

## ◆ Acceptance Address: Building a Bridge between Science, Technology, and Development

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Several months ago, I was asked by my old school to write an article for the school magazine, describing my career as a science journalist. I opened the article by saying that few of those that I was at school with—let alone myself—could have imagined that I would make a living from writing, an activity which, much as I enjoyed it, was neither my strongest academic subject—that was mathematics—nor even a particularly natural skill.

If I were writing the same article today, I would add that 6 years ago, when the organization that I currently direct, the Science and Development Network (*SciDev.Net*), was still only a dream, neither I nor many of those that I was working with at the time could have imagined that 6 years later I would be standing in front of you today to receive this generous and unexpected award. Indeed, the only word that I can think of to express my gratitude for this honor is one that I don't use very often: awesome.

That we have been able to get to where we are in such a relatively short period is due to a number of factors. Some are the result of being fortunate enough to have been in the right place at the right time. I was the news editor at *Nature* when the Internet arrived on the publishing scene and soon recognized from the inside—perhaps it was the one time in my career that a mathematics background came in useful—how dramatically electronic communication was likely to affect the whole scientific publishing industry.

I don't need to describe to this audience how the Internet has transformed science

publishing during the intervening period. The most obvious aspect has been the way that, by virtually eliminating the printing and delivery costs of scientific papers, it has spawned a complete new set of practices and debates. These include those around the whole open-access movement, based on the premise that the disappearance of the costs undermines one of the traditional premises for the subscription costs that scientific publishers have traditionally charged.

I don't intend to go into the pros and cons of open access in these short remarks. I imagine that these were well covered by last year's prize winners, Marty Blume and Paul Ginsparg in their acceptance speeches. But I use the word *imagine* advisedly. Not being a member—I am embarrassed to admit—of your respected organization, I do not have the privilege of having access to its publication, *Science Editor*. As a result, I have not been able to gain access to what was actually said on that occasion!

That is slightly ironic, perhaps, given the theme of the award. But it does illustrate an important aspect of the Internet that is sometimes forgotten. Revolutionary as the underlying technology itself may be, it does not itself *cause* either the changes that some have predicted as inevitable—that was the big failure of imagination of those who created, and later lost out in, the first dot-com boom—or even the changes that would allow its full potential to be met.

Rather, the Internet should be seen as what is usually referred to as an enabling technology. By this, I mean that it enables individuals and organizations—including publishing houses—to do things that are desirable but would previously have been impossible for essentially logistical reasons, whether reasons of practicality or reasons

of cost. But it does not in itself create better ways of doing things.

That is certainly the premise on which we work at *SciDev.Net*. Our goal, seen from a broad perspective, is to get more science into the development process. In practice, that means getting more information about science and technology into the hands of those who can use the knowledge to meet the many social and economic challenges facing developing countries—just the type of goal that your president, Richard Horton, outlined so eloquently in his opening remarks yesterday morning.

This will not be done, we believe, by the massive transfer of the fruits of Western science and technology into those countries; that was the mistake made by those promoting “science for development” strategies in previous decades. Just as technology—including the Internet—does not *determine* the shape of the science publishing industry, so merely providing such countries with *access* to modern science and technology does not inevitably transform their development prospects.

What is needed is the ability to use science and technology in a way that corresponds to prevailing needs and possibilities. And that means placing information about science and technology in the hands of those who are in a position to effect change—and thus use the information to achieve this goal—rather than pretending that science and technology are a source of change *in themselves*.

That's where we come in. Unlike, I assume, most of those in this room, we are not involved in the peer-to-peer dissemination of scientific knowledge, the conventional role of science publishers. Our primary target audience is not those who create knowledge, but those who seek to put knowledge to practical use—in other

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words, to act as a bridge between science and public policy and to put reliable science into the hands of decision-makers.

Our commitment is to a process of empowerment. Remember the old phrase “give a man a fish and you will feed him for a day; teach him to fish and you will feed him for life”. The same goes for science and technology. What is needed is encouraging the skills, knowledge, and mentality to develop science and technology, not just the ability to use it. That requires an element of scientific literacy within a culture. And that itself depends on the ability within that culture to communicate information about science and technology, precisely the job to which we are committed.

But the differences between us are not as great as they might appear. Like any conventional scientific publisher, we feel that the task we have set ourselves requires the same commitment to accuracy and authoritativeness if we are to be effective. Indeed, the public nature of the Internet makes this more essential than ever. For the underside of the democracy of knowledge we now inhabit—as even the developers of the Wikipedia are discovering—is that the ability to discriminate between reliable and unreliable knowledge, one of the cornerstones of scientific knowledge, can sometimes be lost.

Perhaps the most dramatic example of that, and one that I frequently use to justify our own existence, is that the South African president, Thabo Mbeki, has admitted that his doubts about whether the human immunodeficiency virus is really the source of AIDS came from surfing the Web, where he had found this view put forward by an apparently respectable group of US scientists whose names will no doubt be familiar to many of you.

There is no shortage of information about science on the Web. Indeed, one of its invaluable benefits is that it provides the possibility of access to science to many who were previously deprived of it. That is the reasoning behind what we are doing. By virtually eliminating the cost of distributing scientific knowledge



**Dickson presents in a general session.**

to developing countries—a cost which previously was one of the biggest barriers to the creation of a scientific culture in such countries—the Web has opened up possibilities for science capacity-building that were previously unthinkable.

But what is also needed is the presence on the Web of those who can provide scientific and technical information in a form that is simultaneously authoritative *and* accessible (and, speaking as an editor, I should add concise). In themselves, none of these are particularly difficult. Achieving the three simultaneously, however, remains a major challenge, as all of you will be familiar with, as they are not necessarily compatible. Being both authoritative and accessible, for example, is much more difficult than being just one or the other.

For that challenge there is no technical solution, however revolutionary. It requires a combination of professional skills, knowledge, and judgment that can lie only in people—journalists, editors, and production staff—and will never be replaced by an electronic machine.

I mentioned at the beginning of this

address that one of the factors in our favor has been being in the right place at the right time, namely, when the technology that allowed scientific information to be distributed to developing countries at virtually negligible cost was becoming available. But that is only the technical side. Equally important has been our good fortune in being able to put together a small and committed team of editorial, production, and administrative staff whose hard work and dedication have been essential in getting us to where we are today.

In many ways, my being here today is an acknowledgment of the work of that team. And at the same time I would like to take this opportunity—I suppose that this is where I am permitted to slip briefly into Oscars mode, but it does seem particularly appropriate in this setting—to acknowledge a series of editors without whose support I would not be here today.

Four of them mark important stages along my own professional trajectory, and I count myself lucky to have benefited from their encouragement at critical times. One was Brian MacArthur, editor of *The Times*

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*Higher Education Supplement*—the British equivalent of the *Chronicle of Higher Education*—who gave me my first science-writing job, even though at the time I had virtually no journalistic background and as a qualified mathematician was still struggling to put together lucid sentences.

The second was David (Dai) Davies, who spent a brief and often overlooked period as editor of *Nature* at the end of the 1970s. It was Dai who enticed me to work in Washington as the journal's US correspondent—a unique opportunity to experience at first hand the realpolitik of science. Once there, Dai then agreed to let me cover the 1979 UN Conference on Science and Technology for Development—the event that stirred my interest in the role of science in development—even though it took place in Vienna, Austria, not part of the conventional Washington beat.

Then there was Philip Abelson, who, when I wanted to return to Europe, agreed to take me on as *Science's* first-ever staff foreign correspondent. As I prepared for the critical interview with him, aware of his rather daunting reputation among young journalists, I was advised to talk about gardening. My own knowledge of the subject is pretty rudimentary, and I can't remember the details of what we discussed. But it seems to have done the trick, demonstrating once again that in journalism a little knowledge can go a long way.

My spell at *Science* was followed by a difficult and relatively brief period at *New Scientist*, where I learned at first hand—and to my cost—the powers of the publisher and that a successful editor requires more than journalistic skills. At that point, I returned to *Nature*, largely thanks to John Maddox, another formidable character whose daunting reputation hides, as those of you who know him will be aware, a deep concern for the plight of individuals.

Finally, I have additional reason to be grateful to two current editors, Philip Campbell at *Nature* and Donald Kennedy at *Science*. Both have been unhesitating in support of our current enterprise on the basis of their commitment to the idea that not only are scientific journals the

lifeblood of the scientific community, but society more broadly can only benefit from the widest possible dissemination of scientific information, particularly to developing countries (as Richard Horton pointed out in his remarks).

I vividly remember going to see Don, whom I had known during my spell in Washington in the late 1970s. I described the relationship we had agreed to with *Nature*—that we would offer free access through our Web site to a limited number of articles each week from the journal—and he almost immediately volunteered. "That sounds great; anything *Nature* will do, we will match."

Unfortunately, he failed to pass this comment on to his publisher. So when I went back to *Science* 3 months later to say, "OK, we're now getting off the ground; how do we link up?" I rapidly discovered from the blank looks I received that the world as editors see it is not always as simple as the world of the publisher.

Fortunately, there, too, the negotiations were successful. We continue to have an excellent relationship with *Science*, and I would like to take this opportunity to thank Monica Bradford for backing up Don's commitment to our work. Indeed, I think we may be one of the few projects, if not the only one, to have equal support from the world's two top scientific magazines.

I would also like to mention briefly how this commitment expresses itself. We have negotiated an arrangement with each journal under which each week we are able to make direct links from our Web site to selected scientific papers and other articles that would normally be electronically accessible only to subscribers. The articles are selected by our own editorial staff on the basis of their relevance to the interests of developing countries. Usually, we write a short summary on our own Web site, and this is accompanied by a direct link to the paper or other article to which it refers.

That arrangement is, in a way, a form of open access but one that is entirely compatible with existing business models for scientific journals. We do not feel we

are undermining the markets for these journals; indeed, we like to feel that we are helping to increase them, and their decision to support us in this way has certainly given our own editorial efforts an authority and legitimacy that would have been difficult to create if we had started up on our own.

In addition to thanking the two editors (and their publishers, of course) who made it happen, I have another motive for raising this. We are keen to establish similar relationships with other journals that regularly carry scientific articles relevant to developing countries. If anyone here is interested in following this up, I would be delighted to discuss the possibilities.

And while I still have the microphone, I'd like to add a second pitch. Our Web site is free access; it is the basic commitment that we have made to providing access to scientific information for those in poor countries who are least able to pay for it. But that means that our ability to operate depends on the generosity of key sponsors. I am happy to acknowledge the support we have received from our four key sponsors to date: Britain's Department for International Development, the Swedish International Development Cooperation Agency, Canada's International Development Research Centre, and the Rockefeller Foundation. The support of each of those has been crucial in getting our organization off the ground. I am also grateful to each for respecting our demand for editorial independence—an issue that has been hotly debated in the last few days.

But we face new financial challenges as those organizations look to other projects to help get off the ground, and we seek to consolidate and expand our activities. Being British, I have unfortunately inherited the cultural trait of which Americans seem blissfully free: a deep reluctance to talk about money. But as an editor and publisher, even on a relatively small scale, I am having to try to overcome my inhibitions and make use of every opportunity that comes along. So please forgive me for using this one to say that, just as we are looking for proposals for collaboration, so

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we are also looking for ideas about new organizations that might be sympathetic to our need for financial support in the future. If anyone has thought about that, I would be delighted to hear it.

That's the difficult bits out of the way. The easy bit is offering CSE my deepest thanks not only for both this personal honor and for acknowledging what has in fact been a collective achievement but also for turning its attention to the area in which, at least from a moral point of view, science publishing needs are greatest, namely, the developing world.

Included in this are the efforts of your own Task Force on Science Journals, Poverty, and Human Development, headed by Paul Bozuwa, whose sessions I will be participating in this afternoon for those of you who would like more information about what we do and how we do it.

Finally, I would like to say that, as with all startups, one of our greatest achieve-

ments after 5 years is perhaps just the fact that we are still here. But that is not only the result of our own efforts; it is also thanks to the wide support that we have received, not only from the editors and sponsors that I have mentioned above, but from other colleagues across the profession who share our conviction that science publishing, in all its forms, has a critical role to play in helping the world's poorest nations climb the development ladder. The Internet has opened up new possibilities for doing this in ways that were inconceivable when most of us entered the profession. But it will never replace the personal skills, on many levels, that are required for these possibilities to be exploited to their fullest. And central to those skills are the insights and commitments of editors.

One of the key tasks of a successful editor is obviously to nurture talent. In our own way, we are trying to contribute to this task across the developing world. Not

only do we have a growing number of freelance contributors writing for us in these countries—129 at last count—but we are playing an increasing role in organizing science-writing workshops, whether on specific topics (such as HIV/AIDS or malaria) or more broadly on the basic techniques of science writing.

Our conviction in organizing those activities is that science communication is an integral component of the development process—and that effective science communication requires building capacity in any part of the world. From what I have learned of CSE, it is the enhancement of these skills to which the Council is dedicated through meetings such as this. Long may it continue to do so—and to prosper in the process. 