

Role-play “Dianne Cephalon” – Author: Andrew Moore

The following role-play can be enacted simply as stimulus for discussing causes of and solutions to common communication problems between scientists and journalists. It is best suited to an audience of younger scientists. It can also be used as a prelude to interviews with a journalist at a communication training workshop. In this context, it can help to get the audience loosened up: nobody can make as many mistakes as the scientist in the role-play!! The dialogue takes about 7 minutes to speak.

The scenario is a TV or radio programme on developments in the life sciences for the generally interested viewer/listener. It is pre-recorded before transmission. The interviewer is a generalist, with no particular background in science, and a tendency to be quite probing at times, even slightly adversarial. Dianne Cephalon is a scientist with some problems in presentation, communication and expression... Although the scenario, and the research described, are fictional, it represents errors and failings in communication that scientists have genuinely made when interviewed by a journalist (both in EMBO media workshops, and on publicly broadcast programmes). Some theatrical emphasis is introduced in certain passages, but merely to make the point more memorable. Dianne Cephalon is questioned on research she is doing using a mouse model of bipolar disorder. The failings in communication that she makes are coded in the margin with numbers, and explained after the dialogue.

Scene and props: The two role-players should sit in chairs opposing each other, slightly angled towards the audience, and ideally with a low coffee table between them.

Dialogue:

INTERVIEWER: This evening our guest on BioTalk is Dr. Dianne Cephalon, a molecular neurobiologist from the European Institute for Brain Research. Dr. Cephalon has recently made a discovery of major importance for behavioural neurobiology. Welcome to the programme.

DIANNE CEPHALON: (smiles and nods head in acknowledgement)

INTERVIEWER: Now, how would you describe your new work?

1	DIANNE CEPHALON: Well, it's not really new; it's a culmination of years of research. Also, I'd just like to point out that it wasn't really me who made this discovery...
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INTERVIEWER (shocked, looks up from notes): What? (starts to thumb furiously through notes)

3	DIANNE CEPHALON: ...well, not on my own: it was a team effort, and it's very important that I credit everyone involved... (starts to take a piece of paper from her pocket)
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INTERVIEWER (relieved): Perhaps we could simply say that we should acknowledge your co-workers. Would that be acceptable?

DIANNE CEPHALON: Oh... yes. I see what you mean.

INTERVIEWER: Can you summarise your most important progress or result?

4	DIANNE CEPHALON: Well, we've been investigating the relative strengths and waveband distribution of EEG signals in a model system with a deletion in GRK4- δ , the gene coding for a G-protein receptor tyrosine kinase only found in certain neurones.
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INTERVIEWER: Might we say that you've been looking at the brain-waves of mental illness? (looks satisfied, and glances in direction of camera)

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DIANNE CEPHALON (looking sceptical and wobbling her hand to express inaccuracy): It's like this: we have interesting results from the intravenous administration of a compound originally prescribed for treatment of hormone-related cancer. We see a significant reduction in deviations from normal outputs across all wave bands: that's delta, theta, alpha and beta. The bands that most interest us are the right temporal theta and left occipital beta, which encompass brain areas concerned with visuospatial processing.

INTERVIEWER (hesitantly suggestive): Could we say brain waves?...

DIANNE CEPHALON (looking sceptical and wobbling her hand to express inaccuracy): Weeeell...

INTERVIEWER: I see. Now perhaps I could ask you something else, since I'm not quite sure that I understand the science. (clearing throat for a new start) And how do you do these experiments?

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DIANNE CEPHALON: We're using a mouse model.

INTERVIEWER: I assume that you're using a model of a mouse because it's more humane than using a real mouse. (DIANNE CEPHALON looks puzzled) And presumably too complicated to make a model of a human being. But there is something...

DIANNE CEPHALON (cutting in before the sentence is finished): No, we're using real mice in which the GRK4- δ gene has been knocked out. These mice have elevated delta, theta, alpha and beta outputs, which we measure using tiny platinum electrodes inserted cranially through the dura mater. They were genetically engineered to mimic the genetic cause of bipolar disorder in roughly 10 percent of human sufferers.

INTERVIEWER: I see. Now, as we know, the use of animals in research is not automatically accepted by many people. How does this affect you, and how would you argue the justification for your research?

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DIANNE CEPHALON: Well, as it happens my parents own a farm, and so when I was a child I became very used to seeing animals being killed for food.

INTERVIEWER: So you come from a family of murderers. Ha ha, only joking. We will cut that before broadcasting. Well, at least my bit... But seriously now: Apart from the ethical concerns of causing pain and suffering, there is the frequently used argument that animals are not similar enough to humans to give useful results. How would you deal with that problem in your own research?

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DIANNE CEPHALON: Well, I think that generally mice *are* good models; but if we found that they weren't, I think we could consider moving into non-human primates.

INTERVIEWER: Some people would say that science is, well, how can I put it, out of control these days. It doesn't just concern the use of animals; scientists are making all kinds of new and unnatural things – doing as they please, it seems.

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DIANNE CEPHALON: I'm not sure about that, but scientists do need certain freedoms, otherwise they wouldn't make important discoveries.

INTERVIEWER: Granted to some extent. But surely there is some research, where – as a lay person – one simply asks the question “how is this of use to humans?” I hear that some researchers are working with tiny fruit flies, doing developmental biology, I believe.

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DIANNE CEPHALON: Well, I can't really go into that; it isn't my field.

INTERVIEWER: I see. Well, we don't have much time left, so (restarting) I'd like now to return to your science and focus on something that we haven't talked about. I believe that your research could lead to a genetic test for predicting attention deficit disorder in children.

DIANNE CEPHALON: Ah, well, that's not the main focus of our research; it was a serendipitous discovery, but extremely interesting. In juvenile GRK4- δ knock-out animals we do see very unfocussed behaviour, and we've measured increased delta activity and decreased beta activity in the pre-frontal cortex that look very similar to delta and beta activity seen in human sufferers of ADD, if that's what you mean.

INTERVIEWER: I suppose it must be. (starting again) How would you feel about your research contributing to the development of a genetic test for predisposition to attention deficit disorder in children?

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DIANNE CEPHALON: Well, that's not what my work is about. But my view is that I am paid by the public to do *science*; not necessarily to think of the possible technological applications.

INTERVIEWER: You wouldn't have any ethical concerns then?

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DIANNE CEPHALON: I don't think that I can be expected to be an ethicist as well as a scientist; I don't think I'm paid for that. I have to say, I think we've got rather off the main point of my research.

INTERVIEWER (in a friendly way): I'm sorry, I do apologise. We are rather short of time, but if you can sum up your contributions to biomedical research in 15 seconds, then I think we can cut it in at an appropriate point in the footage.

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DIANNE CEPHALON: Well, that's difficult, but I'll try. So, we've been studying the EEG outputs of GRK4- δ knock-out mice... I mean, we've been looking at the effects of a compound previously used in cancer treatment on the EEG outputs of a model system... Oh gosh, erm... We might have found a way of manipulating the behaviour of...

INTERVIEWER (cutting Dianne Cephalon short): I'm sorry; I have to stop you there. That's all we have time for. Thank you for joining us in the studio Dr. Cephalon. And now from a way of manipulating the behaviour of mutant mice (DIANNE CEPHALON looks up wide-eyed and turns to the audience, aghast) to the philosophy of homeopathy. Join us after the break to find out more. (turning to DIANNE CEPHALON) How did you feel that went?...

Comments on the principles demonstrated:

The audience can first be asked to identify the failings. They are listed for discussion below. The most important failing is D.C.'s inability to summarise her most important finding briefly, simply and early in the conversation. She was lucky to have had a second chance at the very end. This point is dealt with in more detail in item 13 below.

1. **Diminishing the news value:** Although D.C. is truthful – the research took a long time, and the results came out slowly – the attractiveness of news is that it describes something that has *just* become known to us. D.C. could have put it another, more positive, way: “For the first time we have a way of studying the genetic cause of bipolar disorder – often termed manic depressive illness – in the lab.”
2. **Distancing herself personally from the research:** Scientists often distance themselves from their research in order to preserve the notion that it is the science that speaks for itself. In scientific circles that is accepted, but the media are interested in people and personalities.
3. **Acknowledging all contributors:** Scientists are generally very sensitive to the need to acknowledge all contributors in their research. Neither the public, nor the media, thinks that this is important. A brief mention of the fact that the research was done in a team, and/or in collaboration with another named laboratory is sufficient.
4. **Jargon, detail and scientific phraseology:** D.C. completely forgets her audience – in many places in the dialogue. Not all scientific terms have to be omitted, but ones that are easily described in normal language should be. Other terms perhaps just need explaining once, and can then be used (e.g. EEG). Certain scientific ways of saying things should be avoided. D.C. could have said the following instead: “We’ve been looking at the electrical brain activity – you could say ‘brain waves’ – in mice that lack a gene that is switched on in certain nerve cells in the brain.” She could have gone one further and summarised her most significant finding, e.g. “By looking at the electrical brain activity in special research mice, we have found a drug that might be able to treat bipolar disorder in humans much better than previous treatments.” Note, phrases such as ‘we are investigating’ or ‘we have demonstrated’ should be avoided at all costs! ‘Looking at’ and ‘shown’ should be used instead. Details *always* detract from the understandability of the main message for a lay audience. It is not a crime to leave them out, but rather a service to the communication of science!
5. **Failure to accept a helpful suggestion:** Interviewers want their audience to understand the science being presented. They will generally help scientists to rephrase or simplify things in the interest of understanding. D.C. should not have rejected this attempt. If she was unsure, she could have discussed the point in order to find a compromise with which she was happy. She should have trusted the interviewer to know the level of comprehension of the audience.
6. **Reference to animal models and model systems:** In fact, D.C. makes the cardinal sin earlier on in using the term ‘model system’, which means even less to a lay person than ‘mouse model.’ Non-scientists can be forgiven for not knowing what kind of model is referred to: a mechanical model? An electronic model? Is it a model that *looks* like a mouse? What is it made of? D.C. should

simply have said “we’re using mice that have been altered in such a way that they mimic the human condition.”

7. **A bad justification for the use of animals:** Believe it or not, this is a real-life example from an interview. Though illogical, many members of the public consider the use of animals for food as ‘acceptable’ and the use of animals for experimentation as ‘unacceptable.’ A comparison of this type is certainly not the best way of answering the question. A more positive approach is necessary, involving the concept of a contribution to medical progress that cannot be made in any other way because the complexity of the brain cannot be modelled by an artificial system. There are certain experiments that we cannot do on humans, and if we are to make progress in the interest of human sufferers, the only other option is to use animals. It can also be added that research on animals leads to advances in animal health care too.
8. **Failure to explain why animals are often good models:** This was really a missed opportunity for arguing convincingly for the use of animals in research. These days we even have the results of genome comparisons between species that demonstrate how closely related they are. D.C. could have said: “Though mice don’t look very much like humans, they work in a very similar way. 99% of mouse genes have a similar counterpart in humans, and the sequence of those genes is 85% identical between mice and humans. That makes mice good – but not perfect – models for many human conditions.”
9. **Failure to explain the ways in which science is controlled:** All too often science and scientists are perceived as out of control. It is important that scientists mention that science is controlled at the stage of publication (in general, bad or unethical research is not published), and even earlier at the stage of funding. Furthermore, for research involving the use of certain animals or human subjects, the permission of an ethical review board is required. Animal health inspectors (at least in the European Union) inspect laboratories at intervals, and appropriate training is required by staff who handle animals. A further point worth making is that the term ‘unnatural’ is very subjective: human evolution and history show that it lies in our nature to change nature. Take agriculture and the selective breeding of crop varieties, for example. The limits of technology are not so much for scientists to determine, but for society at large to decide and embed in regulations and legislation.
10. **Failure to comment superficially on a different field:** Often scientists feel that they risk the disapproval from their peers if they comment on an area of science outside their own research field. Clearly scientists should restrict their presentation of expert knowledge and opinion to their own field, but that should not prevent them from explaining basic facts about other fields. All molecular biologists should, for example, be able to explain to a journalist why *Drosophila* development is of relevance to human biology, or why some researchers are studying yeast to understand more about cancer. Such minor field-crossing is often very useful to journalists. It can also contribute to their general education.
11. **Distancing from a possible technological application:** Scientists come across as much more credible in the public eye if they acknowledge and are prepared to discuss a possible technological application of their research findings.
12. **Avoiding engagement in questions of ethics:** It may have been possible in the past to pull the “scientist-paid-to-do-science” card, but that era is definitively over. The public expects scientists to demonstrate engagement with topics of ethics, and have an opinion on the ethics of application of their own research (if applicable). The reason for this is that scientists have more information about the

science and its possible application than does the rest of the population. However, this attitude can be dangerous. Pushed to its extreme, it could result in the abdication of responsibility by the public for ethics-related decision-making. The point requires a brief elaboration. Scientists should not let themselves be coerced (by a journalist or anyone else) into giving an ethical opinion without mentioning that laws and regulations need to be elaborated with the involvement of the whole of civil society. And that means that the public cannot leave it to scientists to be the oracles of science and technology ethics.

13. **Inability to summarise the important point(s) briefly:** This is the most important point in the dialogue. The opportunity existed earlier (see points 1 and 4), but it was missed. It is always advisable to get the most important point in as early as possible, and concentrate on the possible applications or implications of the research that are of relevance to the public. Also, it may sound ridiculous, but 15 seconds is often the length of material used to quote a scientist in a short news item. The interview itself may last 5 minutes or more. The scientist will have no knowledge of how the material will be cut, and that makes it extremely important to put across the main point in a strong way, briefly and early. Weak points – even if they are brief – are not attractive to journalists. Lengthy explanations – even if they are important – won't be used. Long, convoluted passages are a nightmare for journalists. Journalists often give up trying to find a bit to quote, and instead quote something else, or even nothing at all. Make the chances of success greater by understanding what the final product should look like! In preparation, practice saying your most important point over and over again in different ways, using simple language, without taking more than 20 seconds each time.