



Communicating sciences

A history of the science journal Nature

Hello. I am Ian Flintoff and for some time now I have been doing research into the communication of science with the Open University. And I thought what might be useful for us now would be perhaps to take a short walk through the story, the history, of one of the most prominent and important scientific publications and that is Nature, the weekly journal.

What I hope to show from this is how the shifting environment, if you like, the culture, the science itself, the means of communication, the language, the politics, the sociology, shift over time and place. And have their effect upon the target audiences, the people who write science papers, how the science papers are presented, even the technology of printing and presentation.

So what I would like to start with is let's say the first – the first ever addition of Nature. Nature was first published on 4th November 1869. If we were to look at the cover of Nature we'd see something that looks very much of its period. It's a very black and white presentation. There's a drawing, a pen drawing, an etching whatever you like to call it, at the top of the page, which has a moon rising out of the sea and the word "Nature" magically arriving from the – arising from the waves.

Underneath that there is a quotation from William Wordsworth. And underneath William Wordsworth there are two columns of poems or aphorisms by the famous German writer Goethe. That is the entire front page of the first edition of Nature. Now from that alone we will see how much it's changed. What are the assumptions? Let's look at what the assumptions are for the kind of people who might pick that up on the equivalent of a railway platform and take a look at it. Well, first of all there wouldn't be as the saying is today, they wouldn't be 'into' very heavy science. They'd know something probably about Wordsworth; that would ring a bell. They might even have heard of Goethe, who was of course also a scientist. He was an expert on bone structures. But it would be a sort of rather broad-based readership and I think that's what we can think about for the first editions of Nature.

If I could just track back for a moment Nature was by no means the first nor was it the only one at the time. There was another scientific journal called Scientific Opinion, which was launched at the same time, November 1869 but that only lasted for six months. Nature however survived. It had this general kind of readership. In the pages of that first edition there are articles on the Suez Canal. There were articles on moths. There was an article welcoming the fact that women were being admitted to Edinburgh University to study medicine and actually saying that anyone who thought that this was a bad idea were idiots. So that shows that Nature was pretty well ahead of its time because women didn't get the vote for another fifty years after that. Again, the content of the journal was pretty broadly based and if we were to look at it today we would see that it was what would now be called an 'easy read'. There was no real difficult or technical science involved.

That was the start then. So it had a target readership which was of course still limited because it was limited to the educated people of the time. When I said just now that people might pick it up on a railway platform it wouldn't mean that everybody and everybody in the town or village would have a good time reading Nature. It was for the educated and it was for those with an interest in science.

Now let's move on. Science had a bad time in the UK particularly in the 1880's and 1890's. Politicians were not all that keen on science and there was a kind of backlash which is familiar to some of us today and people were thinking that science, particularly through what we would now call 'reductionism' in biology, was actually saying that human beings were no better than animals. This meant then that science began to feel a little bit self-conscious and

a little bit self-protective. However, that hurdle was overcome and to give some idea of statistics around 1850, excluding agriculture and medicine, there were only fifty academic, scientific sort of posts in the UK – fifty. By 1900 there were four hundred so that shows that science was moving on. And if we looked at Nature we'd have seen also that Nature too was moving on. Printing was getting better. There were more diagrams, more illustrations and so on and if we could just think about for one moment the ownership that would give us a clue to why Nature survived and why it was able to expand and why it was able to reach out evermore to a broader and broader audience.

The journal was started in November 1869 by two brothers called Macmillan, who as the name suggests were Scottish. They were very adventurous in their publishing – their publishing ambitions. They published – they published *The Water Babies* by Charles Kingsley. They published *Alice in Wonderland* by Lewis Carroll. And I mention that because it means that when Nature was launched they didn't depend entirely on Nature being a very successful or massively circulated. They had a lot of other irons in the fire. Interestingly, as a footnote Charles Dodgson, the eminent mathematician, wrote in Nature, under his own name and of course as we all know he was also Lewis Carroll, who wrote *Alice in Wonderland*. So the Macmillan brothers published both.

By the turn of the Twentieth Century Nature was beginning however to feel more and more specialised. More and more a specialised journal just for scientists and those rather 'easy reads', the kind of letters from reverend vicars in the country who talked about the blackbirds or the moths, began to disappear and it became more a journal written by scientists for scientists. That's quite an important point. Norman Lockyer for example, the first editor of Science – of Nature I should say – was himself a scientist and scientists in the early days, Charles Darwin included, wrote quite regularly in Nature. However, over the period of the early part of the Twentieth Century it became more and more specialised. The language changed because the feeling was that the science was being read by scientists and therefore the language could be more and more specialised. It's worth noting on the way that the two World Wars, the First and Second World Wars, also focused the scientific – the scientific specialisation even more.

When we come to the second half of the Twentieth Century we begin to see that the appearance of the journal has changed. It now begins to be a rather glossy journal, well printed and notably all the letters and papers of the - of the science contributors are at the back of the journal under the section called Letters, which are actually peer review Papers. Now many have told me that say an astrophysicist reading say reading a paper on molecular biology would almost be as baffled about its content and meaning as a member of the lay public. So from the Second World War onwards it began to become even more and more specialised. It also began to become more and more globalised. It was in 1970 that the first office of Nature was opened in the United States, in Washington. It became more and more a global journal, aimed at scientists for scientists with particularly written papers of research and peer review as an important part of it.

You'd think perhaps that if the globalisation occurred, it would become more and more familiar to the public. But that isn't so. The very success of the journal, the fact that under the Macmillan brothers it was able to keep expanding but was always as it were a stable mate with many other publications they made. They did music dictionaries; they did novels; they did plays; they did educational material. So that meant that Nature could, all the time, more and more and more refine itself both in terms of language and in terms of presentation for a particular audience and readership of scientists.

It was taken over in 1995 by a very large German consortium called Holtzbrinck. Holtzbrinck had a global empire, not as big as Rupert Murdoch's empire of the News Corporation but a very vast one that included interest shares in the Wall Street Journal for example and so on and so on. It was as a result of this that the strength of Nature was able to continue to expand globally. It now had offices in Tokyo, Australia, Canada, Africa and everywhere but of course it still continued to become more and more refined as an instrument for scientific communication.

There were one or two things that were curious along the way. One was, for example, that they still wanted in some way to make the covers appealing. I remember one, which was on the 21st October 1993, which had a space view of the planet Earth and the caption underneath read "Is there life on Earth?" This in fact was a bit of a leg-pull. What they were actually doing was testing the instrumentation of one of the satellites going around the Earth to see whether they could detect life in that way. But clearly the cover was the kind of headline enticement that we're very familiar with in the tabloids. In 2004 they had Kerry and Bush on the cover with the caption "Head to Head", which shows again that Nature was conscious of the political framework in which science was communicated.

But overall, to sum up. If we go back to 1869, look through the journey of later Victorian England and then the Twentieth Century, we see that the language, the political economy, the ownership and production of Nature, has been extended globally in the sense that it's become stronger and less susceptible to well, for example, to bad circulation figures. But on the other hand, because of its success, it has become more and more a journal purely for scientists. And the language itself, in the letters particularly, at the back, do show that it is aimed and targeted almost exclusively now to specialist scientists.