have a kind of right to exist and take public money just because they exist. They need to be able to show they have some kind of social return on this investment that the government and the public are providing. And in the U. K., university education is subsidized by the government. Is it subsidized here?

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E. J.: So this is another kind of reason why the government has an interest in sticking its nose into what the universities are doing and finding out what's going on, but also the government is pouring in quite a lot of money. In recent years, in the U. K. there's been massive cuts because of the economic downturn, but university budgets were protected because specifically of the expectation that they were important for economic growth. So, this kind of adds additional pressure onto universities to be able to justify themselves. So, the benefits of universities, because a lot of those benefits or are seen to be indirect and intangible, things like having a university kind of means you have more people who are more well rounded, students who attend university have a range of different benefits from attending, not just employment. And so, there's a kind of challenge around how do you evidence that and how do you articulate that kind of a benefit.

So the kind of claims about what a university education provides for society is that it's supposed to improve the kind of economic structure of the society, make it more flexible and adaptable, to improve workforce flexibility. People go back to university to retrain

that kind of thing, and it's also supposed to have these kinds of general social values of promoting social cohesion and values, that kind of thing.

The research side of what a university does, the kind of creation of knowledge is also supposed to, in terms of justifying the investment in them, it's supposed to have benefits for economic and social development, but also for kind of the general benefits to society of having well educated people walking around in society.

And this is recognized internationally, this idea that supporting higher education will have broad benefits for the economy and for society more generally. But in recent years this question of okay, you claim that universities are really beneficial, how do we actually know that they are? As this question has risen in importance as money has gotten tighter and so universities have needed to justify themselves much more.

And in particular, this kind of social function of universities and of the knowledge the universities create has become a big focus in the U. K. There's a kind of national research assessment exercise that happens every six years where every university academic, including me, has to submit what we think are best for pieces of academic work from the last six years, and it gets assessed systematically through peer review process by other academics or specialists and it gets ranked. Our contributions get rated in terms of the quality of the work we've produced.

And then those rankings translate directly into the funding that comes to our departments for the next six years. So, we just went through one of these exercises and there's a big change this last time where instead of it being solely based on the quality of our research, there was a new dimension that was added, which was called impact. And in particular what they mean is impact outside of the academy. So, part of the decision making about how much funding universities would get was determined based on the kind of evidence they could provide, that we're providing benefits beyond the academy, beyond our publications, beyond our role teaching students, that were benefiting the broader society out there.

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And so this kind of raise questions about what kind of evidence, what does this look like impact? How do we know that there's some kind of benefit, social benefit beyond the academy. And there was quite a lot of debate about what constitutes, like what should universities be doing, what kinds of benefits should they be offering, what kinds of knowledge should they be producing. And so, there's been a lot of theoretical work

about, and social scientists have been quite heavily involved, in kind of trying to rethink the traditional model of communication from universities to the broader public, that you have public relations departments that push out press releases. This is the kind of old model of how universities communicate with publics.

Instead, there's been arguments, especially from social scientists that there should be a more dialogical, two way relationship, between publics and university experts in this case, not the institution necessarily, but the research groups and that kind of thing.

And so, the specific ways that this happens varies depending on the university and the institution. But the idea that there needs to be a change and that there needs to be a better relationship between the public and experts is something that's become quite well accepted in Europe in general and in the U. K., in particular. And there are many different kind of stakeholder participants in this process. So these are kind of different categories of institutions and people that a researcher might engage with, like schools, NGOs, businesses, so a whole range of institutions outside of the academy would be relevant also, participating in research that affects government policy would be in this category as well.

So, this idea which has become known as engagement, public engagement the context of Europe has been accepted by universities. So, in their official statements about what the university should be doing, in recent years they've changed these statements to have them include these ideas about reaching out beyond the academy... and that there should be a dialogue between people outside of universities and university researchers so that the kind of research that's done in universities is more beneficial for society and not just kind of exploring interesting ideas for their own sake.

Never actually find their way back to benefiting society So, This this kind of movement and the kind of theoretical arguments about how this relationship between experts and public should work as as played out well beyond universities want to start with the university example but it's also affected institutions like museums and other kinds of places that kind of hold knowledge that's displayed and communicated to the public. So, I'm going to shift to this kind of broader discussion and debate after this, but I first wanted to open up for a bit of discussion about your thoughts on the role of universities and what you think universities should be doing. [In Spanish: *Dígame* | Tell me].

Participant: [In Spanish: *Recuerdo [...] en la sociedad. Lo que pasa muchas veces es que la universidad se queda como ensimismada, encerrada en sí misma y la sociedad no sabe lo que se pasa en la universidad, un montón de información y de ideas [...]* |

What happens many times is that the university remains self-absorbed and the society doesn't know what happens in the university, a lot of information and ideas].

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E. J.: [In Spanish: *Okay, piensas que las universidades necesitan comunicarse bien con los públicos* | Okay, so you think that universities need to communicate well with publics].

Participant: [In Spanish: *Yo creo que es como una tercer y peor cosa, por un lado. Por un lado está esto de que haya más engagement y por otro lado eso se reduce a través de mucha 'governmentality', que es como una discusión que ayer tuve en sociales de Inglaterra [...] y toda esa gente que ve cómo se domina mucho a la universidad y se introducen como el h index y todo eso produce cierto como amarre de la universidad, perdiendo mucha autonomía para pensar los tópicos. Entonces es como un problema: cómo enganchar una universidad sin tampoco someterla.* | I think that there is something like a third and worst thing. On one hand, this idea that there should be more engagement and on the other, this is reduced through 'governmentality', which is a discussion I had yesterday in a class and the people sees how the University is often dominated and some things are introduced, such as the h index and all this results in it being tied up, losing a lot of its autonomy to think about topics.]

E. J.: I think I understood. Definitely, there's been resistance to this change in universities because of a concern that it's kind of the imposition of neoliberal values on practices in universities. That's a very reasonable concern, but actually the specific wave that they've gone about, the accountability measures, which definitely look like 'governmentality', are actually not that bad. They could have decided to use things like H. indexes, bibliometric measures that kind of completely ignore the quality of work and only look at how many times things have been cited, which would be the easy, efficient and probably the most neoliberal option. But they decided not to do that and instead they want to use the traditional peer review process. So, sociology work research was judged by other sociologists in the U. K.

And then, the impact measures also because they could've gone for a very simplistic economic measure of impact and certainly they considered doing that early on in the process, but they ultimately ended up using a case study model where universities put forward a certain number of case studies, depending on how many academics. They had to kind of make the case for why there was social or cultural or economic impact from the seat of the work. So, my my own... I was submitted in both elements for my

research to be assessed, as well as an impact case study based on my research that I do with public engagement institutions like science museums, zoos and science festivals.

So, there was a risk of it being very problematic and I would argue it actually wasn't. It was pretty useful because UK academics, in my opinion when I arrived in the U. K. academy, I found them a little bit too comfortable just sitting back in universities and chatting about things and not actually doing anything useful for society. So I've found it a valuable shift in the climate towards at least thinking about "okay, somebody here in this department should be doing something useful for society." There was you know resistance, but I I think it's a good shift, but I'm in the minority in my department's opinion. Did that answer your question?

Participant: I don't know if you want to have that in English

E. J.: [In Spanish: English *is mejor para mí* | English is better for me]

Participant: So, I think it's [...] because when you talked about, I think this was science what you're talking about, but not necessarily university because why do I think that? Because you can say 'all right, so we have a university and we have like a department that can apply this kind of knowledge to like [...], a museum, I don't know. But you can leave alone science and just science, right, like the classic discipline like science [...], I don't know. So, I think there is a paradox in what you say I mean, it just kind of [...]. So, I'm not really sure what was my opinion about this, probably because I think like [...]. So, I think in practice if you measure like papers in a public sense, you are like criticizing science, not the university. I don't know why because university can resolve the problem doing something else, but not necessarily a measurement is fully science.

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E. J.: I don't know if I fully understood, but yeah, I mean this particular issue is relating to university researchers in general, but it's been a real problem for humanities researchers because they have a harder time making the case that their work has broader benefits. If you're, you know, if you're doing seventeenth century literature studies, it's a little bit difficult to make the case that this is going to have broader benefits for society. Much harder than if you're working on the latest smartphone technology, for example. So, they have often tended to go the direction of communication of holding events for participating in museums, things like that where they can communicate the kind of insights from the research to a broader audience. So, these issues apply in

science, arts, humanities and social sciences, it does apply to different subjects in universities and also that exist outside universities, but it has affected them differently in different disciplines.

Participant: You mentioned something about the peer review process and the mission of academic performance [...]. Indicators of performance, basically. My question is what sort of a tenement halls will be culture sees the inservice he wakes up hi you know the country's been working. And the Tennessee coach maybe. Okay one moment into. Please. Running. Most of the cases John such and someone asking that was sort of an invisible culture system system uses.

Well I mean this is the process of the research assessment exercises, very much an audit. It's definitely an audit. But of course, you can do audits in many different ways and thankfully there's been an acceptance that impact factors are a bad measure of impact actually, and even even academic impact they're a bad measure. They're just too simplistic. And so, in general those are not used in either by universities or by the government to judge the quality of what people are producing.

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So, there is definitely an audit culture but there are many steps. So, I don't have a direct relationship with the government's audit process, that the government commissions a process of peer review that only happens once every six years and then universities make sure that we're producing something so that they have content provide. And so, it kind of filters down so that I know I have to be producing research. At least four items every six years, which in my opinion is not very much. I do more than that every year, so for me it's quite easy. But there are internal processes to check, to review work, but it tends to be quite constructive. Because everybody kind of wants the same thing at the end. We have review processes and we get feedback from both people outside and inside their department, on our work to help develop further and that kind of thing.

So, it's an audit process, but it's an audit process in the sense of like a class has an audit process for students, you know it's not just about auditing them, it's also about helping. So I think it's reasonable. You would get a different answer from some of my colleagues who feel it's unreasonable and [...]. This is such a mission yeah. Yeah that's true. My older colleagues are much more unhappy about it than the younger colleagues.

But I mean, it's so definitely something that's worth reflecting on, and when it was first suggested, it was much worse. It was much more neo liberal, much more problematic

ideas that the government had initially, and then there was a lot of resistance, resistance, resistance, and then the thing that came out at the end was actually I think fine. So, it's been an interesting process, it's just finished last year and the results were announced at the end of last year. And so, there you know it's another five or six years till the next to the next round.

Participant: You said it's independent from all of this or no?

E. J: That's a good point, yeah. It is yeah, so our departments will ask us what are we producing, but the review is blind and also the results are at the department level. So, my department has thirty professors and we have no idea who, which of us got better results than the other, which is important. Otherwise, it could be much more competitive. Yeah. They use a very similar system in Australia. It's a little bit more neoliberal in Australia, a little bit more kind of invasive as well, but it's quite similar.

Anything else anybody has to say about the role of universities before we move to the broader? So, I'm gonna kind of shift to the bigger picture. I do research in a lot of different settings where there's kind of some form of expert knowledge that's being communicated to publics. So, most of this work has been in the area of public engagement with science, public understanding of science. But I've actually done a lot of research in recent years on how the public's response to art galleries, literature festivals, a whole range of different kinds of settings where people encounter unfamiliar concepts and ideas and I'm interested in how they respond to those kind of unfamiliar ideas and either accept them or reject them or whatever.

So, this discussion is going to focus around a public understanding of science because that's the most well developed area in terms of the research and theory. But there are similar issues across a number of subjects, including public engagement with the social sciences. So, this term is used to refer to quite a range of different types of activities, including mediated forms of communication between publics and experts. And the most important theoretical idea that's developed out of actually mostly sociological research on how people respond to scientific ideas, how general public respond the scientific ideas, has been a shift from the kind of old model of how science communication should work, which has been described as the deficit model, so focus on what people don't know.

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And so, if only you could fill people's heads with knowledge, they would agree with science and there would be compliance, helpful and want to keep funding science. This concept has been rejected. Both theoretically and empirically, it's been shown to be incorrect from research, but also in policy, so public policy has also recognized that this is a flawed model. So, this model is the idea that what's needed in order to... Basically, it kind of sees the public as irrational, emotional kind of actors who don't know anything. And so, the general public out there are kind of naive, they're gullible, susceptible to misinformation from mass media, from the news, and they said this is seen as the problem, it's that the public don't know enough.

So, research looking at those shows the first of all the general non-expert public actually have a lot of important forms of knowledge. For example, if you're a farmer you might not have any university education, but you have a great deal of knowledge about the kind of micro climates in your particular farm and what's going on there, and other other things that are directly related to your practices. So, a kind of classic research study in this area was conducted with sheep farmers in the north of England and this was a region near to a nuclear power plant. And there was some suggestion that this nuclear power plant might be leaking some radiation out into the environment. But the government says (it's a government power plant, they set that up,): That's not happening. The reason that there is some radiation in the environment is because of the Chernobyl nuclear disaster in Russia that had occurred decades earlier and this is just kind of fallout from that. But the sheep farmers in the nearby area were convinced that there's been recent changes and evidence of problems.

So, a couple of times the government dispatched scientists from London to the north of the region of the country out in the rural areas. And these expert scientists took their measurements and didn't find anything so they concluded: "You know. There's no problem. These farmers don't know what they're talking about". And they did this a few times. Ultimately, it emerged that the farmers did know what they were talking about. There, it was just that the times that the scientists had arrived were wrong ones for picking up on the problems. So, the nuclear plant had been leaking, there was problems, and the kind of local knowledge of the sheep farmers had picked up on this in a way that the kind of expert scientists have not. So, this is a kind of classic example of kind of local forms of knowledge that are not kind of institutionally ratified, they're not kind of valued by government or by institutions because the person doesn't have a PhD next to their name, but they're really important forms of knowledge.

So, this is a kind of key study that occurred in the 1980's..And, it has kind of informed. Other subsequent studies have informed the shift away from this model of the public

deficit and towards a model that focuses more on a two-way relationship between publics and experts. This shift has also been accepted within science education in schools in the U. K. so there's been a shift away from focusing on just memorizing facts and instead understanding more the kind of processes that go into science, the kind of scientific process, the uncertainties that are inherent in scientific research, and less this kind of idea that there are hard facts that are true always and forever.

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So, this new kind of model I've summarized here is the idea that yes, there is public ignorance of science, but there's also ignorance in scientific institutions and in universities, amongst experts. There are many things we don't know about what's going on in the world. And so, the problem is not ignorance per se because we're all ignorant about certain things. And it's not the case that if only the public knew more information about things that they would be more supportive because actually some researchers found the opposite relationship.

So, with genetically modified crops, for example the more people know about it the more opposed they are to it, according to some of the research. So, it's a more complicated story and the idea is that there should be a sharing of knowledge with the public, sharing their knowledge and scientific experts sharing their knowledge. So, the idea is more a democratized notion of science. There should be more about dialogue, participation and inclusivity of knowledges, meaning that you accept that people have valuable, the general public have valuable knowledge to offer.

The hope in terms of what would happen with the general public is that they would feel more engaged in science because they have something to contribute and because we live in societies that are now heavily dependent on science and technology. It's really important for the general public to feel they can have an opinion about these issues because they have a major effect on their lives. For example, decisions about whether certain kinds of research could happen, like genetically modified crops, that doesn't only affect the scientists doing that research. If genetically modified crop research is done, it potentially puts the entire kind of farm infrastructure at risk. And that's true for other kinds of scientific technologies as well. The decision to use nuclear power is accepting the risk on behalf of everybody who lives in that society, as the example in Japan, of the Fukushima disaster shows.

So, that decision to have nuclear power plants spread all over Japan should have been a democratic decision because everybody was taking on that risk, even though they

didn't maybe recognize that at the time. It's a salient example for me, so I was in Japan and visited Fukushima last year, and they're still suffering from that. So, here's another way of kind of looking at these different models for how communication between experts and publics can take place. So, this comes from a sociologist of science. And so, he identified three different types of ways of thinking about how to relate with publics, if you're a scientific expert. The first order model of public communication focuses on creating greater interest amongst the public in science, on trying to get the public to learn more about science, and to see the scientist's perspective on things. And it does not require that scientists learn anything about publics.

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Yeah, this kind of mode, this is the old model of: we scientific experts know everything and the public knows nothing, so we need to share some of the benefit of our knowledge for the public. The next type is a two-way dialogue, so an exchange of perspectives. Publics know things, experts know things they should share, perspectives. And then, what he describes as third order is where the reflexivity, this kind of sense that there are uncertainties to science, of the need to be acknowledged. And basically, in this model it's all integrated into society itself. So, the kind of discussions about what kind of role we want science to play in society becomes just part of the general public's ways of thinking. And so, the two perspectives, public and expert, become integrated through this kind of inherent reflexivity. This connects up with theoretical work by Ulrich Beck, the kind of risk society, kind of arguments.

So, to kind of summarize where things are in terms of the U. K. context, also Europe in general, is that there's been a kind of shift towards the two-way model, exchanging perspectives, insights policy and this has been adopted, at least officially, by universities, museums, all the institutions that do this kind of work. And the goal is to create the kind of dialogue between experts and publics and to go from this kind of communication where I tell you things to more of a dialogue where we both learn from each other.

Now, one of the things I mentioned earlier was the idea of impact and how you measure and evidence impact, how do you know that any kind of communication with publics, whether it's the kind of one way kind or whether it's a two-way dialogue, whether it's actually achieving anything. So, this term impact has become used a lot in the U. K. in recent years and it's something that's quite a key issue, it's how do you measure this. And it can mean a number of things, that could mean learning attitude changes, a whole range of different things, skill development, confidence, etcetera. Essentially, I think of this issue (I do a lot of research on impact, what's known as impact evaluation, where

you measure how an intervention creates effects or doesn't). And I think of it in these terms: what difference has this made in people's lives, this intervention Is there any kind of changes that have occurred in the ideas, relationships, interests or motivations that people have as a result of this, and if so, what kinds of changes, and essentially is there a difference between what people, how people thought about an issue when you encounter them and how they think about it afterwards.

And this is a very complex thing to do, it's not easy because there are many factors that affect whether impact will take place. Including their kind of personal history, their kind of habitus in a Bourdieuan sense, and their kind of context in which they encounter the information or the communication, what actually happened, and they can broader cultural and social context around it.

So, context plays a huge role in whether impact takes place so in terms of measuring it, it's an important thing to keep in mind. And there's also a kind of complexity around the difference between what an institution wants to achieve, like a museum. If you imagine going to visit a museum they have a kind of agenda for your visit that they would like to achieve. If you go, for example, to The National History Museum, they want to tell you some things about the history of Chile and you arrive with your own agenda, whatever you wanted to achieve from going to that museum.

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Maybe it's just to kill thirty minutes because you are awaiting to do something else, or because you're meeting a friend or whatever, could be any number of agendas that could be quite different, so there has to be a kind of negotiation between members doing the communication and the audience. And impact doesn't necessarily follow kind of direct immediate kind of pathway. So, there are complexities there and of course any form of communication can have both positive and negative effects. If I give a very bad presentation, for example, I can probably make you dislike a topic. After having heard it rather than, you know, improve it. So, and the same goes for imagining a bad visit to The National History Museum, you could be less interested in national history after having visited it, and that's important to pick up in any form of impact evaluation.

So, as I mentioned I do a lot of this kind of research in different kinds of settings. So, I was going to go through one example here from research at the science festival and I don't think these are as common here, so, a science festival is basically where... usually it's run by a university or a set of universities and they have scientists working at the university, often social scientists as well who will hold and then set up stands, kiosks

and they'll communicate about their research, so, they will tell the general public about recent findings from the research, local institutions, like museums often get involved as well, and essentially it's a kind of short term, maybe a week long or even a couple of days event that tries to make a connection between the general public and community and experts in the community. So, before I go into this specific example, are there any comments, questions from what I've talked about so far?

Participant: [...] Have you ever seen anything like the implications of the hybrid form of [...]

E. J.: On the hybrid, like taking two animal's genes.

Participant: no no no, like a forum. It's like a methodology or it's kind of the third kind of engagement sort of thing, but it's actually a process you can do to, when you have experts and you have [...] non-experts.

E. J.: I'm not familiar with that particular format.

Participant: The second thing that you said was that when people know more about things, they tend to dislike stuff, but isn't it like an embedded kind of values [...] that comes before that? Is it more about their knowledge or the engagement or the values that come before that?

E. J.: That's kind of the point of the research is that it's not increasing knowledge, is not in itself going to change people's views because there are... people have values that decide kind of how they will respond to things, so, once you know more about something you might like it more or you might just dislike it more. But it's not knowing it exists that creates your attitude. It's your kind of existing orientation and you kind of fit this new thing into your existing values.

Participant: So like in the sort of third engagement

E. J.: Yeah... third order... yeah.

Participant: Does it get like very political kind of engagement because of the values that are [...]?

E. J.: The idea is that the kind of core normative idea is that we should be deciding what to do based on our values, so, it shouldn't be that we just kind of roll ahead with

scientific development and technological development just full steam ahead just because we can, but that actually, we kind of stop and think about: okay yes we could do all any number of things, let's focus our efforts on the things that are going to benefit society most, which is definitely not what's happening right now.

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Right now, the focus is on what will create the most money. If you go down this kind of technological development route, you can create more income for the people who are doing that kind of research, as opposed to thinking about, you know, what will make the most difference in people's lives. So, the kind of, the ideal is to get to the point where science is seen as one of the things that we have a democratic opinion about, because it affects us both on the risk side and also on the benefit side. This is a normative position I'm committed to so I think it aligns quite well with the sociological perspective. Okay. Actually, how much time, yeah?

Moderator: [Instructions in Spanish for participants that need to leave the room]

E. J.: Sure yeah. So, this particular, this is kind of a case example of an impact evaluation study on how people are responding to expert knowledge. So, in this particular case, it's a science festival, so most of the people that, most of the experts involved would be actual scientists practicing, either university or industry scientists who are kind of presenting their ideas to the public in an informal setting. So, the goal of this particular study was to find out who was going to this science festival in the north of England and what was happening, basically.

So, I did this using surveys, pre and post visit surveys, I had research assistants at the different locations where the scientists speech was taking place and they would stop people as they were coming in, to ask them questions about themselves, as well as, why they were coming in, that kind of thing, why they're visiting and then, a follow up survey was sent by email, online survey after the visit. So, the results could reveal who was coming, both kind of age profile of who is visiting. The ethnic profile, which was less diverse than the local population, so it was disproportionately white visitors, and, also a key finding in terms of who was coming, was that the level of education of people attending the science festival was heavily skewed towards highly educated people.

So, 75% of the people who came to the science festival had at least a bachelor's degree, an undergraduate degree and the U. K. population averages 24%. So, there's a huge gap, a 50% gap. And, similarly there were a lot fewer people who came that had

no qualifications at all than the general population. So, this is an important finding that this is not how they frame these kinds of activities, these kinds of activities are supposed to be for the broader public and for bringing in people who are not already interested in science and creating a kind of dialogue with them.

So, just the fact of who was attending already showed that there was a problem, like it's not achieving what it's supposed to. And also, the income level was disproportionately high: 65% of them had incomes above the median for the U. K. And this region is poorer than other parts of the U. K., so this is particularly bad. In terms of the kind of perspective of people who are coming, it was quite clear that a lot of them were museum visitors, so they were kind of people who went to cultural events in general and then they also came to this science event. And they were disproportionately people who thought science was interesting, so I had a Likert scale question, a level of agreement question said 'science is boring' and only 2% agreed with that statement and 88% disagreed.

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So, that's not representative of the broader population. And then for other questions, similar kind of pattern. So, people were disproportionately interested in science already. Okay, I'm doing a journal article on this topic. The title is 'preaching to the scientifically converted', for these kinds of events. So, people who came very much enjoyed the experience. There is strong agreement that they enjoyed it and that they would like to come again in the future. So, it was very popular, people like that they thought the events were high quality and they enjoyed attending the events. They talked about their experience with their friends and family and they tended not actually though to talk as much to other people who went to the event. That's the particularly British kind of result and most of the people who weren't felt they were able to understand the kind of scientific topics that were discussed at the festival.

One of the goals of the festival is to kind of give people the sense that they are scientific citizens, that they're able to understand science and engage in discussions about science topics. And so, on that point it seemed to go well. And there were patterns in terms of who was visiting. As I mentioned, disproportionately people we're kind of heavy museum visitors in general all that came to this event. so, skipping to impact the question of whether the festival made any difference in terms of people's attitudes about things related to science. So, these were the things where it did make a difference, so I had a Likert scale statement 'I am able to understand science' and 87% of visitors agreed to that beforehand; 92% agreed after, so there's a small increase in agreement

with that. And then, another statement was 'science is a normal part of Manchester culture', so kind of seeing science is part of the community around them. And there's a pretty good size increase on that. And then, the many many people agreed both before and after with the statement 'I'm keen to learn more about science'.

So, there were limited impacts. Those were the... that's it, those are the only effects on attitudes and I asked a whole range of questions about the whole range of Likert scale statements about science and their attitudes about science and mostly they stayed the same, they were unaffected by the experience and they were very positive about it so.

This is a very recent impact evaluation that I conducted and it was commissioned by the Museum of Science and Industry in the city that was the kind of lead partner for the festival. And so, I presented these results to them and to all the partners who helped put on the festival and basically told them that they were largely failing to achieve what they were trying to do. And to their credit, they actually listened and took it seriously and they're actually trying to make some changes, be more inclusive, that kind of thing. But I do this quite often, I do a lot of commissioned studies and most of the time delivering bad news to them, saying like, at the National Gallery in London, one of the main kind of music art museums in London, their audience was even more skewed towards highly educated people and had absolutely no positive impacts on anybody, well you know no statistically significant positive impacts. So this is kind of the thing that I do that's kind of out in the community trying to make a difference to benefit society and it's definitely a mixed story in terms of whether it actually makes a difference because some institutions are not that interested in hearing how they're doing things wrong and so they don't really listen, there they don't really make any changes and then some do.

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So, the story that I told in my impact case study was about some of the cases where they did listen and they did make pretty fundamental changes in how they were approaching their audiences. And it had a good effect in terms of doing things better, but it's an interesting area. I've really enjoyed having you know, as an academic it's quite nice to have a good chunk of my research be about practical issues where there are people who are more than just the kind of handful of other academics who are interested in the results and there's at least some potential for impact.

It's much broader than just kind of academic discussions, which are also important to have as well, but my own view is that if we can, we should be trying to make a difference. So, what are your views? That's a different presentation, so: your thoughts.

Participant: ...What about this notion of public engagement. Really, I do research on this and I find it very [...] because it includes a list of things that you mentioned there: This is kind of dialogue, deliberative [...] it's also very ambiguous because it includes sort of consensus conferences [...] and also ththese practices where people actually participate in the production of knowledge itself, like patients [...]. So, I wanted to know what is yout thought about that.

E. J.: Actually, I've got an article on that exact topic, that just came out recently. I'd be able to send it to you. And basically we tracked the kind of how this concept was developing in the U. K. kind of in progress because it's a relatively new concept. It's about around 2000, year 2000 this concept emerged. And initially, it emerged with a much more specific meaning, it emerged as a meaning about a two-way dialogue. So, it was a kind of in opposition to the kind of old way of like standing up, giving a lecture, kind of one way pushing out messages. And then, what happened is that over time it came to encompass everything because it was seen as a better brand for what people were doing. So, it was a lot easier to just take the label, but it was to actually change practices.

So, in the study we did with a bunch of different kinds of public engagement practitioners in the U. K., we found that they were quite quick to take the label and apply it to themselves and it was only a tiny percentage of cases that they actually saw it as requiring them to make changes in their practices. So, what happened by this point now, the meanings have been completely broadened out so that it now includes absolutely any kind of communication between publics and experts. And I've stopped resisting it because it's so overwhelming that it's completely taken over. And now, if you want to distinguish between these different types of communication, you have to use terms like dialogue to refer to two-way communication, but that probably too will get taken over in time because there's a lot of resistance to changing practices.

Participant: So, the other question is about to what extent these science festivals actually depart from the deficit model [...] initially it was one of the people insisting on 'you have to abandon this', and now he's very disappointed [...] these deficit models being reinvented over and over again [...] and so do you see this as a further instantiation of that?.

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E. J.: it's less complicated than that actually. For science festivals, they've always been about those first order goals, that kind of deficit model goals of promoting science and

they're still doing that. They just have taken the term and put it you know like they've taken the label without actually changing anything. But [...] his criticism is what it applies to is how the U.K. government has behaved. He's been quite involved in U.K. government exercises where they're supposed to be reaching out to the public to get input on science policy rather than kind of government policy pushing decisions outwards. And the way that they go about that sounds very dialogical, they even use the term dialogue, but that once you to dig deeper and deeper and deeper and once you get to the actual details of precisely exactly what did you do in that room, it's back to pushing knowledge. They make them sit through like a day of learning about the science before they listen to their views at all.

Participant: [In Spanish: *voy a hablar español. Creo que hay algo muy importante en el hecho de, en la forma como el mismo público que asiste a la ferias, cómo el mismo público de legos o de no expertos entiende la ciencia en sí misma. En general en el colegio o a las personas con menor educación lo que se les enseña es el hecho: la ciencia funciona en base a hechos. Por lo tanto, no puede existir un ciudadano científico sin tener la posibilidad el ciudadano de criticar el gobierno y la nación. En ese sentido la feria no funciona en ese modo, sino que más bien en el modo de 'estamos mostrando la ciencia para que aprendas todo esto. Podrás tener una influencia en una de las ciencias para poder conversar con los otros'. Pero eso lo encuentro es como una forma falsa de hacer realmente democracia científica.* | I'm going to speak in Spanish. I think there's something very important in the way that the public attends fairs, in how the lay or non-expert public understands science in itself. In general at school or people with lower education, what they are taught is the fact that science works based on facts. Hence, it cannot exist a scientific citizen without the possibility that this citizen could criticize the Government and Nation. In this sense, the fair doesn't work that way, but in a way such as 'we're showing science for you to learn all of this. You will be able to have an influence in one of the sciences to be able to talk with others'. But I find that like a face way to really perform scientific democracy.]'

E. J.: Yes, there's a problem with... the public doesn't know, doesn't understand this dialogue model. It doesn't really make sense to them. In fact, I've done research on how there was a series of public dialogue activities that I evaluated and they wanted to be told, they wanted information. They didn't really have a concept of what it would be to have a dialogue. This should not be coming from school level because in the U. K. the curriculum was supposed to have changed at least twelve or thirteen years ago to be more focused on debate and dialogue.

And so, it is possible to have this kind of dialogue, it just requires a different kind of structure. And the problem is that the people running these exercises, these kinds of public dialogue activities tend to follow a kind of traditional structure of 'your opinion is not at all valid until I fill you up with some knowledge'. So, the term they use is 'informed citizens'. So, they want to listen to informed citizens, which basically means 'have some knowledge first and then you can say something'. But that's quite problematic

Participant: [In Spanish: *En el mismo sentido, creo que el punto en donde las personas se transforman como ciudadanos de la ciencia, en el sentido de una democratización es cuando los aspectos de la ciencia efectivamente les tocan a niveles muy personales, en el sentido de por ejemplo, si yo tuviese una antena de celulares cerca de mi casa y yo noto que después de la construcción de esa antena constantemente tengo dolores de cabeza, por ejemplo, automáticamente yo iría a tratar de solucionar mi problema aunque la ciencia me diga que no existe ningún efecto de la antena sobre el cerebro.* | In this same sense, I think that the point where people become science citizens, in the sense of a democratization, is when aspects of science have a profound effect on them personally, in the sense that, for example, if I had a communications antenna and I noticed that after its construction I've had constantly head aches, for example, I would automatically try to solve my problem, even though science told me that there is no effect of the antenna on the brain.]

[*En ese sentido creo que habría que hacer un cambio, no tanto en la forma como se presentan en las exposiciones por ejemplo, sino más bien dejar que las personas entren dentro del proceso de, no de investigación, pero sí de evaluación de proyectos sociales a gran escala.* | In that sense, I think a change is needed, not as much in the way that exhibitions are displayed for example, but in letting people engage in the process, not in research, but in the social evaluation of large-scale projects.]

[*Y eso en Chile es muy muy bajo. Y todavía el ambiente de gobierno público tiene la idea de 'necesitamos datos para poder hacer la mejor política pública' y no 'necesitamos datos para luego ver cómo medíamos o cómo hacemos un diálogo en persona'. En el fondo, más bien me parece que los ciudadanos en este caso son una molestia para el Estado, más que algo que realmente sea parte del proceso, como 'tenemos que lidiar con esta persona porque nos está molestando, porque nosotros queremos hacer esto, que nosotros sabemos por la ciencia que es bueno'. Entonces es como interesante ese diálogo.* | And that is very low in Chile. Yet, the public government's environment has the idea of 'we need data to be able to do the best public policy' and not 'we need data to see later how we can dialogue in-person'. Ultimately, it seems that citizens in this case are a bother for the State, instead of

something that is really part of the process, like 'we have to deal with this people because they are bothering us, because we want to do this, which we know that is good because of science says so. Then, this dialogue is kind of interesting.]

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E. J.: Oh yeah, all of those things are true, so there there is an issue with with how all the knowledge comes to exist and so there have been efforts to give people more power, to be able. There's been some recent examples I've seen. For example in New York there was a canal that was very badly polluted in a particular neighborhood and they couldn't get any evidence that it was polluted, so nobody was doing anything about it. So, year after year after year it just stayed really bad. And recently they got a kind of community-based project to gather evidence of this pollution. No scientists, no university scientists showing up. Just the community was able to access low-cost technology that let them measure the pollution and then they publicized that and it was accepted as evidence by the environmental protection agency in the U. S. and it's been designated a polluted site and is now getting cleaned up.

So, there is a possibility for kind of empowering communities that have a specific problem to be able to produce scientific knowledge themselves to get that fixed. It's not a hundred percent solution, but that's one one element. The other issue of people not really caring enough, you know it's not they can't really be bothered to take an interest, that's definitely an issue. People don't realize how much it affects them and the kind of the role that science is playing in the risks that all of us are being exposed to just because somebody somewhere thinks it's good for their career to do it.

So this is kind of an awareness issue to kind of highlight that this is something we should care about in a democracy and so it comes down to education ideally starting in schools to try to create this kind of sense of citizen science, scientific citizens. So, yeah those are both key issues. I think you mentioned something else though. So, did that address? Yeah, I think it's quite interesting this kind of the possibility of empowering people to gather their own scientific evidence so that they don't have to rely on scientists. It's quite interesting, yeah.

Participant: I was thinking about three examples of citizen participation. The first one is the co-productions in science, like a performative thing, like bullying. Bullying is a good example, bullying is a social science construction that then is in society now [...] Not only bullying, familiar violence for example is another social science construction that now is in society. But I have another example [...] I don't know if you know the Galazy

Zoo. That's another way of co-production in science that people can actually participate in the research process.

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E. J.: Yes, although think of examples like Galaxy Zoo and so there's this concept of citizen science where publics directly participate in scientific research, also social science research. And I think that's less important than it's suggested because it's a very circumscribed role that the public have. They get the benefit of being free labor for scientists.

Participant: That's actually my question. What is your opinion about which kind of like participation of citizens could actually do?

E. J.: Well there's a third kind. And so, you mentioned two kinds of interactions, but the third is where publics participate in defining directions for research.

Participant: particular problems that the community have, or...?

E. J.: Yeah, there's a whole range. So, one of them is saying 'here are some problems that we have that we think should be addressed', another though that's been done in the U. K. is where the government funding agency says 'there a whole range of things worth thinking about funding, what are your views on what's most important or what do you think should not be done?'. And so, this was done when they were deciding what to fund for research on nanotechnology, the kind of super small kinds of technology. And they decided not to fund one element of the research because the public response was very negative to that element. That was looking at ways to use out of technology for weaponry for creating more sophisticated ways of killing people .Mmhm, they decided not to fund that. Although, I suspected they just moved the funding over to the ministry of defense. But that's an example to like upstream, it's called 'upstream public engagement' in the literature. I have a PhD student that's actually focusing on this topic, in the role of media in this kind of early early in the form of engagement.

So, you can have input at the level of funding, before even asking for ideas from academics, you have input at the level of the community saying 'we have problems that we need solved' and there are examples of doing that, and then also at the level of the individual research project. It's possible to involve non-experts in that process. And where this is happening the most, cases I know of, is in medical context. So, like

patients directly participating in defining research questions, as well as the details of how the research takes place.

So I know that's happened but I actually know somebody quite well who does that kind of research and she could not explain to my satisfaction precisely how that that took place. Because my concern is that it still is dominated by the experts, by the expert researcher and that it ends up being quite a small relatively tokenistic role for the public. So, finding a way to, I mean coproduction of knowledge is one way of describing this, but finding a way to give lay publics, non-experts, full power and voice in the process. It's something that is still ongoing. There are different models that are being tried in different places., particularly in places like the UK and the United States are what I know of examples of this, but it's kind of ongoing, that kind of finding the best model for doing this.

But there is acceptance at least in the U. K. that this is something we should be doing and that we shouldn't be just kind of sitting in an office in the university deciding what the most important research to be done is just because I feel like it or because like, you know, I think it's interesting. That's not good enough anymore. Just because I think it's interesting shouldn't justify investing in that direction. It should be connected to something bigger.

Participant: [...]

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E. J.: So, do it all and do it now, yeah. Steve Fuller is a polemicist. He makes big big claims that are not very defensible in general. But yeah, on this particular one obviously that's not very defensible to just say like 'do it all, do it all the time'. As I mentioned, I take the view that we need to review and decide which things to do through a kind of democratic process of deciding what will be most beneficial for society, so not just kind of doing it all. And that's something we shouldn't do definitely and some things we should.

Participant: You talked about this democracy and this divide between experts and non-experts. Is it useful that divide to be put *a priori*? Because I don't know if you've read [...] There's a book that is called [...] they are in school Where he talks about the divide between the professor and Yeah yeah hearing this is very very Little To keep politics teacher take power from Sears Sure And goes along with the story about French guy named Jack Jack with both actually the sold these rare occasion when he gave to

us through a few things that didn't for French icon version of the same thing on Sort of the thirty three Okay all Right that was translated in Greek French and Dutch and so he told them they learned from that and we'll talk later by and the actually ordered French That's The difference Okay So there's no divide speaking my father political advice actually degenerate power so is it useful video expert an expert beforehand.

E. J.: Yeah I mean, I I would say that's again kind of an exaggerated argument, because you're right there is, in terms of like some kind of objective permanent status, obviously expert and non expert is a kind of contextual judgment. It depends on the particular context, so if I'm standing in a you know in an engineering convention, I'm not an expert anymore, you know. So, it it depends, you know in the last few days I've been meeting with museums and zoos here in Santiago and for them, for the particular topic of researching their visitors, I am an expert because I know more about it and I know how to do it.

So, yes it's a situational contextual judgment, it's not a kind of real status in the sense that it's permanent and it attaches to me no matter where I go. But it I think it is a relevant distinction. Knowing more about something or less about something is one variable that is relevant to what plays out in a social setting. And I mean yes it has a political dimension and certainly within institutions that's particularly evident, that you need to establish power as a kind of major factor. But just because power is involved, doesn't mean that that's the only thing involved. I mean this is part of the problem with Foucault's argument: it's yes, knowledge is power, but it's not only power. So, yeah I would not accept that argument. What's the second part of your...? On, that's it, yeah.

Participant: Do you make a difference between a scientist, an expert or an engineer style or something? 'Cause in this discussion, I feel like there's a mix between the expert, the academic, the scientist. And I understand that an expert is relation to its context, but if we focus on the scientist and his mixology or just mention one way of finding a scientist, [...] So, do you make any difference between all these figures?

E. J.: I mean yes in the sense that if I was doing a study on that particular setting, there would be different factors involved, but no in the sense the similar theoretical issues are involved. So, whether it's kind of practical knowledge or whether it's theoretical knowledge, that's not so important for this kind of issues about how you think about the communication of that knowledge. It is important. One of the factors actually I haven't mentioned that is really important is institutionally ratified expertise. So, there's a distinction between being an expert and being an expert that's recognized by institutions in your particular context. So, in the U. K. I'm a recognized expert in social science

research because of my position in the university. I have a friend who is not a university professor who knows quite a lot about statistics and is able to do research and publishes that research in peer-reviewed Journals but he's not in the university and so he is not a recognized expert in social science research in the same way. And so, that recognition, that doesn't matter quite a lot in terms of the sociological consequences of what happens when you have engagement between experts and non-experts. So, that's a kind of power/status issue, whether your expertise is recognized by an institution, whether you have a degree or certificate that says 'you have this knowledge, you have this expertise' or whether it's just based on your practical experience. That can affect the process of communication.

Moderator: Thank you very much.

E. J.: Thanks, thanks for your contributions. Really interesting.