

Date: 05/12/2002

Source: Ministry of Arts, Culture, Science and Technology

Title: Ngubane: Conference on Public Communication of Science & Technology

-----

OPENING ADDRESS BY DR BEN NGUBANE, MINISTER OF ARTS, CULTURE, SCIENCE AND TECHNOLOGY, AT THE 7th INTERNATIONAL CONFERENCE ON PUBLIC COMMUNICATION OF SCIENCE AND TECHNOLOGY, University of Cape Town, 5 December 2002

Good morning -

Ms Marina Joubert, Conference Chair

Members of the International Public Communication of Science and Technology Network  
Professor David King, Head of the Office of Science and Technology and Chief Scientific Adviser to the Government of the United Kingdom

Dr Alan Leshner, CEO of the American Association for the Advancement of Science

Dr Rob Adam, Director-General of the South African Department of Science and Technology and Chair of this session,

Distinguished guests

Members of the media

Scientists, researchers and educators

International visitors

Fellow South Africans -

It gives me great pleasure to be here this morning and to celebrate with you the opening of this important conference. It is an event that augurs well for the development and increasing popularity of the sciences in southern Africa and the rest of the continent and the world. I speak on behalf of our people, and more specifically our science community, when I say that we are deeply honoured to be hosting this colloquium on South African shores. As you may know, this is the first meeting of the International Public Communication of Science and Technology (PCST) Network in Africa, and the second in the Southern Hemisphere. I trust that our cultural and scientific idiom and experiences will enrich the proceedings, just as we will greatly benefit from the wealth of knowledge from around the world that is to be shared in the coming week.

I take it for granted that every one of you, being keenly involved in the science sector, had a good view of yesterday's eclipse, which I am sure some of you managed to see from the best viewpoints in Limpopo or elsewhere. For those of you who remained in Cape Town and attended the MTN ScienCentre presentation i-KLIPS! African myths about the Moon in the Sun, I hope that your enthusiasm for our continent's rich oral tradition has been stimulated and that your appetites have been whetted for the experiences that you will have during your time here.

Ladies and gentlemen - I am sure that the debates and discussions that lie ahead will enable us to forge new tools with which to build a solid public understanding and appreciation of science. Our theme, "Science Communication in a Diverse World", is ripe for discussion, at a time when we are all assessing and engaging with the challenges and opportunities of globalisation. Conferences such as this facilitate science communication in multicultural societies, which increasingly define our world, and will enhance the dialogue between developed and developing countries.

It is indeed a time of great change and development on all fronts, a time of evolution and, sadly, extinction. It is a time in which the many cultures of the world are being exposed to one another as never before, whether through media such as television, radio and the Internet, or through the growing international tourism and travel industries. This creates increased opportunities for synergies and co-operation, but also necessitates the need for mutual respect and the appreciation of diversity, multiculturalism and a variety of approaches to any particular question. I believe that a pragmatic attitude to the plethora of contextual frameworks in which science is

located, and effective communication of its countless contributions to development, wealth creation and a better life for all, will ensure that present and future generations respect and admire science for all it is and all that it can be. This will entail the demystification of the work of scientists, effective and culturally appropriate dissemination of information on what it entails and what it means for the future, and the building of bridges of understanding with decision-makers and members of the public.

A vital aspect of this process involves developing trust in what science can do for us all - I think that it would be fair to say that scepticism about the methods or ends of science has not always been unfounded. Current debates on genetically modified seed and the furore around the trade marking of natural resources and common foodstuffs are two that I can mention. This sort of issue touches on the very basics of survival and is linked to the principal fears that have come to the fore as areas of concern for those who take issue with globalisation: among other things the widening of the gap between rich and poor and between so-called developing and developed nations; the increasing burden of poverty and underdevelopment, especially for the poorest of the poor and rural communities; the increasing dominance of powerful nations in world affairs; the inequitable and not always sustainable exploitation of environmental resources. The recent World Summit on Sustainable Development in Johannesburg dealt successfully with a range of pertinent issues, most notably focusing international attention on the goal of poverty eradication, the kernel of the sustainable development agenda. It also dealt with the roles of science and technology in taking us forward in the global village.

We, as scientists and science educators, communicators and enthusiasts, need to remain critically aware of the perceptions and attitudes of people not directly involved in the sector. We need to develop new tools for assessing the impact of science education, both through formal means such as schools and tertiary institutions, and in the broader sense of public understanding and appreciation of science, technology, engineering, mathematics and related disciplines. Not only does the shift towards an emphasis on innovation imply the need to ensure relevancy in scientific work for socio-economic development: this shift signals that it is imperative that we cultivate a culture of innovation that permeates all levels of society. This will have numerous positive results, and I shall only point out two: that those who utilise scientific innovations every day in their work begin to appreciate that these do indeed stem from science and hence engage more actively and enthusiastically in supporting the development of the sector and secondly, that innovation, the growth of ideas and the application of inventions, can improve everyone's quality of life and create opportunities for people with no formal scientific training. This is one way, for example, of successfully harnessing indigenous knowledge systems.

But not only are the strategies of communicating science to non-scientists developing rapidly: science itself is experiencing an unprecedented growth in many directions. This is happening in terms of its applications, its content and new ways of understanding it. Our scientists are exploring realms only dreamed of a few decades back and, concurrently, the popularisation of science is taking waking debate among diverse groups of people.

Human cloning and biotechnology, genetic modification, the centralization of information on citizens, perspectives on environmental degradation, and other branches of research and development, have also produced new ethical challenges and debates, issues that often have foundations as strongly built on personal opinions and belief-systems as on a grasp of their scientific basis. Even within the scientific community there is vigorous debate and disagreement, and this can send out a confusing message to the layman. Arguments for and against the seriousness of global warming and the greenhouse effect are examples that come to mind.

But these issues all fall under the rubric of the Public Understanding of Science and Technology, the pursuit of which it is almost unanimously agreed is beneficial and desirable, indeed vital. Ladies and gentlemen, one of the primary reasons that we are so happy to host this important conference is in the hope that it will provide momentum to the efforts of local scientists to communicate their work effectively to a broad range of stakeholders, and to journalists in their

endeavours to reflect accurately the developments around them. It is unfortunate that the image of the scientist working in isolation amongst Bunsen burners and steaming beakers still persists for many people, and that a widespread appreciation of the many faces and roles of science is not yet deeply embedded in popular consciousness. We hope that the gathering of experienced practitioners at this conference will inspire public awareness of our scientists and provide new insights into the importance of what they do, and new strategies on how to communicate this, just as our journalists may come to rediscover the pivotal role they play in taking science to the people.

Science is integral to sustainable development and inextricably linked to financial empowerment and the realisation of a better life for all. As I will say again, science and technology are tools for development, not just its rewards. As has been pointed out, it is the public understanding of science, technology and related disciplines that forms the critical interface between science, wealth creation and sustainable development. It is here, ladies and gentlemen, that we unlock the potential of our sciences, cultivate an interest in future scientists, demystify and even de-stigmatise our endeavours to understand the universe around us, to interpret the past, to plan for the future, to harness the opportunities of the present.

While I will not go into detail on the particular sub-themes and topics that will be discussed at this conference, which I am sure each of you brings unique expertise to and is eagerly waiting to engage in, I have decided today to touch on some as a broad introduction to this conference.

If we are to be successful in making the public understand at least the importance of science, if not science itself, we need to be able to reach out to culturally diverse communities. This means that we must employ a multifaceted approach and innovative strategies, often tailored to specific target audiences. While using the experience and methods developed by others elsewhere, we must not forget to ask ourselves what we want to achieve and whom we wish to educate with any particular project. We must assess the circumstances in which our projects evolve and the needs and priorities of those to whom they are relevant. A poor community is more likely to engage in a science-related project with job and wealth creation potential than in one that seeks primarily to educate through entertainment. We also need to take into account language and literacy barriers when we go about our work and ensure that we cultivate sensitivity to the nuances of dealing with people with different priorities and resources.

Especially in developing countries, the fusion of indigenous technology and western science can be used creatively, but must be sensitively managed. While information and technology communication mediums have gone a long way to breaking down barriers in multicultural communications as people proactively search and refine their questions to meet their specific needs, we need to ensure that greater access and literacy in these media become a reality for all, including the poor. Within the framework of the New Partnership for Africa's Development, NEPAD, we are seeking to address this. It is also increasingly being recognised that information and communication technologies are integral tools for sustainable development. NEPAD recognises them as a priority because of their economic-enabling effects.

Many of the poor live in rural areas, often without access to newspapers, television or the Internet. Yet most people have access to a radio. This should be explored further as a tool for developing a public understanding of science. Science programmes alone may not appeal to a wide audience, but principles of science incorporated into other popular mediums definitely have an impact. My Department, in fact, sponsored a television programme called *The Big Idea*, which drew on the skills of the audience and met with great success on local television.

In terms of the rural development agenda, making science work for the community is a good way to communicate about it. Our Council for Scientific and Industrial Research has a number of such projects on the go, as do our technikons in the form of technology incubation projects. Project-oriented learning can be a very effective communication tool, especially if the long-term benefits for individuals and the community are apparent. As part of our HIV/Aids awareness strategy, a

number of years ago my Department sponsored a papermaking project integrating art and easy-to-use technology for recycling waste paper into marketable paper and cardboard products. Its work has met with huge success and created jobs and expertise in a number of areas, both rural and urban.

The Human Development Report of the United Nations Development Programme (UNDP) emphasises that "Technology is like education - it enables people to lift themselves out of poverty. Thus technology is a tool for, not just a reward of, growth and development." The Report argues the need to prioritise SCIENCE AND TECHNOLOGY at policy level to "bring life to an environment of technological creativity people need to have technical skills, and governments need to invest in the development of those skills. Today's technological transformations increase the premium on such skills and change the demand for different types of skills. This calls for a rethinking of education and training policies. In some countries systems need an overhaul. In others, (the need is for) a redirection of public funds."

We also need to consider that scientific and technological developments affect the work of many rural inhabitants, such as farmers, both to their benefit and in ways that may make them unsure of their future prospects. We need to communicate with these people, assess their needs and ensure that there is at least a basic understanding of the role of reconstruction and development and science and technology in improving their production.

The approaches that have and can be utilised are too numerous to mention here, from mobile outreach programmes, like industrial theatre trucks or the HIV/Aids awareness train, to science and maths camps and science focus weeks that address transport problems for rural communities. The possibilities are endless.

There are different approaches that may be taken to instil an appreciation of science in urban environments. South Africans across the spectrum, but most noticeably in our cities, recently went astronomy mad when our intrepid Afronaut, Mark Shuttleworth, took off into space. Our government, our science centres and our media used this as an opportunity to unlock the interest, especially of children, in exploring the fascinating world of the sciences, and no doubt many a young person has caught a glimpse of an exciting possible career. We are also very lucky that Mark is also dedicated to furthering public understanding of science, maths and technology and is doing excellent work in this regard through, for instance, the Hip 2B Square campaign aimed at the youth. You see what a difference one person with a passion for the sciences can make?

It is so often the way in which we go about communicating our message that makes the impact. Last night's function at the Two Oceans Aquarium no doubt made an impression on many delegates - the sublime sight of the multihued denizens of the waves should have inspired us with awe and respect for the diversity and the range of creatures that abound in our seas and beyond. Many ichthyologists or oceanographers no doubt began to dream their path in life in this magical environment.

Museums, interactive learning, and outreach projects seem to be meeting with increasing success in adapting to new contexts and communicating their messages to diverse audiences. Increasingly these activities situate themselves within the area of other activities, such as a shopping mall, in order to target visitors who might not have otherwise thought of going there. Outreach programmes also strive to take the work of science institutions to the public and decision-makers or, alternately, take the public to the institution, increasing accessibility for a broad range of people. Children who are taken to iThemba LABS, one of four nuclear accelerator centres of its kind in the world, on its weekly open day, no doubt return home with wonderful facts and stories for their families, and a sense of new possibilities about what they can do with their lives.

Visits of a different kind, like tours of cultural heritage sites and new and exciting discoveries in this, the cradle of humankind, have also opened up exciting new vistas for aspiring archaeologists

and palaeontologists. Co-operation between specialists in different disciplines, in both the social and the natural sciences, opens up new avenues for all and enhances and enriches emerging understanding. Science gives us the portal into our past, interpreting and contextualising the artefacts, signs and symbols that we have today. Our heritage is also an area of popular interest that can be a springboard for science education.

In considering possibilities for interdisciplinary collaboration, we need to mention the role of new technologies, especially ICTs, in disseminating information and stimulating fast and internationally instantly accessible debate on reconstruction and development. Beyond specific collaborations between individuals or groups of scientists, trends such as webcasting scientific developments and news blocs are also vital and easy communication tools for educators, journalists, institutions and individuals.

While thinking of interactive learning, the accessibility and scope of the World Wide Web immediately comes to mind for the cause of furthering science education and understanding. Of course, just as on television and in the movies, there is the risk of unscientific "facts" being put across as scientific realities. But despite this, the vast majority of sites dedicated to science are of good quality and provide information from popular science to detailed research papers. Using technology to communicate science is effective, requires a minimum of effort by the end user and is low cost if access to Internet cafes or a home computer exists. I must once more emphasise that the potential of this for developed and developing countries is vastly different and we all need to do our utmost to address this situation in whatever way we can.

There are widely different cultural and political attitudes to matters of representivity within the sciences. The conceptual framework within which public communication exists of necessity takes these issues into account, for it is through effective public communication at targeted audiences that we can begin to address disparities in representation or, in the case of a country such as South Africa, redress the legacy of the past. Here, for instance, we had a system of government and power that nurtured a select few on the erroneous assumptions of gender and racial superiority. Many of these scientists have made and continue to make outstanding, world-class contributions to scientific endeavour, and many of them did not support the policies of previous government in this country, or even actively opposed them; yet we must continue to work to ensure that women and girls as well as people from previously disadvantaged backgrounds take their rightful places in the diverse scientific community of our land and contribute their competence to reconstruction and development and science and technology.

In South Africa we are tackling this through, for instance, hosting an annual science camp for girls, through promoting the role of women in science and technology, and through proactively promoting the representation of role models and scientific achievers in the media. It is a triumph for our education system that a young South African girl, Carike Bosman, won first prize in the international essay competition on "Space and Daily Life" for World Space Week in early October. The competition was organised for teenagers by the United Nations Education Scientific Cultural Organization (UNESCO) and the European Space Agency (ESA), hoping to "encourage students from all over the world to think about how space is affecting, improving and helping them in their daily life". It is pleasing to note that, of the more than three hundred entrants, fifty per cent of the essayists were girls. FEST was the national coordinator of this science engagement initiative.

This is merely one of many instances showing that our science communication and public awareness programmes are having an effect. Yet we still need to assess effective ways of measuring the scope and quality of public awareness before and after PUSSET interventions. I am sure that the session on evaluating science communication and public awareness of science programmes will take us forward in this regard.

We need to be realistic about the science messages we communicate. While it is exciting to inculcate a respect for science as a quest for knowledge and enlightenment, as I have illustrated, the real purpose of science is to create a foundation for sustainable development, which requires

an understanding focused on addressing socio-economic circumstances and the alleviation of poverty. This also relates to wealth creation through the commercialisation of science. We need to take this direction, giving due consideration to each case as it arises. My Department, for instance, through our National Council on Innovation, thoroughly examined the matter of open source software in the context of increasingly expensive foreign proprietary software and has made recommendations on its findings to key decision-makers. What is vital is that we communicate the matters intelligibly and in an idiom that is not purely scientific, or we risk working in a vacuum and ending up with policy decisions that have no relevance.

The commercialisation of science in the context of reconstruction and development has also given rise to much debate on the ownership of research findings and the ethics of when they should be freely available and when not. In a world in which competitive advantage often means the difference between being rich or poor, these are matters that will increasingly become part of the public domain and, where appropriate, should be addressed in the communication of a public understanding of science and technology. I would like to echo the words of our Foundation for Education, Science and Technology and say "Sustainable knowledge-based development has to address the requirement for a global dialogue to steer the process of scientific and technological advance, not just for the creation of wealth by industry, but for the good of communities all over the world". It is our governments, our businesses and activist organisations that steer the course of our development and we need to ensure that a basic appreciation of the debates in the science and technology fields is fostered.

As some of you may be aware, in August this year, due to a phenomenal growth in the scope of our work and the range of our programmes, the former Department of Arts, Culture, Science and Technology split to form two new government Departments, the Department of Science and Technology and the Department of Arts and Culture. I mention this today because the touchstone defining excellence and development in both of these fields is innovation, the creative base to the realisation of dynamic new ideas and potentials. Furthermore, art itself is a highly versatile and adaptable medium to communicate the numerous applications and basic principles of science to people of all ages and from all backgrounds. Art can serve to communicate complex ideas in an accessible, interesting and culturally relevant manner. Art and science have a symbiotic relationship. Art has the unique ability to give expression to the ineffable, while the sciences inspire great art. In the words of Einstein, "The most beautiful thing we can experience is the mysterious. It is the source of all true art and science".

The blooming of the African Renaissance, growing and made manifest through a cultural revival and increased co-operation, mutual understanding, integration and support, for instance through NEPAD and the African Union, finds its key expression, as did its European counterpart, in its artistic and scientific endeavours. During this period of vigorous artistic and intellectual activity, a time of looking at what others can teach us and reawakening and appreciating what we already know, we need to ensure that we communicate the discoveries, the innovations and the possibilities to improve life for people from all walks of life and for generations to come.

Our efforts with Puset have succeeded in increasing the number of researchers, raising political support and bridging the gap between science and the public at large. These are essential to the success of national systems of innovation. The World Conference on Science in Budapest in 1999 identified the key role played by the use of scientific knowledge in alleviating poverty. The Declaration that resulted stated that increased utilization of scientific knowledge was essential in creating a better life for all and a sustainable and healthy environment for present and future generations (UNESCO 2000). The urgent need to reduce the gap that exists between the use of scientific knowledge in developing and developed countries was also highlighted. But to increase the use of scientific knowledge, we must first communicate it effectively. A cornerstone of the World Conference on Science Declaration is that greater scientific literacy, increased abilities and skills, and an appreciation of ethical values must be stimulated to improve public decision making on science issues.

Ladies and gentlemen, scientists and science communicators, I would like to end by thanking the International Public Communication of Science and Technology (PCST) Network, and all of you, for your invaluable work in increasing public understanding of science and technology. I would also like to thank the Foundation for Education in Science and Technology for hosting this conference, and especially Ms Joubert for her dedicated efforts to ensure its success.

I wish you all well in your deliberations and hope that each of us comes away more able to contribute to science and our world as a whole.

I thank you.

Issued by Ministry of Arts, Culture, Science and Technology

5 December 2002