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Session 1a: transforming culture within academia and research institutions

Professor Glynis Breakwell, Vice Chancellor, University of Bath – Universities can do more to improve communication about science

I've been a social psychologist longer than I've been a vice chancellor, and you will find that I slip into the concerns of social psychology and what it can say about how we can communicate effectively. I hope you will bear with me on that. And I think I should give you my starting point. I would argue that lay publics need a better understanding of science and should not be expected to support scientific developments from the position of ignorance.

Now, I'm not suggesting that lay publics *are* ignorant, and consequently targets for education, I am not suggesting that a one-way flow of communication that has to be assimilated by lay publics like some form of cognitive medicine is what we should be talking about. The process of developing understanding of science is dynamic. Lay publics have to be actively involved rather than passive recipients, and the science community must also listen to their publics, must understand the mental models that they use in order to make sense of complex phenomena. Only by doing so can those who would communicate science be heard by their audiences in the way they require.

It's a matter of shaping the discourse to the audience. A lot is known about public mental models of scientific phenomena and practices. It should be used. Can I just emphasise that? We should use what psychology, sociology, the history of science, all of those people who spent so many lifetimes looking at how publics understand science, it should be used. We shouldn't keep inventing the wheel when dealing with these things.

Scientists and engineers particularly should try to understand and respect the publics who ultimately pay for and live with the consequences of scientific innovation. I think in saying all of that you know, and stating my position, all I've done is re-iterate what's been said so far this morning. Fair? Go on you can nod. I can communicate with you lot as well.

I think its true, that's the sense that's in existence in this room, but I actually feel that it has to go out of this room as a starting point as a basic set of premises and be shared by a much larger community of scientists and engineers. And, you will have noticed that I am talking about publics, in the plural. Publics, not 'the public'. I think that we are bedevilled in our attempts at communication by the myth of *the* public. Talking about *the* public, as if there was one, as if it was singular, as if it were homogeneous. Everything that we know is that the reality of the public is that its publics and its heterogeneous, and once you acknowledge that, the real difficulties of

effective communication emerge. Naivety in the appreciation of the diversity of publics scuppers many a communications effort and campaign.

I'm rather taken at this point to mention the work of an economist, a Nobel Laureate called Arrow, who invented the Impossibility Theorem. Have you come across this one? He basically said that 'for society, as a whole, there is no uniquely rational way of resolving divergent perspectives or interests. There is no single objective aggregated preference ordering', you can tell he was an economist. But essentially what that is saying is that we live in a dream world if we think that we will achieve a single consensus, a single understanding, an agreement about ways forward, in the context of divergent interests. I think that one of the problems of those who would have us engage with the public and even early engagement with the public, one of the problems that they face is the Impossibility Theorem.

Okay major point for me being here, what can universities do? Well, universities should be, I believe in the business of building trust in science. Science is a body of knowledge, and enterprise and an institution. And we should be in the business of building trust in scientists. What's trust? What's trust all about? What do I mean by this trust thing that everybody needs to talk about in this area? Well, we have to show competency, we have to be consistent, we have to have commitment, we have to have independence, we have to be open, and we have to show empathy with those who we wish to trust us. Clear, no problem, we know what we have to do in order to be trusted. We do. We know what we have to do in order to be trusted, its just that we don't do it. Do we? No, we don't. We don't show competency often, we don't show consistency, we don't show commitment, we don't show independence, we don't show openness and we don't show empathy. And its not surprising then that we have this vast literature on the relative trust associated with particular groups and we engage in a little bit of consideration of that earlier this morning where its quite clear the politicians, I think it was recognised by a politician that politicians are not highly trusted. It turns out that doctors and academics of course are more highly trusted but the profile is failing on a daily basis, trust is declining in academics on a daily basis.

How can universities actually have a role in improving trust and developing the basis for effective communication? Well, first and foremost I think that one of the things that universities have got to show when they are engaged in a scientific enterprise is that they are autonomous and independent. The decisions that they take are independent decisions. Now, actually, that's not easy is it? Thank you Robert! Autonomy is not easy to prove, its not easy to maintain, because actually the universities have taken the industrial shilling, and they must do so increasingly, and we just need to bear that in mind if we are looking to universities to change this situation of trust. The second thing that I think that universities have got to do is to disseminate the scientific method. There is a real absence of understanding of the scientific method. Not just in the lay publics that are out there, but in well-educated undergraduates, and fully trained academics in non-scientific and engineering

areas. There is an absence of understanding of the scientific method. We have to have a professional and sustained campaign with all agencies onboard to ensure that people actually understand what we talk about when we talk about the scientific method, and we had reference to issues of understanding probability and so forth earlier, and I absolutely agree with that.

The third thing, which is along the same lines is that we have to educate everyone, and I do mean everyone, about the peer review process. Peer review and its role in verification of scientific findings and conclusions is sadly misunderstood. Its not surprising that its sadly misunderstood, given the bad press its received from some of the most well known history of science researchers, but it is misunderstood and we need to pay serious attention to how peer review is operating and is explained. Universities can play a role in this, a much broader role than they do now.

The forth thing that universities can do is that they can train and reward scientists for public communication of their work. I don't just mean now the academics who are professional academics but I think also we need to train people in their undergraduate curricular. We need on a broad basis to train people about the process of public communication of science.

Its not easy to do this. Its particularly not easy to expect scientists in the current climate to spend a lot of time engaged in public communication of their science. Peer groups are generally anti such processes, that's to say other scientists are anti the use of broad-based communication. Its perceived as self-aggrandisement quite regularly, there might be a fair degree of envy about this because the people who see it as self-aggrandisement normally couldn't possibly do it, not if they were given five lifetimes, but basically it is perceived in that way. Also the process entails the use of the media very frequently to broadly communicate, and , using the media is really very difficult. I wont dare to say more about that with the sort of audience I've got today, you know a lot about it, I know. I would just say that using the media is more difficult than being used by the media, and I am sure that you understand what I mean.

I did a series of interviews with famous press editors and newspaper editors quite recently, and they emphasised that the media don't like really real science, they like infotainment and media life now pushes towards infotainment rather than real science and if we are going to engage with that agenda within the mass media, we, as science communicators are going to have to understand a lot more about how decisions are made in the mass media. I don't think we do at the moment.

Its not easy to train people to deal with the complexities of a highly professional media operation. Okay, a few more things that universities can do. First of all pan university alliances, I don't see why every university has got to do everything for itself, I don't see why we shouldn't engage in some

sort of pan-university alliance to speak on these topics. Some things we can speak on effectively and some things we cant, we actually should be helping each other – everso difficult to get universities to do that. We should also sign up to cross-institutional commitment to organisations that have firm ethical values in science and technology. We should do that, institutions should do that. The vehicles for doing it are just not there at the moment. We should ensure that academics in the broadest sense appreciate public representations of science. There is a vast literature as I said before from psychology sociology history of science etc, etc on public appreciations of science. We should use it.

We should also, this is the third point on this slide, we should also start to look seriously at how we handle conflict and uncertainty. There is again really interesting literature nowadays you know on uncertainty and how the public responds to uncertainty. How scientists themselves deal with uncertainty. And its uncertainty in the sense that you don't yet know what you want to say about a thing but there is also uncertainty in the sense that you may be in conflict with other scientists who have perfectly good reason, you don't believe that they are devils, or influenced by Satan, you actually think that they might have something to say but they disagree with you, so you have conflict which generates uncertainty and you have uncertainty because the piece of research is not yet completed it's a very large project. How do you actually deal with that in a public arena? Until relatively recently what has happened is that science has closed ranks and refused to deal with uncertainty and played upon conflict. Now actually one of the things that we have learnt in the very recent past very clearly is that the public is much more sophisticated, the general sweep of these heterogeneous publics that I've been talking about are much more sophisticated when it comes to uncertainty than we've given people credit for and actually prefer to be told about the uncertainties, have the uncertainties explained, have them clearly explained. We need to move forward with that and it needs to be part of the way in which we educate within universities, and it needs to be part of the way which we reward our academics within universities for the expression of uncertainty. Its almost at the moment the death knell to a scientific career and if you are too open about the uncertainties associated with your scientific enterprise.

Okay, build knowledge of science at large. Universities in the past were major agents of educating the broader public about science and scientific discoveries. The workers education authority activities of universities in the past were very considerable in changing whole generations understanding of what science was about. Universities increasingly do not do that, and they don't do it because they are rewarded for only providing certain types of accredited extra-curricular course, and there is a clear incentive for universities not to engage in the broader transmission of information that we used to do.

My last slide. Don't expect too much from universities. Despite everything I've said we can do. The work that I've described requires resources, enormous resources actually, and at the moment universities across the board are being asked to do ever more. We're being told that we have to have a regional role, we're being told that we must engage in knowledge transfer, we must respond to the desire for international export, we have to exploit our intellectual property. Yes, and now we should do this next thing as well. The only way that universities are going to focus on these issues is if this issue of science communication is given priority in higher education policy, that is the only way that we are going to move in this direction. It's the only way that individual academics going to be motivated to engage with this agenda to a greater degree because at the moment the research assessment exercise and other instruments actually move against this process. And really the final thing that I wanted to say is that universities are only one among many agencies to be potential actors here. Nobody should think that they could do it alone, and we should work increasingly on alliances with other agencies who can make a difference.