



Northern Ireland
Assembly

Committee for Employment and Learning

OFFICIAL REPORT (Hansard)

Armagh Planetarium

19 September 2012

professor of geology in South Africa. I was trained in Northern Ireland, but I left because we were developing awkward situations at the time. I have returned as part of the optimistic diaspora, because I think that we have an enormous future here, and the planetarium has a big role to play in that.

I will give you a brief potted history, and, again, I am hopeful that you will have some time later to allow me to take you on a very swift tour. We have 10-, 15-, 20- and 25-minute tours to accommodate all types of visits, and I can easily do that.

The planetarium opened in 1968, but our parent organisation up the hill, which is the observatory, goes back to 1790. That shows that even then there were optimists around in Northern Ireland. The observatory was meant to be the start of the university in Armagh, but, of course, that was stillborn. I like to think that that happy accident has meant that we have retained a great deal of that optimism and the projection into the future of things that we can do. We opened in 1968, following a very long fundraising campaign by Dr Eric Lindsay, who was the observatory director. He was a man with sufficient foresight to see that the observatory was too cramped a building in which to entertain people and to explain the cosmos. Strikingly, everyone has an interest in the stars, even if it is only to check what their star sign says; that is not really science, but we deal with that, too.

The planetarium was an early adopter of the digital systems that are now commonplace around the planet. In the olden days, we had a monstrous machine in the centre of our theatre. It took up lots of room and required a lot of tender loving care, because it was optomechanical, and both those things gave hassles. We are now working with computer systems that can simulate the entire cosmos. We have had Digistar 2 and 3. We are on the fourth version, and, last week, I came back from Utah, where the fifth version is on offer. Since our current machine is quite new, our upgrade is very cheap, so we will be doing that. For example, with that particular machine, I can bring you into the building, take you to the theatre and ask you where you would like to go in the universe. I can then type in the co-ordinates and, bingo, there we are. Of course, we would be taking a bit of artistic licence, because one is unsure of what precisely would be at those destinations. However, there is certainly a great deal of scope for mind-broadening experiences.

One of the other things that I want to mention is that we have worked very closely with our colleagues in the Ulster Museum, W5 and the other educational institutions around Northern Ireland. When Basil and I met at a science, technology, engineering and mathematics (STEM) event in W5, which is where, really, this meeting has come from, I mentioned that I thought that one of the things that we were long overdue in Northern Ireland was recognising that we have several world-class organisations: the planetarium, the Ulster Museum, Titanic Belfast and the new Giant's Causeway visitor centre. However, we do not do a very good job of advertising just how good they are and how similar they are in what they do. In my view, their function is public education and, of course, educating young people. I hope that, in future, we can advertise that function more efficiently, effectively and cost-effectively, given the desire to cut back on government spending.

On the third page of my submission, I have included an article that I wrote for a journal. It was an invited article, and I commend it to you. I will not deal with it in any detail, but I will mention a couple of salient points. At this time of year, as the nights draw in, Venus pops up in the sky, and, of course, our phones start to ring with people telling us that they have just seen a UFO. That is a tragic comment on the level of education of our population. How the devil can you mistake a planet for a UFO? It is not green, and it does not have little people on board. However, in its way that is brilliant, because we have advertising built in. If something happens in the sky, it is an advert for the planetarium, and, of course, we make sure that whoever rings up is invited to come down so that we can show them what it really is. We can manipulate it in that way.

The second thing that I want to mention is that the planetarium is a place where you see the sky as it should be during the day when we are all awake. We show the sky as most people do not see it, unless you live somewhere really dark — in Northern Ireland, and on the entire island of Ireland, there are not many places left that are dark enough to see the sky properly. The proper sky and the sky that you see from the centre of a big city are completely different animals. We can show kids what they would see if they were outside and all the lights had gone out. The Milky Way is a spectacular sight, but I would hazard a guess that many of you might not have seen it as it is meant to be seen. We can simulate it and also give you tourist advice on the best places in the planet to go and see what is actually up there. We also deal with history, because one of the things that we point out is that, just round the corner from us in the Navan Centre and at Newgrange in the Boyne valley, we have evidence that people have been interested in the skies from the time they could look up and wonder what was there. So, that history is built in to how we view things.

However, the most important thing of all is our STEM activities, and just a moment ago, I mentioned that that was how Basil and I met initially. STEM is the key to our future and to the skills and jobs that we hope to create in future. In Northern Ireland, we have a long history of making stuff. I am happy to report that if you do not already know, there is a huge amount of interest from American companies, and that Talas Aerospace has just announced that it will build rocket engines in Belfast. That is brilliant. Again, what we are doing is exploiting the history of engineering and technology that our city has been renowned for for a very long time.

I made a little comment to one of my colleagues the other day that the thing to do now is educate minds so that we have people who are skilled in IT, so much so that it is part and parcel of their normal operation. The shipyard man who would have said to someone working on a project, "It would be useful if you used your loaf" was not referring to what was in their lunch box. That applies just as much today as it did in 1911 or 1912.

In the Titanic centre, folk say that Titanic was the space shuttle of its day. That is, indeed, what it was: a piece of top-class engineering. There was just an unfortunate incident with a bit of frozen water, but had they had satellite navigation in those days, that would not have happened. Again, one can weave such stories together for young people, and that is what we do. That is our target market.

Another of the documents here deals with my new career as a planetarian. As I mentioned, I was a geologist for 20-odd years and worked in Africa finding useful stuff such as diamonds, coal and gold. We also looked unsuccessfully for oil. Basically, I am keen to make sure that the kids who come to us, as well as their mummies and daddies, appreciate that the most important thing you can educate people to do is to use their head. What is in your head is portable. You can take that anywhere on the planet and apply it. We need to emphasise that.

Yesterday, I had some outside recognition. You may have heard of Trip Adviser. It sent me a letter yesterday saying that it had such nice comments about the planetarium that it was giving us a little sticker, which I hope is now on the door, and that we were becoming a recognised centre of excellence. You cannot seek out that stuff; it just happens. In my view, that is a very good advert for how well we are doing our job — not that we need to tell you that. You know it already, but I just wanted to make sure that you do.

Finally, I have worked with artists in Africa and here for quite a long time. When I was in Africa, I worked with creatures that preceded the dinosaurs; big ugly things the size of rhinoceroses with pointy teeth. Anything that is big and beastly and has the word "dinosaur" attached to it works with children. The planetarium can, of course, point out how those creatures got totalled 65 million years ago. About 250 million years ago, other things had gone on, and in Africa, I dug up fossils and took people out to see them. I am a strong believer in handling the merchandise. In the planetarium business, it is very easy to wave your hands and point out things that you cannot actually touch. Luckily, however, meteorite samples from outer space come down and hit the planet, and we have a small collection that we use to great effect.

Last year, I bought a tiny piece of the moon, which is tricky stuff to come by. As you can imagine, the price was rather high; I would hate to be buying it by the acre. We took out the little bit that we have and let some kids touch it, which they did very gingerly, because I did not want them to trash my \$1,500 sample. However, they were able to touch it, which was the important thing. Very few of us will ever go to other planets, but the samples come to us. Giving a kid a meteorite and saying, "Where do you think that came from? How old is it? Where would you find it? What is its story?" is precisely what is needed to them fire up so that their enthusiasm is built and they see that there is an interesting future and career in the sciences. That is the litmus test. Remember the story of the man who was leaning on a broom in the NASA buildings at the Kennedy Space Center during a presidential visit. The President went up to the guy and said, "What do you do here?", and the guy said, "I launch the rockets and put men on the moon." That is a cool thought, which I will leave you with. I am happy to take any questions.

The Chairperson: Thank you very much indeed, Tom. Perhaps you will expand on a couple of things for us before I bring in Committee members. Members of the Committee went to Farnborough to look at some of the aerospace work being done there. I, along with the Committee Clerk, went to see the launch of the new space initiatives. Perhaps you will talk to us a wee bit about developments in the space programme.

Dr Mason: The aerospace industry developments are outlined on page 9 of my submission. It is something that the planetarium has been involved in subliminally, I guess. My colleague Robert Hill,

whom you might have met in Farnborough, represents a paper organisation that we created called the Northern Ireland Space Office. Its address is here, and it exists in the ether, as it were. Robert used to work for me, and he left to work independently. I told him at the time that if I ever saw him back here, I would be wildly disappointed because he is a huge ambassador for Northern Ireland. He has amazing contacts in the aerospace industry, not just here but across the planet.

We have some really good contacts in the European Space Agency. I am thinking specifically of Dr Mike McKay, who is the original rocket scientist; he launches those things and steers them to Mars. He is from north Belfast, and we whip him in as our exemplar because he speaks the language. He can say, "If I can do this stuff, so can you." Example is very useful. Robert has been chatting to Invest Northern Ireland. We are looking at a fairly dramatic development in not only the rocket motors but the establishment of the composites unit down beside Bombardier. That is almost a spin-off from the linen industry, as they are spinning composites, but they are composites that you would build into the wings of aircraft, spacecraft and rockets. As you know, lightness, strength and the ability to flex and not break are very important.

We are not behind the door on this. This is cutting-edge stuff. It is being done in Northern Ireland, and, more important, it is being done by graduates of our local universities.

The Chairperson: Tom, people might raise their eyebrows when you talk about the Northern Ireland space programme. Perhaps we can help by explaining that we are part of it. You may not know this specific example, but one of the interesting things that we found about the UK Space Agency is that it is trying to justify the benefits of getting involved in space. There are, of course, the esoteric things such as the fact that mankind always wants to know the answers to big questions. However, it was talking about things like being able to plot from low-earth orbit the subsidence in Schiphol airport and the reduction in the height of the dams. It is talking about 9 mm from X-ray aperture. The other thing that it talked about that has a connection with other scientific activity is plotting the retraction of the north polar ice caps. Do you have any initiatives or anything that we could do together to explain to a wider audience why investment in space is worth the money?

Dr Mason: We worked with people in the Republic 10 years ago or so. We were trying to persuade the Space Agency to set up an organisation in Ireland. At that time, the best opening that we had was with one of the Ministers in the South, whom Robert and I went to talk to. The reason that I bring this to your attention is that, at that time, he had understood — and I assume that, by extrapolation, the Government there had understood — the fact that there was really a rather good return on the relatively small amount that they contributed to the European Space Agency, which is almost like a tax as we contribute here as well,. It was something like 10:1; they invested £10 million and £100 million came back in industrial development, etc. The point is that if you look around the table, you will instantly see things that are dependent on what is happening in space. You may not have had your satnav switched on this morning, but it would have brought you right to my door without any hassle. You are working with things that have come from space spin-offs all the time. We had teachers in one of our meeting rooms, and I asked them to throw out some suggestions. We were immediately able to work back to some sort of contribution to the space race, and, subsequently, satellite navigation, etc, was brought to the table.

The Chairperson: I have two things to say. First, the other folks may not bring it up, so I would like to finish by asking about the curiosity rover on Mars. Tell us where we are on that? Are there signs of it moving yet? I am interested in that. Secondly, the all-party group on science and technology is having a science day in Stormont, which, I think, is on 15 October, but I will get you the details. I would really like to see whether you could take part in that, if you are not already part of it.

Dr Mason: I would love to be part of it.

Mr McElduff: What connection, if any, does the planetarium have with the Department for Employment and Learning (DEL)? Is there any funding coming here?

Dr Mason: We would be mightily interested in that. When I first took this job, I was told categorically that I was not allowed to fish outside the Department of Education (DE) pond; that story has changed, and we are currently in the Department of Culture, Arts and Leisure's (DCAL) pond. It is hugely important for how we operate that we are seen to straddle several Departments. As I have just said, based on the things in your pop-up, I think that we tick all those boxes. That is what we do on autopilot.

One of the problems that we have is refreshing and renewing what is outside where we had our photographs taken. That place was built for £47,000 because that was all that I could scam up at the end of money that I had been given for the refit. This entire building was stripped and redone, and the refit came to about £3.2 million. However, there was very little left over for displays.

The Chairperson: Are you still on the Committee for Culture, Arts and Leisure, Barry?

Mr McElduff: No.

The Chairperson: Is anybody on it?

Dr Mason: Anyway, that is something that we need to work on.

The Chairperson: We might help you with a bit of the fishing. Barry has a good point. If it is DCAL, we might need to check with them. However, we ought to see whether we can do the educational bit with DEL and DE as well.

Dr Mason: Please do not mistake me: we get enormous support from DCAL. However, it would be better for us to spread out what we are doing from DE and DEL because we straddle all those things.

Mr McElduff: One of the words missing from our list is imagination. I thought that you might have used it.

Dr Mason: We do. I have it in a book here from a meeting that I had yesterday where we are bringing in a test egg, which will sit over there. It is a big pod, which is being developed, and we are one of the pilot organisations because we have been involved in putting together what is going into it. It will be like a tiny capsule. We are trying to persuade them to make it a two-seater so that two folk can sit in it side by side, and it will tell them stories of space, and, more important, it will look back at the earth, because, in the planetarium industry, that has become the hot topic.

The Chairperson: It is worth pointing out that you have not talked about your connection with print and art, which was in the papers .

Dr Mason: Sorry, I skipped that.

The Chairperson: It is OK. It is just to say to Barry that it is addressed, and there is an interesting thing about creativity and art.

Dr Mason: Sorry, I skipped it because I was not following any hard script. At the moment, we are working very closely with Seacourt print workshop in Bangor.

We spent a week in England as part of the Cultural Olympiad doing courses in how one could use the science of Portland, which is where we were, to inspire print-makers and sculptors to make works of art, and we also did courses with children. The objective is to bring it back to Northern Ireland. I am meeting them next week to plot a similar thing in Northern Ireland, where we will use the local examples instead of the ones in England.

We find that there is a huge cross-pollination, I guess, between art and science. I have gone down to them, given them a presentation on the things that you would find in the cosmos, and they have produced art works. In fact, down by the ground-floor toilet block, we have the artwork that resulted from that available for people to see, and we have continued that work. I do not believe that there is any arts/science gap; I think that it is a continuum and that the barrier is artificial. I do art. I draw, paint and sculpt, and I am quite sure that there must be other folk like that. You can be a scientist and still not be a philistine.

The Chairperson: I have on my iPad, and I recommend it to you, the Hubble top 100 pictures, which are stunningly beautiful when you look at the art. It does inspire. Barry talked about people's imagination, and there is a link between art and science.

Dr Mason: We do story-telling, which I have mentioned. That is our prime job. We are not talking about fairy tales; we are talking about reality. If you have time later, I can take you out and tell you a brilliant story about one of the images on our display space.

Mr Flanagan: Tom, thanks for the presentation and the invitation. I must admit that I have never been here before. It is always somewhere where I have wanted to come —

Dr Mason: No excuse now.

Mr Flanagan: I am at the stage now where I was going to come, but I thought that I would wait until my children were old enough to enjoy it. You have rushed me. However, I am delighted to be here. I have always had an interest in space. Growing up in the country, I was lucky enough to be somewhere that was dark enough to see things with the naked eye. There was also a really old telescope lying round the house; I never really figured out how to work it, but I tried my best with it.

Recent events demonstrate the huge interest in what is happening in the sky — meteor showers and solar and lunar eclipses, for example — and there is a massive demand for it. It is how an organisation such as yours taps into that.

I know that Tom and Barry will be delighted to hear this: when I was in primary school, we went to the folk park in Omagh three times a year, but never thought about coming here. How do you get more schools and more young people to come here? Are you noticing fewer or more people coming for visits?

Dr Mason: Fair point. We are noticing that we are sort of static, at about the 35,000 mark, although that rose last year to 38,000. It is basically because we are where we are. If we were in Belfast, or closer to Dublin even, we would have much better numbers. However, to offset that, we have an outside broadcast system, as it were, where we take planetariums out. One of the other things that has affected us quite badly is the enormous increase in fuel charges. It costs kids and their schools more to get to my door than it does for us to charge them coming through the door. That is how we operate. We have to charge, because we are meant to operate like a business. If we were in a different place, if there was a subsidy for fuel and transport costs, which I know has been tried by the Scottish Government as they represent a spread-out, rural community, and if consideration were given to the planetarium being free to visit, we would have a much bigger visitor base. We can earn money, of course, by bringing folk in through the shop. Our difficulty is that we are compared with, say, the museum. The museum is a much bigger organisation, but, pro rata, we do as good a job of attracting people to our facility. However, given that the museum is free, it is an unfair comparison, if you see what I mean.

Mr Flanagan: Yes.

Dr Mason: Our hinterland is anywhere that is up to a two-hour drive from this spot. I have put the compasses on and worked out that more than 60% of the population of the island lives within that two-hour radius. However, that population would barely make up that of a decent-sized city in most European countries. We have a very small population. The people we compare ourselves with are the National Space Centre in Leicester, which is sitting with six million living within an hour of its front door. Those are the things that we have to consider.

We are doing a very good job. I would like to see a lot more people coming through the door. It is very difficult to see how I can do that without a boost in advertising. The type of advertising that I am thinking of would be very expensive, which is why I mentioned earlier that advertising the cluster of organisations that we are part of might be a way in which we could improve people's perception that we are not that far away.

Mr Flanagan: Do you get any funding from Europe?

Dr Mason: We do not get funding from Europe per se. We do get funding to run projects from Europe. I heard yesterday that we got some new money from that source. One of the problems, which I am sure you are aware of, is that European funding comes with a penalty: a stack of paper at least 6 inches high. We have been involved in such things before, but we find that we are being excluded because of our size. We were excluded from one of the recent ones we went for because we were trying to do something —

The Chairperson: Is it because you are too small?

Dr Mason: Yes. Someone else had done what we wanted to do. We were going to do a thing for blind people, which is done in Barcelona and in America; I could get the stuff. However, the blind or partially sighted folk in Northern Ireland would enjoy just as much as their counterparts do in Barcelona. I did not appreciate being told, "Well, it has been done before." Maybe it has, but it has not been done here. If it is being done in London or Edinburgh, I am not really concerned. So, there are little issues like that that we need to get by. We are received with acclaim. They say, "Brilliant idea, great stuff, but sorry we do not have any money to give to you at the moment."

Mr Buchanan: Tom, in your presentation, you talked about how you work to promote the STEM agenda. Will you elaborate on the workshops and programmes that you are involved in for schools and students that generates their interest so that they come into the sphere of scientific learning and technology?

Dr Mason: Absolutely. First, the STEM agenda is something that we have been involved in from the start. Everything we do is related to it. For example, we have special shows for two-year-olds, which we make in-house. In my presentation, I said that we deal with people from the ages of two to 92, and when you look at the people at the opposite ends of the spectrum, you see they have things in common. If an OAP group is coming — one is coming later — it requires the same sort of attention to detail as a group from a nursery school, but for different reasons.

When it comes to the ones in the middle, specifically the students, and those who we think could be the scientists or engineers of the future, it is best to catch them young, which is why we do the shows for little people. If I can get through to a four-year-old, I may well have planted the seed that will blossom when he or she is 24.

For the past couple of years, we have offered Stranmillis the opportunity to send some of its student teachers down here for what they call an "alternative placement". You are aware that a glut of teachers have been locally produced, some of whom are very well qualified but cannot find jobs. So, we were trying to point out that there is more than one way to skin a cat, and that if you are interested, you can educate in an organisation such as the planetarium. We also offered Stranmillis and St Mary's the opportunity to bring students to us en masse, but that has not worked out. So, tomorrow, I am going up to Belfast to do a special at Stranmillis with a colleague, where we will be talking to the entire first-year intake. As I said, there are other ways to teach outside the classroom.

Good teachers are born. It is very difficult to make them up. If you have enthusiasm and can teach something, you know it very well. The best way to learn something is to have to teach it.

Mr Buchanan: Although you had no real uptake on getting the students here, did you have any uptake on getting the teachers from Stranmillis to come?

Dr Mason: Yes, we did. We run teacher training courses. We have run them in collaboration with our friends in Dublin and Cork. The last one we ran was funded from Dublin through Forfás. One of my colleagues went down to Dublin for the day and then the teachers came here for two days. We give them an intensive course. The idea is to upskill them because if you are trying to teach something and you are one page ahead of the students, that is a dicey place to be. We want to provide them with the confidence where they can say, "I might not know all the answers but I certainly know where to find them", which is the best answer of all. It is to get the enthusiasm going.

I have one scientist among the people I employ. He is a physicist and my head of education. My other education officers come from marketing, geography and history. I employed them for their communication skills. I can teach them what they need to talk about but I cannot teach good communication skills as easily.

Mr F McCann: Tom touched on what I was going to say but I have to confess I have always been amazed, going right back probably to black and white TV, listening to Patrick Moore. It is amazing to look at the advances that have been made since those early broadcasts.

It is how you get that person at the age of two or four where you have sown the seed and nurture them and bring them through. So many things are happening in children's lives that may distract them. Is

there anything that moves it on from that first touch with this place into the classroom and then into the colleges and universities?

Dr Mason: Yes, there is. That is why I think this sort of outreach programme that we have is very important; it is almost touching base with them again. I see that some of you have iPads. I have a batch of iPads and the stands have just, at last, arrived. We are moving to interactive iPad operation, so anywhere in the planetarium you currently see a piece of A4 paper, an iPad will be there. The beauty of that is that, instead of getting just the A4, you can touch the screen and dig right back in. For example, at the top of my stairs at the back end of the building, we have a space shuttle. The space shuttle programme is now over, which means that the total history can be on that iPad. They can type in "STS55" and they will get that mission. They can deal with all the things that happened in the programme but, more importantly, look to the future to other things that have spun off from that.

We also think it is important to get role models in, so we have brought in astronauts. We have André Kuipers, a Dutch astronaut, who has just come back from another visit to the space station. I was over at the International Planetarium Society meeting at Baton Rouge about a month ago, where I am about not to be an office bearer any more. I met one of my colleagues from the Netherlands, and he knew André. André took a little teddy bear into space and God knows what that cost because, as you know, the lift-off cost is based on weight. I assume it was an ultra-light teddy. He provided me with a little video of the teddy bear floating around in the space station. This immediately gets me to my two-year-olds. I ask, "Have you got teddies?" They say, "Yeah", and I say, "Wait till you see this one." You have instantly wedged in there. You have now done the business.

To get back to your original question: mentoring is even more important. Most of the scientists who I know have bumped into a really good teacher, and I mean spectacularly good. We have got lots of them here in Northern Ireland. That is where I came from. That stuff is so important; we cannot ignore it. If we choose to back off from it or not support it, it means that we will be filling up all those jobs that we need for the future with Chinese and Indian engineers and imports. There is a huge shortfall.

The Chairperson: I think we get the point, and Committee members will want to take it up. There is a great resource here for inspiring young people to consider the bit. The Committee has taken that on board and we will maybe have a look at that. Fra, have you any more questions?

Mr F McCann: That is it.

The Chairperson: If no one else has questions, I will just finish up with a few things. First of all, as part of my overarching campaign for Wi-Fi, it would be great if we had non-password Wi-Fi access and things.

Dr Mason: Here?

The Chairperson: Yes.

Dr Mason: I already gave that out.

The Chairperson: I did not get it though. But I just think, as a general thing —

Dr Mason: OK. I can do it for you.

The Chairperson: As a general thing for all public areas, I think we ought to have Wi-Fi for which people are not asked for the password.

Dr Mason: That little white box perched precariously there is the new Wi-Fi that is coming in. That is exactly what is going to happen.

The Chairperson: Brilliant. I just think that people come in and they never like to ask, but I think it is great. People have got iPads now and they want to come along. It is about saying, "We are right behind you."

Secondly, the advantage of us coming down here today is that we get to see what you have got. I am hoping that people will have a bit of time, if they want, to go around and see the things. Then, I want

to try to find a way, if the Committee is supportive, which I am sure it will be, of getting you to get your message up to Stormont. You talk about publicity, but with all the best will in the world, we get that there is an Armagh Planetarium down there, but — a bit like Phil was saying — we never quite get the idea that it is relevant to us and that we should go and do it. Yet, actually, for inspiring those young people who potentially want to be involved in STEM-type subjects, this is a good way to go. I am not in any way saying that there are not other things for people to do, but this is a good way.

In conclusion, I would like to talk to you further outside the remit of the Committee to find ways that we might get you doing something mobile or whatever up in Stormont, where we have a bit more of an opportunity to sell your message, so maybe we will work on that. I am going to move on. I was going to talk to you about Curiosity and then I thought that, actually, we will do that over lunch.

Dr Mason: We will do that offside, yes.

The Chairperson: I have another talk coming up. If you wish to stay at the table to listen to our next speaker, you are more than welcome to do so, although, if you have got other things that you have to do, that is up to you. Stay there if you wish.