8TH WORLD CONFERENCE OF SCIENCE JOURNALISTS, HELSINKI, JUNE 24–28, 2013

Voices of WCSJ2013 Helsinki

PAGE 18 *Risk and the visualisation of risk were pondered at many sessions of the World Conference. The most stunning cards were put on the table by American risk consultant and former journalist David Ropeik.*

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At the Network Nodal Point

According to a membership study conducted a year ago, the most important reason that members of the Finnish Association of Science Editors and Journalists wanted to be in the association was that of networking with colleagues in the same, and also in other professions in science communications.

The Finnish Association of Science Editors and Journalists was established in the spring of 1985, and the founders had good foresight with respect to networking. As people who disseminate information on science and research in their respective roles – as journalists, information officers, researchers, and other professionals.

The field was a new one, and the pioneers had the insight that joining forces was the best way for them to influence how it develops. The magazine *Tiede 2000* ("Science 2000") had been published since 1980, and Finland's first science centre was taking shape. The universities started to open up to society.

Since its establishment, the association's membership has increased 50-fold to more than 1,000 members. The opportunities stemming from networking are completely different today. The Association is a member of numerous Finnish and international networks, and through its members it is linked with thousands of networks involving lifestyle, profession, and expertise.

The Finnish Association of Science Editors and Journalists is at a nodal point of networks for science journalism and other science communications. The networks are flexible and in constant flux, so the knots should not be pulled too tight. Through the networks the Association has unique opportunities to serve as a bellwether. WCSJ2013 Helsinki will remain a crown jewel of these networks.

Vesa Niinikangas

What does a Science Journalist Want?

We asked science journalists to write in a special WCSJ2013 issue of Tiedetoimittaja about the topics that they found most interesting in the 8th World Conference of Science Journalists. We got many articles about the environment, and we will start this issue with them.

Nearly all other articles are connected with how journalism is produced, its quality, and the roles of a science journalist. They deal with science journalism's taboos, conflicting roles, and the different categories of the profession.

Through their selection of topics the writers ask what kind of journalism is currently produced, using what methods, and under what conditions, and what kind of journalism they would want to produce.

These questions are necessary.

Discussion on the upheavals that the media is facing, and how the conditions of a journalist's work are deteriorating, has continued for a long time and become less fruitful. It would be more rewarding to ponder the changes from a different perspective and to think about what kind of journalism would be interesting and in what kind of framework it could be implemented.

On the basis of the WCSJ2013 one of the journalistic genres that has become increasingly attractive also to science journalists is narrative journalism.

A session conducted by British and American nonfiction writers was so popular that not everyone who was interested could fit into the seminar room; even standing room ran out.

Annu Kekäläinen

Voices of WCSJ2013 is an edited and translated version of a special WCSJ2013 issue of Tiedetoimittaja, the magazine of the Finnish Association of Science Editors and Journalists.

This report reflects and illustrates sessions, cultural events and excursions of the 8th World Conference of Science Journalists in Helsinki, June 24-28, 2013.

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(if not otherwise stated)

Yippee – it's fun to succeed!

The past year has been a very successful one for the association. You have no idea how good it feels to write this conclusion. We have organised a world conference. It was attended by 800 science journalists from nearly 80 countries, many of whom were at the top of their fields. *Wired* magazine called one of them one of the best tweeters in the world, many familiar names from the conference were on *Time* magazine's list of the world's best bloggers. The BBC's science department was named number one soon after the conference after heavy competition.

We offered our members an excellent opportunity for networking, as well as a first-class training event. Helsinki showed its best side and the Main Building of the University, and the Porthania building offered ample space. The finances of the association did not collapse. The conference did not bring big profits, but no losses either.

Fortunately, the *8th World Conference of Science Journalists* proved not to be the risky project that some had feared in advance. Fiscal discipline held through the end, fortunately. Nevertheless, organising a conference is like sailing in the summer wind – a capricious and gusty trip. The organisation committee bore responsibility, as did the executive board of the association, and their members were busy doing all kinds of volunteer work in the week after Midsummer.

The Finnish Association of Science Editors and Journalists enjoys a good reputation internationally. For a small country we have a large membership, and there is a respectable amount of activities. We have managed to support the career planning, travel, and book projects of Finnish science journalists. Along with the association's Secretary-General Vesa Niinikangas we noticed that we proved to be quite good at negotiating sponsorships, and we actually like that work.

Our membership is approaching the 1100 mark. We have not compromised at all on the criteria for membership. Science communications either provide employment more than before, or then the attractiveness of the association has grown. Hopefully both of these are true.

The most important matter for our members is networking with colleagues. Second-most important is the strengthening of our own professional identity. Third in line of appreciation is the press card. The results of the membership survey are being utilised in the planning of upcoming activities. The association defines itself as a nodal point of networks.

I also want to say a few words about the work of the executive board. After the World Conference, the visions have opened up and plenty of new ideas are on offer. We have selected a few of lines of direction for the common debate. We have given much thought to how we might listen to our members and serve them better. We could have more regional activities. The use of the network needs to be intensified.

New channels of influence need to be opened, training that is not offered by anyone else needs to be offered, and the culture of constructive debate needs to be reinforced.

After the World Conference, the visions have opened up and plenty of new ideas are on offer.

The age structure of the membership is good. Most of the members are of working age. We seek as members producers of science magazines and programming, online writers, science communicators, and basic journalists who want to write about science and to develop themselves into science journalists. The professional skills of experts in the electronic media have changed, and more attention needs to be paid to them than before in training by the association. Network communicator, visualist, and curator... new professional titles are coming. Narrative and visual quality and use of data are all part of the mainstream of journalism.

The association has plenty of work to do. The role of a science journalist is changing. Through our training we are strengthening the new professional skills. The association can promote the networking of its members specifically through training. New special skills are required by data journalism, for instance.

The association is not turning into a provider of basic training. We have supported education in science communications at the universities of Helsinki and Oulu, and a former member of our executive board is now a professor in Tampere. We have also supported Reporters without Borders, as well as the Communications and Development Foundation (Vikes) when it was first set up. The association is a member of the *Kopiosto* copyright society, and operates in the *Tekijäfoorumi* ("Writers' Forum"). So there are plenty of threads in all directions. They help form activities with influence on society.

At an event preceding the World Conference, in which volunteers were trained, a few members of the association who are retired explained why they wanted to volunteer: "I have been a member of the association for a long time – now it is time to give back." We need these alumni, our retired veterans, to mentor, to build support networks, and to continue traditions.

This year has been especially wonderful also for the chair. It is not common for an ordinary journalist to get to serve as President of a World Conference. I will never forget the experience. All of you deserve thanks for it.


WCSJ
Helsinki
2013

Full Days in Helsinki

As organisers we were very pleased with large and diverse group of participants at the Helsinki conference. New registrations kept coming in up to the final moments, and preparations kept us busy all the way to the end.

Konferenssikävijöitä saapui Suomeen Participants in the conference started arriving in Finland already on Midsummer weekend, and many were amazed at how silent Helsinki, which was largely deserted by its inhabitants, was at the time. However, there was much to see and experience for the science journalists who had arrived Monday through Friday from different parts of the world.

Between six and seven parallel presentations were organised in the Main Building of the University of Helsinki and the Porthania building, and the days of the conference began and ended with plenary sessions. After the presentations the participants immersed themselves in discussions in the hallways of the university. The conference was an excellent opportunity to network and exchange ideas with colleagues.

In addition to the versatile presentations, the conference also offered its participants the opportunity to acquaint themselves with the summery city of Helsinki and with Finnish culture. The evening programmes included pesäpallo (sometimes referred to as "Finnish-rules baseball"), bathing in a sauna, traditional country dancing, and many other experiences. At the end of the conference week there were study trips to Tampere, Turku, Oulu, Hyvinkää, Mikkeli, Helsinki, Espoo, as well as Tallinn and Tartu in Estonia.

In the midst of all the rush, we unfortunately had few opportunities to attend the presentations ourselves, but we have received plenty of positive feedback on the programme. Fortunately all of the plenaries in the Great Hall were recorded on video for the conference's website for the secretariat to enjoy later.

The next World Conference of Science Journalists will be held in Seoul in 2015. We wish our Korean colleagues the best of luck and success in preparations for the conference.

Sincerely,
Minttu Hilden ja Minna Härkönen

There and back

The headline is familiar to all. The Hobbit is going on an adventure. That is what the World Conference was like.

On Twitter I was accompanied by **Bora Zivkovic**, whom *Wired* described in its August issue as "The most aggressive connoisseur of online science coverage" and *Deborah Blum*, whom **Time** referred to in the summer as one of the world's 25 best bloggers.

I tweeted with people from MIT, Reuters, and the *Wall Street Journal*. I had certainly anticipated that I would find myself in prestigious company. I practiced in connection with a couple of international events what to do.

Tweeting about an event is not

Hans Rosling makes the world's demographic statistics rock.

easy. It is a learning process. Bora and many other top professionals graciously helped me, and I am very grateful to them.

The Great Hall of the University of Helsinki is truly grand. I was determined to go to the speaker's podium without stumbling. I wondered how the hard-working young conference director **Minttu Hilden** dealt with her task at the same podium. Executive board member **Mikko Suominen**, who handled computer issues at the conference took care of a minor crisis which emerged when the slide pointer did not work right. That was also an enjoyable memory.

The conference taught us that Hobbits can do anything, as long as they work together. We concluded that for science communicators the new channels will bring great possibilities. The only thing that needed consideration was who pays the salaries. The unforgettable social programme concluded in Heureka. The Ring is with us, and it will stay there.

Satu Lipponen

The most important issues in the world

Hans Rosling can make the world's population statistics rock. His themes kept turning over and over in people's minds almost throughout the whole conference.

It is a sunny summer morning at eight o'clock. A freelancer needs a good reason to get up early, and one such reason is standing at the speaker's podium in the Grand Hall of the University of Helsinki. Professor Hans Rosling seems like a modest man, but this master of visualising information makes the world's demographic statistics rock.

Rosling shows how changes in demographics, money, and the availability of energy guide the world. He shows in a convincing manner that a rising population in the developing countries is not a threat to global well-being. A high birth rate is no longer increasing the population; population growth stems from the fact that today's young people are growing up and having children – most of them only two! The word "population explosion" calls to mind "genocide", a word that is taboo when talking about people!

Rosling's themes keep turning around in my mind for the next three days. How the questions of health and illness revolve around money.

In the session *New Era for Drug Discovery*, Lithuanian **Vaidas Neverauskas** proposed crowd funding for the kind of pharmaceutical research that is not attractive enough for the pharmaceutical industry which runs after the money of rich Westerners.

Taru Berndtson

The writer is a Helsinki-based free-lance journalist and researcher

Getting to know the limits of forensic medicine

The research methods of modern forensic medicine have developed rapidly, and it is increasingly difficult to cover up the traces of a crime. However, despite a common misconception, not all crimes can be solved.

Progress has been rapid, especially in genetics. It has been possible to isolate a DNA sample even from small pieces of a skeleton, or the blood in a mosquito, which has been admissible evidence against a criminal on trial.

"Solving crimes is also important from the point of view of the grief process of the next of kin", says Professor **Helena Ranta** of the University of Helsinki at the World Conference.

Helena Ranta has headed many research groups in forensic medicine around the word, for instance in investigating the causes and manners of death in the massacres that took place in Bosnia-Herzegovina and Kosovo.

She pointed out that she cannot always accept a task. This happens when, for instance, the group is not provided with all of the necessary information that it needs. The samples also need to be transported outside the country for closer analysis and study.

Many different kinds of evidence are needed in the legal process. Very accurate personal identification is possible with the help of an intact DNA sample, so samples are often decisive evidence in a trial. However, environmental conditions can rapidly affect the preservation of a DNA sample.

"It is often hard for journalists to comprehend that not all crimes can be solved through forensic investigations", Ranta pointed out.

Kaisa Salminen

The writer is a journalist from Espoo who writes about technology and economics in a way that a layperson can understand.

Observation about Korea

A list of the high points of the conference would be a long one. I will tell about what was chronologically the first one, as random first impressions are quite revealing.

At the reception of the opening ceremony I noticed a fairly large group of people. Immediately it occurred to me: this is certainly a good event now that the South Korean team has arrived.

It was not until the following day that I noticed in the exhibition that they were supposed to be here because they will organise the next conference.

Independent of this; the South Koreans are everywhere, collecting all information, copying everything worth copying, adding their own ideas, and surprising the world with their innovations.

Kalevi Rantanen

The writer is a science journalist.

An ocean between us

Critical issues to be pondered are something that one always expects from a conference of science journalists. At the Helsinki conference two comments were the most memorable for me, with an entire ocean opening between them.

"The Barents Sea area is developing quickly as the ice melts. Residents of the Arctic Region now have a very exciting future ahead of them." **Thomas Nilsen**, *Barents Observer*

"If the water rises any more, my home country, Samoa, will be left beneath it. Completely." **Cherelle Jackson**, *Pacific Environment Weekly*.

Two comments, two worlds: two lifeboats, but only one of them has oars, water, and a life vest.

What is the headline?

Eeva Pitkälä

The writer is a free-lance science journalist.

Science is not a matter of faith

The most interesting session of the conference concerned the causes and history of denialism.

Participants in the session on the Roots of Denialism talked about climate change, vaccines, HIV, politics, and evolution. The thought-provoking introduction to the topic was given by **Cristine Russell**, a science journalist form the United States, who gave precise instructions on writing scientific copy.

One of Russell's pieces of advice was to avoid the concept of faith, as science cannot be a matter of faith. She advised science writers simply to tell readers what kind of debate takes place on certain controversial topics. The worst mistake would be to act according to traditional journalistic principle and bring in artificial for-and-against views, as this would not benefit anyone. According to Russell, a journalist needs to keep in mind that social, cultural, and political points of view need to be taken into account.

Annu Hattunen

The writer is the managing editor of Aikuiskasvatus – an adult education magazine.

OSMO PEKONEN

Following the ghosts of the Cold War

Freedom of expression is still the most important thing for a journalist!

I am a veteran of the Cold War, born a year before the Berlin Wall was built. My father is a 90-year-old veteran of the Tali-Ihantala battle. He fought for Finnish freedom of speech. Consequently, on Tuesday, June 25th, I was pleased to listen to **Viola Egikova**, a journalist of *Moskovskaya Pravda*, who praised Finland for being the number-one country in freedom of speech in the world, while Russia is no. 148. In the same session we heard about the situations on Croatia, Romania, the Czech Republic, and Hungary. Under communism, the *politruks* were not particularly interested in censoring nature documentaries because they were considered harmless. Critical opinions could occasionally be hidden away even in a weather forecast: "Dark clouds are rising in the east..."

President **Sauli Niinistö's** 97-year-old mother **Hilkka** has lived an even longer life than my father: she was born a subject of Tsar Nicholas II. **Vladimir Putin** met her at the President's residence in Kultaranta on June 25th. Consequently the day was a busy one for **Markku Kangaspuro**, Director of Research at the Aleksanteri Institute. First he was on morning television, then at our congress in the session on the *Role of Media in Russia's Modernisation*, and in the evening, he was on TV1 again.

On Wednesday I listened to **Helena Ranta**, whose job it has been to investigate the massacres in the Balkan region. She was just leaving for Moscow to be interviewed about the Racak massacre of January 15th, 1999, about which Russian Foreign Minister **Sergei Lavrov** had voiced opposing opinions. Forensic pathology has long traditions at the University of Helsinki. After all, Arno Saxén, a Finnish pathologist, had taken part in the Katyn commission in 1943.

Finland made it through the Cold War largely unscathed. Hardly anyone was sent to the gulags. Consequently it was slightly misleading for foreigners, when the stern-faced student theatre actors dressed as Komsomol members ragged us around on "ropes" for a Cold War tram ride. The performance was enjoyable. We met Paavo Nurmi and James Bond. We saw the World Peace statue, the Hotel Torni, and the Russian Embassy. But is it ethical to make light of the Cold War when the suffering of our neighbouring nations was so immense?

Osmo Pekonen

The writer is a versatile veteran science journalist.

Old acquaintances, new networks

In Helsinki, I networked with colleagues from my own country whom I had not met before.

In addition to learning new things, connecting with people was one of the best things that the conference had to offer. I met many people who I had seen before, and many new ones. It seemed downright strange to be face-to-face with many Kenyan colleagues whose by-lines I had read in newspapers, online publications or heard on radio.

In Helsinki I finally managed to meet **Wycliffe Muga**, a managing editor with Kenya's *Star* newspaper and his science pages colleague **John Muchangi**. I also met Journalist **Tabitha Mwangi** and **Ruth Wanjala**, a press officer with the malaria project of the Kenya Medical Research Institute from whom I had received press releases but never met before.

The surprises did not end there. In a seminar on tuberculosis I met two Kenyan scientists, **James Nduba** and **Ann Kaguthi**, who told about their research on the tuberculosis vaccine, and also found time to explain to me in depth the difference between the MDR & XDR strains of the disease.

Some of the Kenyans had travelled with me from Nairobi to Helsinki on the same flight, but for some reason we had not met yet at Nairobi Airport, or on the plane. It was only at the conference, where naturally as Africans we had to chat and get to know one another.

Maina Waruru

The writer is a Kenyan science journalist.

"It was only at the conference, where naturally as Africans we had to chat and get to know one another", Maina Waruru says.

JARI MÄKINEN

CONFERENCE FOLLOWED ONLINE AND IN REAL TIME BY

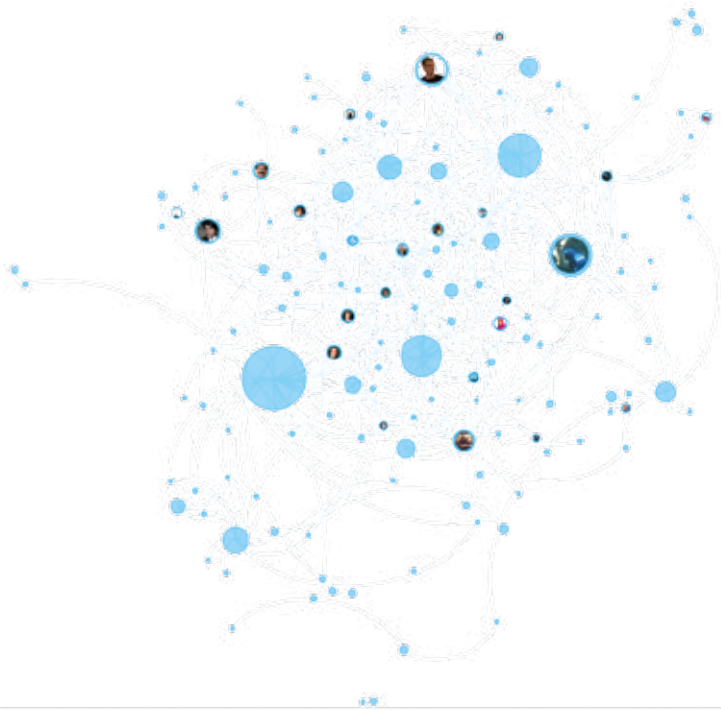
339 367

Physically the 8th World Conference of Science Journalists was held in Helsinki, but the event spread all over our planet via the internet.

The power of the internet came out clearly already in the spring, as the number of registrations shot up as soon as the active updating of the website began at a suitable time in the arrangements. At one point the newsletter was sent to about 3 000 subscribers.

At the time of the conference, the event's own web page worked primarily as an information channel for the pro-

JOUKO KESKI-SÄNTTI



While it was going on, the World Conference had a total of 339 367 active followers around the world. The conference could be seen in the message streams of about a million people.

gramme, as the pictures and experiences of our sunny capital were disseminated in blogs, Facebook updates, and on Twitter to all parts of the world. Messages were sent so enthusiastically that the wireless network at the University was pushed to its limits, and crashed a couple of times; the situation was worst on Monday when the conference guests started arriving on the scene and logged on to the network with all of their devices at the same time. However, we made it through that, even though there was some grumbling in the corridors.

The main presentations and panels of the conference both at the beginning and the end of the ceremony were streamed live on the internet, and through the linked recordings it is still possible to get a feel of the hectic atmosphere (links to the videos in the online publication). Many of our collaborative partners also recorded some of their events for the internet.

Social media gurus were on hand

The value of the social media was recognised already in advance, for which reason it was decided that five enthusiastic science bloggers, updaters, or Twitter-users would be invited to come to the event. About 30 applicants signed up for the open application process, of whom **Teguayco Pinto Cejas** (@ teguayco) from Spain, **Sara Mattar** of Lebanon, **Tamara Dawn Johnson** (@ sciandthecity) from the United States, and **Ruth McAvinia** (@ruthie147), an Irish citizen living in The Netherlands, and Australian **Andrew Wright** (@ligaze), who works in Central America, were chosen.

The last three of these proved to be especially efficient, and it was a pleasure to observe how professionally they worked.

In a class of their own were many speakers, especially gurus in the field who took part in social media presentations and workshops. **Ivan Oransky** (@ ivanoransky), **Connie St Louis** (@ connie_stlouis), **Rose Eveleth** (@roseveleth), **Erin Podolak** (@erinpodolak) and **Bora Zivkovic** (@boraz) shone in a class of their own on the tweet map.

The most popular scientific event in the Twittersphere

Key word statistics of WCSJ2013 reveal that, the conference had a total of 339 367 active followers around the world. The conference was seen in the messaging streams of about a million people.

At the final event in Heureka, the world's first WCS-tweetup was held, with invitations to participants going out in ad-hoc on Twitter. Heureka's **Mikko Myllykoski** (@MikkoMyl) guided about 20 participants on an exclusive tour of the Heureka cellars and back rooms.

In the Twittersphere the conference was the most popular scientific event of the year, and it continues to resonate: even now tweets from the summer are being passed on, attracting comments and references.

Kirsi Matson-Mäkelä (@KirsiMM) has collected a good selection of tweets that communicated the atmosphere of the conference (storify.com/WCSJ2013).

The conference was naturally also present on Facebook (www.facebook.com/wcsj2013) and in Linkedin, although of the two, only Facebook was active. Even more active than the conference's own Facebook page were the closed pages of the participants where the discussion continues to this day. The pages functioned as both a communications channel during the conference, and to help in the networking of the participants. Access to the page was either by invitation, or by requesting membership, and as the page still operates, it is still possible to join (facebook.com/wcsj2013)!

The writer is a science journalist.

TUIJA KÄYHKÖ

NETWORKING,

Science journalists from around the world who gathered in Helsinki felt that the best part of the World Conference of Science Journalists 2013 was the opportunity to meet colleagues. The conference gave fresh thoughts, topics for stories, and energy for daily work.

Ingrid Söderbergh, information officer at Umeå University in Sweden, was in Helsinki to sense new winds of science journalism.

"I wanted to sniff the newest winds of science journalism", says **Ingrid Söderbergh** from Sweden.

She says that she got inspiration and ideas for her work from the lectures and the discussions that she had.

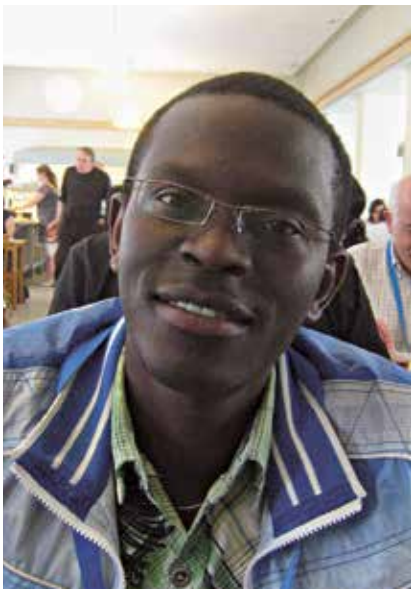
Söderbergh, who works at the University of Umeå, went to the conference at the behest of her superior. In her work as an information officer, she seeks out topics of news linked with science and technology, and drafts press releases.

As with Söderbergh, the gathering in Finland was the first time that **John Muchangi Njiru** from Kenya had been at a World Conference.

After studying science journalism at the Massachusetts Institute of Technology (MIT) the young man now works at the Nairobi-based newspaper *The Star*. He is specialised in environmental and health topics. His newspaper is currently producing a publication on health and the environment under Njiru's guidance. In Helsinki he got many topics for stories.

Njiru is happy about the grant that allowed him to come to Helsinki:

"It was great to get to Finland and to meet journalists from different parts of the world. I learned much, because the standard of science journalism is higher in Europe than it is in Africa. I also got advice on how to strengthen our science journalists' association."



John Njiru, who writes science stories for the Kenyan newspaper The Star, says that three new newspapers have been launched in Nairobi in the past year.

TUIJA KÄYHKÖ

Amber Yang from China followed environmental issues in Helsinki.

Updating information

Amber Yang from China got her visa just a day before her departure and it took her a full 32 hours to get from Chengdu to Helsinki. She works as a science journalist at the *Chengdu Economic Post*.

"In Helsinki I learned about international science development. It interests me", says Yang, who is specialised in health and environmental matters.

"In China air pollution is a huge problem for people. I want to tell people about the possibilities of reducing emissions."

Michele Catanzaro, an Italian freelance journalist who works in Barcelona, came to Helsinki on a grant. He

STIMULATION
and recharging the batteries

has a doctorate in physics at the University of Catalonia.

"I am here to learn about the latest trends in science journalism, and to network", Catanzaro says.

He writes science stories in publications including *El Periodico* and *Natural Physics World* and for local television in Barcelona.

Catanzaro says that he was impressed by discussions that he had with his Finnish colleagues on the welfare state, the Finnish educational system, and the input into research.

Michele Catanzaro, who works in Barcelona, recently received a journalism prize from the Spanish King for is book Networks.

Australian Susannah Elliott spoke on behalf of independent science journalism.

Working for independent science journalism

A seasoned participant at World Conferences, **Susannah Elliot** of Australia, spoke in Helsinki in several panel discussions and sessions.

"It is not enough just to talk. Hard work is needed on behalf of independent science journalism" Elliot says.

She first worked as a cellular biologist, but later started to study journalism and currently runs a science media centre in Adelaide.

Chandra Chekar travelled from the United States to Helsinki with the help of a scholarship. As a freelancer he would not have been able to make the trip.

The Indian-born Checkar, who now lives in the United States, went into science journalism to improve the poor quality of science journalism.

Chekar, who has studied mechanical engineering and computer technology, says that he writes stories involving all branches of science. He also teaches writing at Stanford University.

This was the first time that Chekar attended a World Conference, and Finland was also virtually unknown for him.

"Naturally I knew about **Linus Torvalds** and **Esa-Pekka Salonen**, who are famous in California."

Chandra Chekar travelled from California to Helsinki with the help of a grant.

The writer is a science journalist.

MARJATTA SIHVONEN

ENVIRONMENTAL CRISES AND Who will stop climate change? SCIENCE COMMUNICATIONS

A roller coaster and a spaceship serve as metaphors when experts ponder what kinds of messages are needed to ease climate change.

Knowledge raises emotions. However, not all information is turned into action. European Union science expert **Anne Glover** noticed this after offering her neighbours the possibility to car-pool. In her suburb in Scotland nothing changed; everybody preferred to keep driving their own cars, with no regard to the cost or the ecological footprint.

Glover did not give up. She called on the science journalists from around the world who had gathered in Helsinki to save the world from climate change in the spirit of the Star Ship Enterprise from Star Trek.

Speaking before Glover, **Janne I. Hukkinen**, Professor of Environmental Policy, suggested a roller coaster as a possible conveyance of the future.

The power of upward-moving images

According to Hukkinen, constant economic growth and the primary metaphors that move upward raise positive feelings in us, but growth in GDP that is based on the use of non-renewable resources can no longer continue. News of oil production turning to a final decline causes unpleasant sensations.

"Vertigo. Uncontrolled falling, a tailspin", Hukkinen said, listing emotions caused by messages that speak of the impossibility of perpetual growth.

Primary metaphors are defined in cognitive linguistics as the basic units of thinking and language, which provoke sensory motor reactions. Hukkinen used the concept of affection as an example of a word that provokes a sense of warmth. These sensations have an evolutionary basis. They are immediate feelings that cannot be avoided.

Primary metaphors into journalism?

The question arose among journalists considering travel on the Starship Enterprise, how positive primary metaphors could be used in journalism. Hukkinen raised sports news as an example. However, primary metaphors cannot be used as simple journalistic tools, because communications on environmental crises also involve propaganda.

According to Hukkinen, science communications must, above all, be transparent, and must function on conditions set by democracy.

What can then be done differently from how it has been done so far?

Anne Glover advised researchers to be provocative in their communications.

"Speak a language that a 15-year-old schoolchild can understand. Don't push final solutions: offer alternatives instead."

Cherelle Jackson, Janne Hukkinen, and Anne Glover ponder how to reduce climate change.

Janne Hukkinen's roller coaster model combines two current theories of power: the model of constant economic growth and the theory of an ecologically adaptive circle, which represents newer thinking.

A journalist's responsibility

Personal experiences help Glover understand suspicions felt toward journalists by researchers. Journalists look for causes and effects, and sometimes go through the results of studies to make tendentious interpretations, while researchers love uncertainty.

Listening to Glover and Hukkinen speak were science journalists and science public relations people who are often pitted against each other.

Danish free lance journalist **Gorm Palmgren** would opt out of a trip on the Enterprise.

"Journalists are now being asked for help in implementing the EU's climate polity", Palmgren says. "This is not a journalist's job. We cannot have an agenda, even on questions concerning climate change."

Samoan journalist **Cherelle Jackson** mentioned everyday reality: selling climate change stories is hard because they are dull – even on the Pacific islands which would be affected in the most concrete manner by climate change.

Jackson nevertheless called for authoritative communications which would make climate change research more comprehensible on a general level.

Sharing this view was **Marea Martlew**, who works as head of communications and marketing at the University of Technology, Sydney.

"I certainly recognise the problem of propaganda. But in my work I specifically translate the results of climate researchers into a language that a 15-year-old can understand, and I train researchers to speak about their work in an interesting manner. I do not feel that my profession is a dark side of publicity, as journalists often think", Martlew said.

The writer is a science journalist and a biologist.

The upward-directed metaphor that supports economic growth raises powerful pleasure in people. What kind of an image would help protect the environment?

A rollercoaster to ecological sustainability

Professor Janne Hukkinen developed a model in which the idea of constant economic growth merges with the theory of an ecologically adaptive circle.

"It is not insignificant from the point of view of the environment how and what kind of scientific theories on the relationship between economic development and the environment are presented to the public at large", Professor **Janne Hukkinen** says.

According to Hukkinen, this applies both to what researchers say, and to the way that science journalists write about the results of research.

"World oil production, economic figures and GDP have been rising all the way up to the past few years, as is required by the neoclassical theory of continued economic growth. Continued growth is a powerful image, a metaphor for everything that is good, where people keep moving higher. But we also know that constant growth is impossible. World oil production has already reached its peak."

Hukkinen is looking for a new model for interaction between people and the environment, which would be empirically valid and cognitively desirable, and which would entice people to adopt a new attitude toward economic and environmental crises that are constantly changing.

"Optimism and *joie de vivre* are needed, but at the same time, we need to communicate realistically on the impossibility of continued wasteful use of natural resources and economic growth."

Hukkinen says that he has developed a scientific model in which economic growth is used to strengthen the services of the ecosystem.

He shows a slide with a graph resembling a rollercoaster, and after that, a group of happy people sitting on the ride ready to take a plunge. Hukkinen explains how the picture combines two predominant theories of today: the model of continued economic growth and the ecologically adaptive circle, which represents newer thinking.

"*Joie de vivre* is there, but there is also the message that we are all on the same train, with all carriages linked to one another. Continuous squandering of natural resources and continued economic growth for everyone is impossible. The picture entices people to think differently, doesn't it? "

Eeva Pitkälä

The writer is a free-lance journalist specialised in science and technology.

RAILI LEINO

An erroneous assessment of risk is

Risk and the visualisation of risk were pondered at many sessions of the World Conference. The most stunning cards were put on the table by American risk consultant and former journalist David Ropeik.

"Our risks grow if we fear some things too much or too little. Incorrect risk assessment leads to risky choices, stress, and harmful political decisions", **David Ropeik** thundered.

He was particularly critical of the fear of radiation. He said that the dangers of ionising radiation have been considerably exaggerated. Low levels of radiation are either harmless, or the potential harm is minimal.

To back himself up, Ropeik mentions numerous studies that have been conducted on the survivors of the Hiroshima and Nagasaki bombs – *the hibakusha*.

The hibakusha are people who were less than two kilometres from ground zero, which is the spot directly below where the bombs exploded.

Ropeik emphasises that the research, which has continued for 67 years, spanning three generations, proves that the long-term effects of the atomic bombs were few. Lifetime cancer risk increased by less than one per cent, and the next generation has not been found to suffer from genetic damage.

Many opinions on harm caused by radiation

No consensus exists in the world of science on the dangers of radiation. Some researchers believe that radiation is always harmful. According to a different theory, evolution has made us accustomed to radiation, and small doses of radiation can even advance health.

The hibakusha received a powerful single dose. The situation could be different when the radiation is low, but continuous.

There are areas in the world where background radiation is significant – far above the levels that prevail in Finland, which in turn are significantly higher than in Japan. Not even in powerfully radioactive areas in Turkey or Brazil has the local population been found to be more prone to getting cancer that people living in other areas.

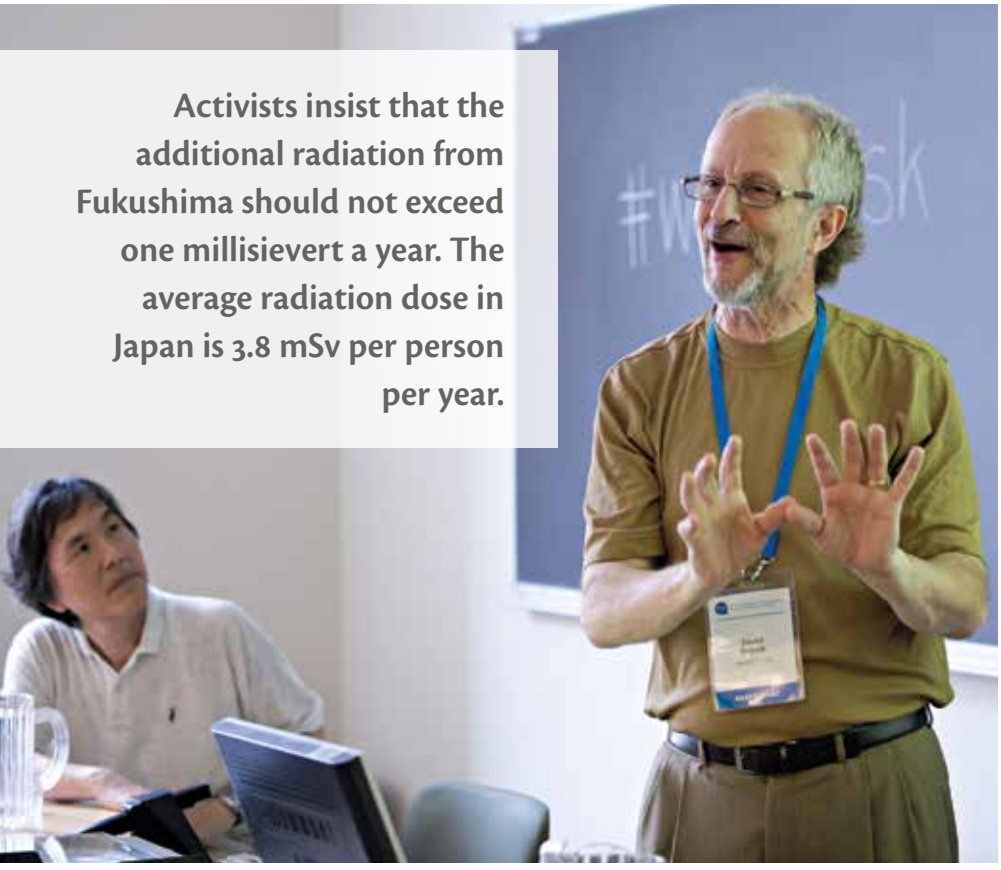
Also interesting is a study published in Finland on reindeer herders in Lapland, who have had more exposure than the rest of the population to radiation from both Soviet nuclear weapons tests and to fallout from Chernobyl. Researchers had expected to see a doubling of cancer cases, but the outcome was the opposite: reindeer herders have cancer less frequently than other Finns do.

The outcome could be the result of factors other than radiation, but at least it proves that radiation has not significantly increased cancer in this case. Ropeik mentions the book *The Rise of Nuclear Fear* by Spencer Weart.

There are understandable factors behind the fear of radiation: the fear of nuclear weapons dating back to the Cold War, the anti-nuclear war movement, atmospheric nuclear tests, and the rise of the modern environmental movement.

We also tend to fear risk factors caused by human action more than natural risk factors.

Activists insist that the additional radiation from Fukushima should not exceed one millisievert a year. The average radiation dose in Japan is 3.8 mSv per person per year.



American risk consultant David Ropeik spoke about the risks of unfounded fear.

A RISK in itself

Reindeer herders affected by fallout from Chernobyl and Soviet nuclear weapons tests suffer cancer less frequently than other people in Finland.

"Nuclear energy is a human product. It is identified with cancer, which is believed to cause severe pain. Radiation is invisible. The fear grows if radiation produces and regulates systems which people mistrust."

The fear is great in the United States and Britain, where there is popular mistrust of officials, and where government is seen more as an enemy than as a friend. In France the situation is calmer. Tours of nuclear power plants used to be a popular summer holiday activity until 9/11.

Cultural factors also matter. We have a tendency to mould our opinions to coincide with those prevailing in the group with which we most strongly identify. This group dictates how we would like society to operate and what kinds of norms we would like to follow.

"Fear of nuclear radiation has caused more severe and expensive safety standards to be imposed on nuclear power than any other form of energy. That is why nuclear power plants have become proportionally more expensive than any other energy sources.

Conservatives lack faith in science

Shawn Otto from the United States noted that science has increasingly become a matter of faith. We do not see microwaves, and we cannot manufacture a smartphone ourselves. We simply need to believe what others say.

Education does not always improve our trust in science – sometimes the opposite is true. Shawn mentions a study conducted in the United States by the Pew Research Center in 2008.

Only 19 per cent of Republicans with a college education believed that climate change caused by humans is a reality. Among Republicans with just a high school education the figure was 31 per cent.

"Education might give people self-confidence and a sense of knowing about things even without a command of the facts."

However, the distortion on the climate change issue only applies to political conservatives. Among Democrats the result is different.

Otto also examined fear of radiation, emphasising that fear of radiation from mobile telephones is irrational.

The energy of radiation is affected by the intensity and frequency. The skin emits much more infrared radiation than a mobile phone sends out microwaves. In addition, the frequency of infrared radiation is a million times greater than that of microwaves. On this basis the heat radiation from skin is much more dangerous than microwave radiation from a mobile phone.

Difficulties of the Fukushima cleanup

Hikino Hajime, the chairman of the Japanese science journalists' association, is also annoyed by the overblown fear of radiation.

"The Japanese insist that there should not be even the most miniscule risk linked with food, energy, vaccinations, medicines, and radiation. However, a zero risk is not a reality in this world."

"People are increasingly afraid of risks, which scientific evidence has shown to be relatively small. At the same time they forget the real and serious risks such as tsunamis, nuclear weapons, or the population explosion."

"When a noodle package has a big red label stating that it does not contain genetically modified products, customers get the impression that genetically modified wheat or rice are dangerous."

According to Hajime, fear is largely an emotional matter, which is hard to dispel through factual information. He visualises the situation with a video showing a glass container that is supposed to contain excrement. None of us would want to drink water from such a container even if it were thoroughly washed first.

"Disproportionate fear of radiation has forced Japanese officials to set such low safety limits for radiation that cleaning the area of the Fukushima nuclear power plant is impossible. There are amazing amounts of junk and trash emitting low-level radiation. Those living further away do not want the waste near them, or vegetables, fish, or firewood from the area."

In April 2011 the government raised the limit for radiation from Fukushima from 1 mSv per year in normal conditions to 20 mSv per year in emergencies. The government's nuclear energy advisor, Professor **Kosako**, resigned to protest that the new limit also applied to children. Many evacuees and activists insisted that the additional dose of radiation from Fukushima must not exceed 1 mSv per year.

The average annual dose of radiation in Japan is 3.8 mSv, which is about the same level as in Finland. However, there are areas in the world where natural background radiation exceeds these limits many times over.

The writer is a journalist for the publication Tekniikka ja talous, and is the deputy chair of the Finnish Association of Science Journalists.

KALEVI RANTANEN

ETHICS OF nuclear energy journalism AS A MISSION

I was prepared to present material on ethics in nuclear energy journalism at the conference. I found plenty of interesting material, even though the concept of ethics of nuclear energy ethics was missing in the programme.

General ethics came up only in the name of the first plenary: *What about Ethics?* There was discussion about vaccinations, which provide a suitable analogy for nuclear power.

Journalist **Ulla Järvi** discussed how the pendulum of public opinion and journalism swings in Finland. In 2009 people lined up to get vaccinations. Soon the wind turned. Many wanted to leave the risks of vaccination to others, while reaping the benefits of herd immunity. Morality in the media was mostly at the same level. By exaggerating the risks of vaccinations they encouraged people to enjoy the free ride.

The same distortion emerges in nuclear energy journalism. There is talk about the risks of nuclear energy, but what is often left unsaid is that nuclear energy would be replaced by fossil fuel, whose negative effects and risks are at least dozens of times greater.

Not in my back yard

The topic of one session was *The Pitfalls of Reporting Nuclear Energy* – with a backdrop of exploding reactors and changing climate. The title itself speaks of the difficulties in balancing communications.

Exploding reactors are a small and at worst a local problem. Emissions from fossil fuels are a big global problem. If a small and a big problem are presented as if they were equal in size, the picture gets distorted and erroneous decisions get made.

The idea of free-riding has also gained popularity in the field of energy: let us have the benefits, let others suffer the harm. Even nuclear-generated electricity is OK if it is produced somewhere far away.

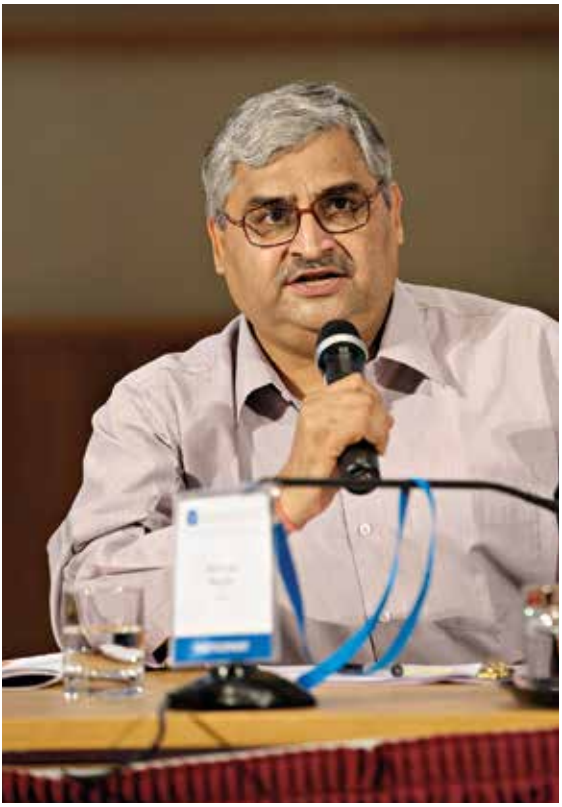
Small good acts as a justification

In addition to the NIMBY attitude there is another moral distortion at work: that of self-licensing. It means that by doing a small good deed, a person unconsciously grants him, or herself a moral licence to behave badly in big matters. The phenomenon has been examined in many sectors, but so far I have not seen any studies related to nuclear energy.

However, at the session on Fukushima, *the Psychology of Risk Perception*, the idea of self-licensing came strongly to mind.

Hikino Hajime described attitudes among the Japanese after the tsunami. The zero-risk syndrome is now a common ailment. The public even opposes biological laboratories of the fourth security class. The same public neverthe-

Ulla Järvi told about how the risks of vaccinations were exaggerated in the media. Is there a similar slant in stories about the risks of nuclear power?



Pallava Bagla from India has written about secretiveness at the construction site of the Kudankulam nuclear power plant, and of the strengthening of NIMBY attitudes in his home country.

Juha Kere pondered what will happen to the boundaries of normality now that people have started to collect more detailed information about their health.

Daniele Fanelli says that fraud in science has not increased.

less approves of gas-fired power plants and internal combustion engines.

Little debate emerged on these questions on the issue – possibly owing to a shortage of time. One of the speakers at the nuclear energy seminar, **Pallava Bagla**, said later in a letter that ethical questions deserve attention. At the same time he sent a letter that he had written in May specifically on the topic of nuclear energy. It told of issues such as secrecy at the construction site of the Kudankulam nuclear power plant, and on the strengthening of NIMBY attitudes, which is a new phenomenon in India.

An excursion to Olkiluoto added to the discussion on ethics at the conference. Thousands of people there are building a nuclear reactor, with massive delays and cost overruns. But they are building it while the critics are content to criticise what others are doing.

The writer is a free-lance science journalist.

The best researchers and engineers are not fact-collecting machines – they are explorers and knights who fight for truth and progress.

Ethics needed in all science journalism

Ethical questions emerged at the conference – occasionally in unexpected places.

Juha Kere mentioned health terrorism in the first plenary.

People start to collect more detailed measurement data on their own health. This useful gathering of information can turn into a moral problem if the boundaries of normality are tightened excessively, pushing people to police the health morality of their fellow humans.

Interesting statistics on the morality of science were presented at the session *Can We Still Trust Science?* **Daniele Fanelli** spoke about his studies, according to which there is no evidence of an increase in fraudulent science over the long term. With all of its shortcomings, science has plenty of moral power.

The ethical structures and psychologies of the sciences are sciences in their own right. They make science communications more interesting. It is impossible to avoid emotions and morality. It needs to be said that good researchers and engineers are more than mere fact-collection machines. They are explorers and adventurers, and also knights fighting for truth and progress.

ANNU HATTUNEN

CUTTING CORNERS

Experts know that simplification increases the visibility of research in the media. In issues affecting the Arctic region journalists and researchers also do balancing acts with minority issues.

Anthropologist **Florian Stammler**, who has studied reindeer herding in Arctic regions, is accustomed to collaborating with the media. In about 2005 there was a clear turning point when natural gas was found in the area. Suddenly there was a need for information about the Arctic, and this currently affects the everyday life of the researcher.

"Jamal, which is the edge of the earth in the Nenets language, is like a cradle of gas", says Sammler, a German.

He was speaking about collaboration with the media at the World Conference of Science Journalists in Helsinki in June.

Gazprom, Russia's largest company and the world's biggest producer of natural gas, started building a gas pipeline in the Jamal Peninsula in 2007. Officially the pipeline was taken into use in 2008. The massive project has since interested the media around the world.

Oil, polar bears, or science

The fate of the local Nenets population has raised questions about the ethics of gas production. Typically the indigenous peoples are depicted as victims of the oil and gas companies.

Markku Heikkilä, Head of Science Communications at the Arctic Centre at the University of Lapland says that there are plenty of stereotypes concerning the Arctic region. It is described either within the framework of science and research, as a stomping ground for the mining industry and oil tankers, or as a place of polar bears and melting ice.

"In reality most of the population in the Arctic region live in cities, such as Murmansk", Heikkilä says.

Energy policy researcher **Hanna Lempinen** of the Arctic Centre says that the point of view of a good story does not heighten issues. Even though reporting is often sensationalistic, energy policy developments are not unambiguously positive or negative.

"Energy also is not mere oil and gas; there are renewable sources of energy, energy savings, and efficiency".

Research and media in symbiosis

Florian Stammler admits that it is easy for a researcher to sympathise with indigenous peoples. It is nevertheless im-

Researchers of the Arctic regions work to find a balance between simplifications required by the media and the dissemination of new information.

PETER PROKOSCH

PETER PROKOSCH

IN RESEARCH

Field travel by researchers into the Arctic regions is often paid for by the media.

Polar bears and receding ice are stereotypical subject matter in depictions of the Arctic regions in the media.

portant to give as balanced a view as possible of the situation. Sometimes it is necessary to cut corners, and even to indulge in journalistic sensationalism to get results into the public eye.

He uses the expression *money shots* to describe a situation in which travel into the field is financed from the budgets of media houses.

The arrangement serves both sides. Arctic research is partly dependent on external funding and for media people who are often short on time, and an experienced researcher is a reliable source of information. When Stammler travels with a journalist, he is also doing his job.

Stammler notes that while an average of 500 people will read a single newspaper article, a BBC documentary will reach anywhere from five to fifty million viewers.

"I think that it is better in any case to work as an assistant to journalists than to go in front of a camera myself".

The writer is the managing editor at the adult education publication Aikuiskasvatus and a professional in the field of adult education.

Florian Stammler spoke at the WCSJ Arctic Seminar wcsj2013.org/crossover-journalism-hot-stuff-arctic/

The BBC documentary Taming a Siberian Reindeer in which Stammler was helping on YouTube.

Look for the invisible stories

US journalist **Rae Ellen Bichell**, who has worked in Finland on a Fulbright scholarship, was interested in fairly typical environment topics when she arrived in Finland: climate, nuclear waste storage, and geological uplift.

"Gradually I started to shake off these stereotypes and to see invisible stories around me."

Bichell has acquainted herself with matters including beetles, microbes, mud, and clouds.

Her advice to journalists studying Arctic topics: forget the stereotypes, read as much background information as possible, don't dramatise.

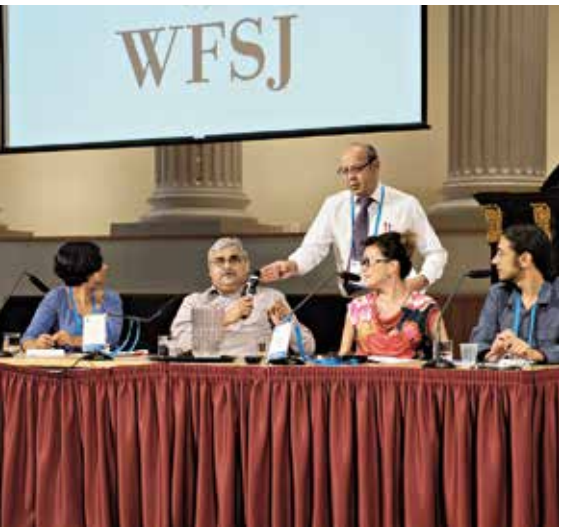
"I have also noticed that people tend to open up more slowly in Finland. In the United States interviewees are ready to offer their comments right away."

Rae Ellen Bichell's blog and her radio programme Hot Air are available on line: raeellenbichell.wordpress.com.

MINNA MALJA

Can a science journalist speak about **TABOOS?**

Taboos of science vary from one country to another. There are equivalencies in the experiences of all science journalists on the handling of critical questions affecting the world of science and society.



Discussing the taboos of science were Ballava Bagla, Veronique Morin, Lucy Calderon, and Mohammed Yahia.

Pallava Bagla from India faced outrage and outright harassment after writing a critical article on climate change.

For instance, the pharmaceutical industry, plant breeding, climate change and nuclear power have been seen as sensitive subjects in different parts of the world.

Speaking at a session on the taboos of science, **Pallava Bagla** of India gave an example from his own work.

Bagla wrote a critical science story on climate change, its research, and its impact on the earth. After the story was published, the camp of opponents became activated and Bagla came under tremendous pressure. There were suspicions that he had falsified facts and selected biased studies as his sources. However, as a skilled science journalist Bagla had secured his rear and written his articles on the basis of independent research, which even climate change deniers are unable to refute.

"In such a situation a journalist easily finds himself alone if he is not backed up by a strong journalistic community", Bagla says.

Praise and repudiation

"The freedom of science journalism has not increased in the past ten years; actually, the reverse is true. There are efforts to muzzle researchers and science journalists", says **Veronique Morin** from Canada.

Morin feels that in medicine and the pharmaceutical industry, for instance, there are potential time bombs that can result in either a massive amount of debate or total silence if taken up.

Inside science itself there are blockers, and on the other hand, the state might want to withhold information – something that happened to Morin with a story on Canadian soldiers. She hit a sensitive spot in society, which brought her both praise and public denials.

"Science journalists are expected to show the courage and intelligence to disclose the other side of science", the Canadian journalist points out.

When science literacy is missing

Lucy Calderon of Guatemala lamented that science stories do not interest the newspapers of her country very much. Not even neutral stories about climate change get accepted because science literacy in the country is weak, and not even being a science journalist is self-evident.

"In our private universities there are brief courses on science journalism, but in state-run universities there is no education in science journalism."

Mohammed Yahia from Egypt agreed with Calderon.

"If a country lacks a tradition of science journalism and if scientific topics do not interest the media, it is very difficult to be a critical science journalist."

"For whom are we supposed to write stories evaluating research and its impact on society? Young people need to be trained for the profession of science journalism, but readers also need to be educated to be more critical."

In the evening session a serious question was put forward: What questions in science are considered taboos right now, and who dares write about them?

The writer is a science journalist.

SINI SILVAN

OPPONENTS OF SCIENCE
And their growing array of devices

What are the reasons for denying the results of scientific research?

The title of the presentation, *The Roots of Denialism*, initially grates at the Finnish journalist's ear. The idea that someone would want to systematically deny the existence of evolution seems strange while standing firmly on bedrock about two billion years old.

But there is no avoiding that systematic anti-science action has become a game with a growing selection of methods thanks to the social media. Scientifically researched phenomena have morphed into matters of faith, with arguments about whether or not smoking really is harmful, if the ozone layer really is becoming thinner, if evolution is true, and if vaccines are dangerous.

"We need to know the ways of alleviating the scepticism", says American science journalist **Curtis Brainard**. He is moderating the session on anti-scientific attitudes.

"There is systematic action behind opposition to science. It has become more skilful and more serious than before."

According to Brainard, denialism is motivated by religious or political consideration, or it is linked with money and culture. The motives also vary from one culture to another.

The politics of evolution

Another American science journalist **Cristine Russell** sees the issues of tobacco, evolution, and climate change denial as specifically American problems. There is also opposition to genetically modified food and vaccinations.

"Lurking in the background is big business and big money, and also ideology."

"Two thirds of the tea party movement reject climate change and the greenhouse effect. Evolution is rejected by a third of Democrats, half of Republicans and two thirds of the tea party movement."

Russell points out that anti-science attitudes increase as the print media and the mainstream media grow weaker.

"Publications have fewer science journalists than before and local issues get more coverage. In the social media opinion trumps fact."

Russell feels that there should be more writing about science. It is also important to choose one's words right. For instance, asking if someone believes in climate change turns the issue of climate change into a question of faith.

Tobacco industry buys opinions

Argentine science journalist **Valeria Roman** feels that in South America denial of the harm caused by tobacco as a phenomenon is even more significant than the rejection of evolution.

Tobacco legislation has been blocked by tobacco companies who bribe researchers and legislators and organise corruption travel for ordinary journalists.

"Only in Uruguay has research affected legislation. With respect to tobacco policy that country is a model for the whole continent."

"The illegality of abortion is another big problem for us. Maternal death is common, because in Argentina 31 illegal abortions are performed for every 1,000 women", Roman observes.

Writer **Colleen Dawson** takes up the problem in South Africa where many have denied the existence of a connection between the HIV virus and the disease AIDS. This problem has been partly overcome.

Thanks to the active input of civic organisations and demonstrations that have been organised, it has been easy for science journalists to start to write about the matter. Today free HIV medicine is available to all South Africans who need it.

The writer is a science journalist specialised in radiation safety and medicine, who produces stories primarily for print publications, television, and radio.

Evolution is denied by a third of American Democrats, half of all Republicans, and two thirds of the tea party movement.

US journalist Curtis Brainard says that opponents of science produce material systematically.

EEVA PITKÄLÄ

VOICES OF REASON in reporting on violence

Mass killings lead to worldwide media storms. What kind of a role could science journalists have in producing accurate information for online publications?

"The news gives a distorted picture about violence against women", says Meri Valkama.

Whenever there is a school shooting, act of terror, or other act of violence targeting the public at large, the scene of the event immediately becomes a focal point of world attention.

A media storm is brews at editorial offices around the world and thousands of journalists race to cover the events.

What is the role that science journalism could have in supplying online publications with appropriate and accurate information?

Fifteen minute, two-source rule

"Being the first is not the same as being right", observes science journalist **Shankar Vedantam**, who reports on crime in the United States.

"At first it is a good idea to examine the work processes of the editorial office. Facts that come in need to be checked with at least two mutually independent sources", Vedantam adds.

"Two sources are not enough. Two mutually independent experts need to give background information on the situation", adds **Meri Valkama**, who works for the Finnish Journalists' Union newspaper *Journalisti*.

"Reporting on the events in Oslo got out of hand even with large media houses. At first papers blamed the bomb that went off in the city on Muslims and al-Qaeda. However, there had already been reports on Twitter and in Facebook about a fair-haired man shooting at young people on the island of Utøya."

Speculation feeds prejudices

Stories about shootings always bring many kinds of speculation on the reasons and motivations for the act. Journalists speculate a great deal on the mental health of the perpetrator. There is talk about autism and schizophrenia.

"These kinds of stories raise unpleasant prejudices toward people who are ill", says **Curtis Brainard**, who has written on the subject.

He is a contributing editor for the online science news of the *Columbia Journalism Review*, and he chairs the session.

"In the United States alone there are more than a million people suffering from schizophrenia, and 99.9 percent of them would never become mass murderers. Where is the one in a thousand?" Vedantam comments.

"The truth is that we simply do not have researched information for profiling."

Researched information in the gun debate

Firearms in the household are a sustained topic which usually arises in

connection with shootings, the panelists say almost with one voice.

"The gun debate easily gets polarised. This can be avoided if guns are seen as a threat to public health", observes Vedantam, who has written about studies on the psychological aspects of mass killings.

In his view journalists should ponder what kind of a risk guns in the home really are. The questions in such a case are empirical, and they can be answered with researched information.

"More useful than condemnation would be to put forward researched information on the actual harm caused by easy access to weapons. In the United States, the number of victims of impulse-driven suicides is significantly greater than those of school shootings", Vedantam adds.

"The facts of mass killings need to be checked on the basis of at least two sources that are independent of each other", says Shankar Vedantam. In a discussion on The Mind of a Killer, panellists discussed the role of science journalists in the reporting of mass killings.

Why does some information spread while some does not?

"Tragedy is always dramatic, but it becomes big news when great malevolence is involved, in which it is possible to imagine that it might happen to one's self", Vedantam ponders.

"People want information on what they fear the most, even though the risk of confronting the object of the fear, for instance the fictional serial killer Hannibal Lecter, is minimal."

Vedantam feels that it is important to keep in mind that mass killings are a very rare form of violence, in spite all of the uproar that they are associated with.

The tone in which a journalist writes the story is also not irrelevant. News items that take up less space are often perceived to be of less importance.

"A good example of this is one of the most serious flaws in Finnish society – violence against women and how it is covered in the news", says Meri Valkama, who has examined research on the subject.

Valkama tells about the shocking results that journalism researcher **Minna Nikunen** got when she examined the way that Finland's four largest newspapers cover murder-suicides.

If the victim is a woman and the perpetrator is her male spouse, the stories are usually mentioned in passing amidst other crime stories. The news value grows if an outsider in the situation is in danger or if a child is at risk of becoming traumatised.

"According to Nikunen, there is never any reflection in the media on the reasons for murder-suicides – this in spite of the fact that from 2005 to 2010 Finnish men have killed 135 current or former female spouses. Finnish school shooters have killed only 18 people in the entire century", Valkama points out.

The writer is a freelance journalist specialised in science and technology.

The panellists were journalists Shankar Vedantam from the United States, Meri Valkama from Finland and Lynne Smit from South Africa. The panel was chaired by the session's producer, Curtis Brainard, the editor of The Observatory, the scientific online news outlet of the Columbia Journalism Review.

Vedantam, who has worked as a science journalist for the online publication of National Public Radio (NPR) has written a book on reporting on violent events, and Meri Valkama wrote an article in the Finnish Journalists' Union publication Journalisti in 2012 on how violence toward women and school shootings are reported in Finland.

AMANDA ALVAREZ

THE BLOGS ARE COMING

Blog networks have grown around the websites of quality publications, churning out pearls of science on Twitter at a fast pace

"My science blogs have become more journalistic than before", says Ed Yong, who blogs for the National Geographic.

Blog networks are published on the websites of magazines such as *Wired*, *Scientific American*, *The Guardian*, and *National Geographic*.

At the summer conference those who have been working long with science blogs described how the blogs emerged, who their readers are, how profitable their blog activities are, and what a person needs to do to become a blogger.

Pepsi boycott brought out talent

"When Pepsi started to sponsor the ScienceBlogs.com pages in 2010, many moved over to our camp in protest", **Betsy Mason** says.

Mason is the editor responsible for the blog network of *Wired*.

The magazine publishes blogs such as **Mary McKennan's** *Superbug* and **Deborah Blum's** *Elemental*.

"Our blog ecosystem is thriving. We constantly get proposals for new blogs", Mason continues.

As many as a third of blog proposals come from outside the United States.

Wired does not supervise the blogs, and draws a clear boundary between blogs and the serious journalism that it publishes. However, Mason says that the reliability of the blogs has improved in recent times.

Breakthrough with a blog

"Blogging is a convenient way to add to a collection of samples of work and to try out different styles of writing", says British science journalist **Ed Yong**.

The prolific writer says that he made his breakthrough with the help of blogging.

Yong says that unconventional and strange stories are suitable for the blog world. His own blog is a laboratory and a playground in which curiosity and the interest engendered by the subject step ahead of the structures and rules created by the editorial office.

In December Yong moved from the blog network of *Discover* magazine to *National Geographic*. Also writing in its new Phenomena blog network are **Virginia Hughes**, **Carl Zimmer**, and **Brian Switek**.

Journalists have started to see blogging as high-quality journalism and not a suspicious marginal phenomenon", Yong points out.

In his view blogs have turned into part of the mainstream of science journalism. Consequently, bloggers need to be vigilant and trustworthy. Yong's own blog style has developed in an increasingly journalistic and responsible direction.

Many kinds of benefits

"We have about 60 writers in our blog network", says **Bora Zivkovic**, a journalist who is responsible for the blogs of Scientific American.

Zivkovic, who wears a shirt with the slogan *The Blogfather*, says that the magazine's bloggers are researchers, journalists, and students of different ages. In addition to freelance writers, the SciAm bloggers also include science illustrators, photographers, and the magazine's own journalists. Writing under the name of a publication that is over 150 years old brings visibility to the writer, and the magazine helps the blogger in editing and legal matters. Some of the bloggers have won science

Blog networks benefit everyone: the publications get new readers and the writers get both exposure and a moderate remuneration for their work.

writing competitions, or have compiled their blogs into book form.

Not for the clicks alone

"Science blogs do not bring us money, but versatile writers and topics improve the science reporting of our newspaper", says **Alok Jha**, producer at *The Guardian*.

The publications are funded through advertising, which means that blogs also need to bring clicks and traffic to the pages. Jha and other speakers on the panel emphasise, however, that the quality of the science blogs is more important than the amount of advertising revenue.

So how does a writer get to join a blog network?

A science journalist will probably first have to have an independent blog for a few years, as Ed Yong did, and then establish his or her own readership. *The Guardian*, *Scientific American*, and *Wired* occasionally seek out new bloggers and new topics, and call on experienced bloggers to get in touch.

The writer is a Finnish-American science journalist who works at the Institute of Molecular Biology in Mainz.

Wired: www.wired.com/wiredscience/category/science-blogs
National Geographic Phenomena: phenomena.nationalgeographic.com
Scientific American: blogs.scientificamerican.com
Guardian: www.theguardian.com/science-blogs

All noteworthy publications already have their own science blogs. In the picture is Betsy Mason, who is responsible for the blog network of Wired, science blogger Ed Yong, and Alak Jha and Bora Zikovic (above), blog producers for The Guardian and Scientific American.

Aok Jha says that The Guardian's science blogs do not make money but they expand the newspaper's selection of topics.

Betsy Mason says that Wired constantly gets proposals for new blogs.

WITH BRANDING AND SKILL

Promising young figures in science journalism work on the internet and in networks.

ANNU KEKÄLÄINEN

They are ambitious American women. They believe in their story and in their brands.

"A good story is always a good story. A source is still a source. And journalism is still journalism", **Rose Eveleth** says.

"What we do does not fundamentally differ from print journalism."

Eveleth is a freelance producer and writer under the age of 30. She chairs the panel on the "Killer" Science Journalists of the Future which was convened by **Bora Zivkovic**, blog editor at *The Scientific American* magazine.

Zivkovic brings **Erin Podolak**, **Lena Groeger**, and **Kathleen Raven** to the stage to join Eveleth.

"Do what you know best and let the others take care of the rest." Erin Podolak

All of the women have a command of several different media and have a conspicuous presence on the internet. They brand themselves quite deliberately and effectively, and this session is also a part of establishing a brand.

Zivkovic explains her choices for speaker by pointing out that the upheaval in journalism began in the United States, which is where the new ways of producing journalism have moved the furthest.

Networks are in, competition is out

The session invites its audience into the ambitious core of new American science journalism. From there, via tweets, blogs, and various internet applications we attain the old values of American journalism: good stories and good writing. And doing good work is also talked about.

But let's rewind to the beginning of the panel and Erin Podolak's introduction.

Podolak sees herself as the only person in the world who wanted to be a science journalist ever since she was a child. At the moment she is working as a writer at the Dana-Farber Cancer Institute.

When finding a job after graduation was hard, Podolok worked without pay at journalism and learned new skills.

"My relationship with writing is passionate, but I don't like coding, for instance. For that, I go to my networks for help."

In Podolak's view, each journalist should do only that which he or she does best. She has understood that it is pointless to compete with other journalists: it is better to network with them.

Erin Podolak worked without pay to learn journalism.

"We will do all we can to bring an evildoer to justice, for example." Lena Groeger

Science journalist, designer, and developer Lena Groeger works for The New York Times, and other publications.

"You need to do beautiful things together."

Significant content

"We create materials that are beneficial for readers", says Lena Groeger, who is up next to describe the principle of her ProPublica community.

The working community of young multitalented people produces graphics and applications and other services for *The New York Times*.

Groeger defines herself as a science journalist-designer-developer. She says that she aims at content with meaning both from a social point of view and for individual readers.

The whole, which is published in the online version of *The New York Times*, makes use of big data, and reports on the strengths and weaknesses of different homes for the elderly, and lists the residents who have fled them. With its help readers can look for the best care facilities for their loved ones.

Also based on big data is a story that thoroughly investigates the costs of health care in the United States, and invites the readers to compare the prices of treatments that they have received with those of other Americans.

Fearless tweeter

The fourth hope of American science journalism, Kathleen Rave, gets a laugh from the audience. She tells about a 90-year-old friend who wondered what a young person like Raven could have to say to the participants at WCSJ.

"I have moved forward in my career thanks to my fearlessness and my tweets", Raven discloses.

"At first I didn't like Twitter, but now I tweet every day and I tag experts in different fields. We help each other."

A freelance writer on science and health issues, she also masters video production, and she and her boyfriend own excellent cameras and editing equipment.

Which generation's story is the best?

When moderator Rose Eveleth, opened the panel about an hour ago she asked the audience of more than 100 people to raise their hands to show if they are at the beginning, middle, or end of their careers.

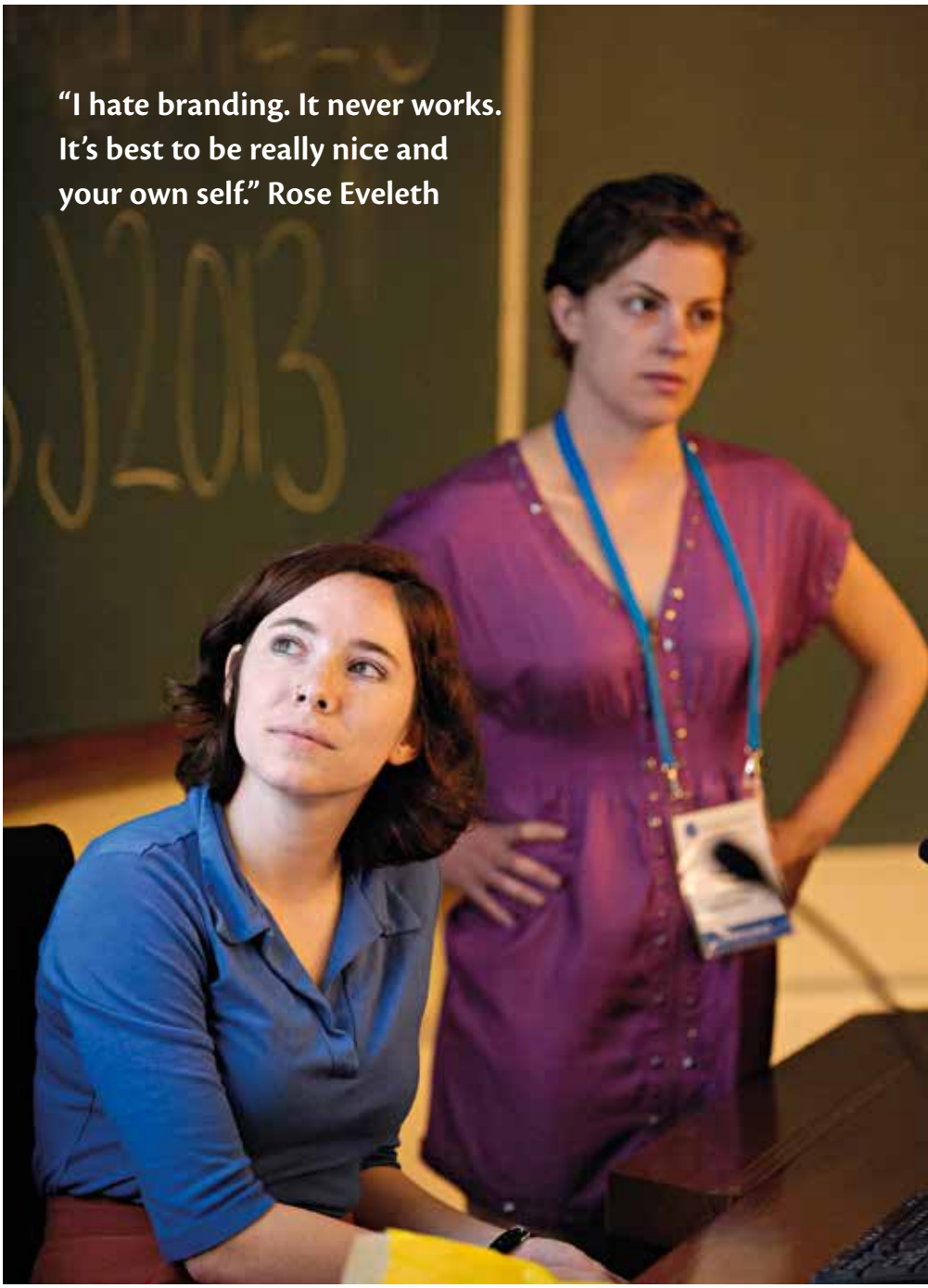
The greatest number of hands was for those who were in mid-career, and as soon as the young promising talent had gone silent, the middle-aged break out into questions.

"Is it possible that the abundant use of graphics and big data might hinder communications more than promote it?"

"Is video dead as a medium?"

"Am I some kind of semi-journalist since I lack all technical skills required for new journalism?"

The young journalists answer cautiously, although Erin Podlak does confirm that all employers that she knows are looking for multitalented people.



Rose Eveleth feels that the same quality criteria that apply to print journalism also apply to online journalism. Standing in the background is Kathleen Raven.

The last question in this story is from **Deborah Blom**, a middle-aged professor of journalism at the University of Wisconsin – Madison, who once taught Podolak. Blom wants to know how an appealing science story should be told in the new journalism.

"You have spoken about this and that, but tell me how you would beat our generation as storytellers."

HEIKKI KUUTTI

Data journalists looking for the BIG PICTURE

The governments of many countries have recently made their public data reserves available for the public to use. This establishes excellent conditions for the development of data journalism.

Data journalism has a special significance in the implementation of democracy and in establishing transparency in the activities of officials.

HEIKKI KUUTTI

"Data journalists would do well to cooperate with computer experts", says researcher Duncan Campbell.

The source material of data journalism is a massive collection of digital data. In journalistic work information is combined and analysed on spreadsheet and database software, and new kinds of data wholes are established. The computer-based analysis of data reveals dimensions which might not emerge from the data on the basis of manual examination.

Key issues for the development of data journalism have been moves by the governments of various countries to open their public data reserves to public use. International and national open data movements, for their part, have helped advance the emergence of a more open atmosphere. Models of data journalism are also expanding from traditional news work into important parts of science journalists' work.

The possibilities offered by data journalism came out in one of the sessions of the conference called *Data explored. The code that underpins the future of journalism.* Introducing the session, British investigative journalist *Duncan Campbell* spoke strongly in favour of data journalism.

Even though human sources are also needed in data journalism, Campbell feels that each story requires at least 90 percent document-based content to verify the accuracy of the information. Fact-based analysis and the numerical and other data information improve the reliability of the stories and all journalistic activity. Computer-based analysis also speeds up editorial work and brings a new dynamism to publishing.

Going for the big picture

Data journalists try to see the forest for the trees. They seek out the big picture by visualising broad complexes of issues on the basis of individual items of information. Analysis helps, for instance, in establishing the origins of the matter being investigated, ascertaining who are in the background and what their activities are, or investigating the use of money. What is important is finding the necessary data material and the utilisation of various computer-based software tools in the analysis of the data.

Editorial offices' story projects so far have shown that data journalism practices can bring considerable added value to traditional editorial work. Data-based materials offer new possibilities for analysing collected information and direct journalistic data acquisition toward the precise clarification of questions raised by the results of the analysis.

On the side of democracy

Data journalism also has its own special significance in the implementation of democracy and in establishing transparency in the activities of officials. Analysis has shone light on, for example, certain regular patterns, dependencies, and linkages in official plans and decisions that would not have been revealed on the basis of disconnected pieces of information.

In addition, conclusions drawn by journalists have been persuasive. Ba-

sically, data does not lie or keep anything a secret if it has been saved properly and is regularly updated.

Data journalism allows journalists greater expertise than before, and through that, better founded interpretations on matters that have been researched. The interpretations are made more credible by the fact that the material that forms the basis of the stories is often available on line for public examination.

Journalists need a clear direction

Campbell emphasises that a journalist who acquires data material must have sufficient knowledge of the subject matter and the data material that is required and that which is available.

The cost of data material is a problem for some media houses. Although the material is official information available to the public, authorities have outsourced the maintenance of their databases and registers to commercial operators which can put a price on relinquishing their own services and information.

"With respect to their ethical requirements, activities of data journalism did not differ much from other types of journalism. What is significant is that information that is acquired and published must be sufficiently accurate. The need to publish information linked with people's private lives must be evaluated with respect to the overall importance of the information, as is the case in all journalism", Campbell says.

Campbell emphasises that not all journalists necessarily have the essential skills in data technology that data journalism requires. In practice the work requires collaboration with programmers and other computer experts. However, it is the task of the individual journalist to know what he or she wants to say with the help of the analysed material.

The writer is a PhD and a researcher in Journalism at the University of Jyväskylä. He has previously worked as a journalist, a chief information officer, and a communications entrepreneur.

HEIKKI KUUTTI

Is a science journalist an independent journalist?

Media houses are cutting back on staff and the market for freelance journalists is getting crowded with new players in the field. How independent can a science journalist actually be?

At the session on *Wearing Many Hats* moderated by Dutch communications consultant **Peter Vermij**, participants were allowed to evaluate the ethics of their own activities by choosing sides in an imagined scenario. The starting point was an international online survey that Vermij had recently conducted.

Comments from nearly 400 responders in 53 countries revealed that the distinction between science journalism and disseminating science information had become less clear than before. Public confidence in science communications hangs in the balance when media houses that see themselves as independent directly copy information material produced by universities and research institutes, and increasing numbers of science journalists and freelancers serve as double agents of sorts by working as consultants, or in PR work in research organisations in the public or private sector.

Many science journalists work actively in fields on which they are expected to write stories in the press. The activity lacks clear ethical rules on matters such as the payment of fees, free travel, and accepting gifts.

It is possible to ask, for instance, to what an extent a journalist reporting on climate change can be trusted if that journalist is also working with outside funding from an organisation that studies the phenomenon. Or how critically can a journalist evaluate a study that he or she feels has not been implemented to a sufficient degree of quality?

Half of journalists surveyed have conflicts of interest

Half of the respondents to Vermij's survey had experiences of potential conflicts of interest concerning their work. The respondents were also split on whether or not they would be willing to disclose to their readers free travel connected with the story, or if they would interview their own client for a story. A clear majority of respondents would use a free ticket acquired

Media outlets copy information put out by research institutes verbatim and freelance science journalists increasingly operate as double agents.

HEIKKI KUUTTI

At a session moderated by Dutch communications consultant Peter Vermij (rear) speakers included US science journalist Anne Sasso, German Freelance journalist Kai Kupfersmidt, and Dutch science journalist Hans van Maanen.

Science journalists on a salary are clearly more bound to ethical operations models than freelancers.

at a press conference to attend a popular concert.

The respondents' evaluations of their own impartiality are affected considerably by their job description, the economic environment of their activity, and what kinds of journalistic operational models they are accustomed to.

In the survey, the emergence of various conflicts of interest was seen as inevitable. For instance, media houses are less willing than before to pay for a freelance journalist's travel costs and other expenses for doing a story. In addition, subjects of stories might pressure freelance journalists to publish their PR material unchanged, as if it were produced by the freelancer him, or herself.

In some responses there were also warnings that outside parties should not interfere with the work of science journalists through the use of "Taleban-like" regulation.

Money is the key

Money has a considerable effect on a journalist's own independence and the scope of that independence, because "journalists also have to eat and pay bills", as one respondent pointed out.

Science journalists are enticed to take part in PR projects by earnings that exceed those of traditional journalism. There is also some significance in whether or not a journalist is employed full time by a media house, or if he or she is a freelancer competing on the open market for stories. Journalists with a fixed job are bound by considerably more stringent ethical standards, and the ethical models of activity are more familiar to science journalists with a journalistic background than among those who came from a background in research before later moving over to journalism.

One factor making it harder for journalists to evaluate their own independence is that not all media houses have principles concerning problem situations. One solution could be to make the transparency of a journalist's own activities part of his or her professional identity.

Different roles can be combined

American science journalist **Anne Sasso** voiced the view that science journalists can combine different roles if the boundaries of those roles are sufficiently clear.

The boundaries could be clarified both within the journalist's own area of activities and in the use of personal sources: stories should not be written in an area in which the journalist is an active player. Correspondingly in the use of sources, a journalist should keep information officers of organisations separate from personal friends, and friends should not be utilised as potential sources for a story.

Journalists would also do well to ask for help in evaluating their own impartiality. A good evaluator would be a journalist's own supervisor, or the managing editor who commissioned the story.

RAILI LEINO

"YOU

According to Anne Glover, the right kind of information comes out best in direct discussions, but the EU's scientific advisor does not boycott the media.

Anne Glover, the scientific advisor of European Commission President **Jose Manuel Barroso** likes to speak to people face-to-face. She is not as fond of interviews.

"You never know what comes out in them", Glover says.

At the moment Glover is especially upset with a BBC journalist who asked her for an interview of a few minutes for television. When the story came out the original question was replaced by a question that had been recorded in the studio which, in Glover's opinion, put her answer in the wrong context.

Nevertheless, Glover does not plan to boycott the BBC – not even the journalist who pulled the questionable stunt.

Live discussions are the best way for researchers to communicate with citizens, in Glover's opinion. Journalists are also needed if a researcher is to reach a broader audience.

Media distorts climate issues

Glover's favourite topics include genetic manipulation and climate change, a topic that she spoke about at the World Conference of Science Journalists.

The EU's Chief Scientific Adviser Anne Glover was angered by a BBC journalist who distorted a statement that she had made.

In Glover's opinion, climate change is a fact on which there is no doubt or dispute in the scientific world, even though it is possible to get such an impression from following the media.

Sceptics get attention in the media, even though more than 99 percent of researchers are of the same opinion as the Intergovernmental Panel on Climate Change, which is composed of 6000 scientists.

Small details in which mistakes may have been made have attracted unmerited attention. One example is the question about how fast the glaciers of the Himalayas are melting. These details do not alter the overall picture.

"Would you step in a car if you know that it has a 70 per cent chance of being involved in a serious accident during the ride?" Glover asked during the panel discussion.

No hands went up.

"So why do people take it lightly that there is a 70 percent likelihood that climate change caused by humans will have very serious consequences in the future? Why do so many people say that this means that there is a 30 percent chance that this will not happen?"

The writer is a journalist for the publication "Tekniikka ja talous" and Vice Chair of the Finnish Association of Science Journalists.

Dreaming of a network of European science ministers

The EU did not have a science advisor before **Anne Glover** started as advisor to Commission President **Jose Manuel Barroso** in January 2012. Her term runs out when Barroso's does in 2014.

"I don't think that I want a second term. It's better for officeholders to change. I have my own topics of interest, and my successor will have his or her own", Glover says.

She is Professor of Microbiology at the University of Aberdeen. Glover dreams about a pan-European network of scientific advisors and ministers of science who would communicate with each other.

RIITTA TIRRONEN

The story

Stories are the cement that keeps the different phases of an investigative process together.

"It is a good idea to write a hypothesis of a few sentences. It shows what a story does and does not tell", Mark Lee Hunter explains.

RIITTA TIRRONEN

Can science journalists utilise the working methods of investigative journalism in their work? Mark Lee Hunter, a guru in the field and a developer of investigative journalism, convinced the participants in his workshop that they can, and should be utilised.

"Skills from investigative journalism make journalists stronger. They can investigate the backgrounds and the course of events on their own. No one else needs to teach them that", said **Mark Lee Hunter**, offering encouragement to participants in his workshop.

"At the same time the journalist will understand the world in a new and deeper way."

Hunter is an award-winning journalist and journalism researcher who currently works as an Adjunct Professor at the Social Innovation Centre of the INSEAD Business School in Paris.

He feels that it is possible to overcome the crisis in the field of media and in journalism by developing the journalistic work process and by advancing the working methods of investigative journalism.

"Justify your work"

"The traditional news media have constantly been losing credibility in the eyes of the public. For instance, in the United States, the medium that is seen as the most reliable, CNN, saw its reliability rating fall from 42 percent to 28 percent between 1998 and 2008. Media companies whose journalists are good at background research are appreciated and influential. This makes it easier for their journalists to gain access to sources of information. At best, this can improve the result of the company"

In Hunter's view journalists nowadays are surprisingly interested in what kind of added value their work has for employers.

"Journalists should learn to justify why they need to make efforts in their work and why they need time to achieve a high-quality outcome."

"Investigative journalism is an invest-

"Investigative journalism is an investment. We need to explain why the investment is worth it."

and the hypothesis make the article

ment. We need to explain why the investment is worth it."

Hypothesis is the foundation of a story

Hunter feels that honing the journalistic working process reduces mistakes and ultimately cuts the amount of time spent on writing a story. In recent years he and his colleagues have developed investigative journalism based on telling stories, which he also calls hypothesis-based investigative journalism.

"Stories are the cement that keeps the different phases of the investigative process together, from the research work all the way to the writing and the publishing."

"By hypothesis I mean that the story is just an assumption until it is confirmed. A hypothesis can be written as two or three sentences. It contains the information on the subject that the journalist has at that moment that needs confirmation. The hypothesis also defines what the story does not cover", Hunter says, explaining his concepts.

"A hypothesis is a conclusion that can be either completely or partly true or untrue. So as not to be trapped into the initial hypothesis, it should be reformed as the work progresses in such a way that each element that is linked with it can be verified separately."

At his conference workshop Hunter challenged participants to ponder, in light of the examples, how to move forward on the basis of the story and the hypothesis.

The story is not necessarily what it appears to be at first. Therefore it is a good idea to calm down and take the time to collect facts and to confirm information before drawing conclusions and writing the final story.

Through open doors first

So where does a journalist find information and how can it be verified?

"Generally a journalist's first reaction is to grab the telephone and start making calls."

"Don't do that. Instead, acquaint yourself with material that is already available. Go to a library, study statistics and research. Don't ask the people you are interviewing things that you can find out somewhere else – unless you want to find out if an interviewee is lying to you", Hunter explains.

Information sources form a village for journalists, with open and closed doors in it. It is best to first go to the open doors – that is, to find out what sources, topic areas, and details have information available. Open doors also tend to be gateways to the next sources of information.

Hunter urges science journalists to focus on a few topic areas of their choosing, and to learn the language of the fields in question.

"Science journalists need to devote part of their lives to the study of certain topics and branches of science. It is good to see this familiarisation as richness, also for one's own life."

"When you familiarise yourself as a journalist with a new topic, you step into another world, in which the language is initially foreign. Learn the language, and you can be on an equal footing with your interviewee", Hunter says.

Mark Hunter has worked as an investigative reporter in the United States and France. He has researched journalism and has been a teacher and consultant for journalists. He is a founding member of the Global Investigative Journalism Network which was set up in 2003. He has been awarded for his work as a journalist and journalism researcher. From the beginning of the century Hunter has served as an Adjunct Professor at the Social Innovation Centre of the INSEAD Business School in Paris.

The writer is Communications Manager at the Academy of Finland.

A work by Hunter and his partners introducing story-based inquiry in investigative journalism was published in several languages with the support of UNESCO. It can be downloaded for free on the internet.

Story-Based Inquiry: A manual for investigative journalists markleehunter.free.fr/documents/SBI_english.pdf

Story-Based Inquiry Associates storybasedinquiry.com

WCSJ2013 presentations of the workshop on investigative journalism: wcsj2013.org/investigative-journalism-sciencejournalism/

RIITTA TIRRONEN

Sources of information form a village for a journalist. The houses of the villages have open and closed doors.

Advice for dealing with the gloom of FEATURE WRITING

ANNU KEKÄLÄINEN

The torment and the rewards of writing a story were discussed at a packed session on narrative journalism.

"We will need a much larger lecture hall the next time."
Alok Jha

"If writing the story isn't difficult, you're doing something wrong", laughs **Alok Jha.**

He is a producer for the newspaper *The Guardian* and the moderator of the session of Narrative in Science Writing.

Freelance writers **Mary McKenna** and **Ed Yong** and **Helen Pearson**, feature editor of *Nature* magazine are all pleased.

More than 100 people are packed into the small lecture hall. Perspiration beads up, even though the windows and doors are open, as we lean forward in the direction of the journalists who have established reputations for themselves with their science stories.

Let's hear their advice on how to survive the anguish of writing a story.

Make time and get to know your characters

"Time is decisive, and I don't mean the time of the story – I mean the time needed to do the job", Mary McKenna says.

Without a good protagonist there is no good story. A writer needs plenty of time for seeking out characters and getting to know them.

"Visit with your characters in places that are important to them. Ask the same questions five times. You will always get a different answer", the US journalist and non-fiction writer explains.

Help your interviewee relax

"I meet my interviewees face to face. I tell them something about myself and ask the easy questions first", Helen Pearson says, describing her interview technique.

Ed Yong, who writes for Pearson and for *Nature* magazine, among others, takes his interviewees away from their workplaces, walks with them, or interviews two people at one time.

He also asks abstract questions which disengage people from their routines.

Be topical

"We publish a certain amount of meat-and-potatoes stories. They have an especially topical and important subject, but the story is missing", Helen Pearson says.

She recalls the foundations of narration: a story consists of events happening in time.

Pearson likes good stories so much that she does all that she can to find a hook of topicality even for non-topical subjects if she sees a seed for a good story in them.

Remember that flow and structure of a text are different things

"The most difficult thing in writing is finding the structure", notes Ed Yong.

At first he took great pains with transitions and flow on the surface level. He sees this kind of honing of the microstructure as a besetting sin of a beginning writer, even though the macrostructure of the text is decisive.

Skilfully constructed text can withstand great leaps in time, space, and levels of abstraction.

Yong gives an example of his feature on grasshoppers, which is based on variation between close-ups and full-length portraits.

The story begins with a solitary entomologist with a microscope. From there we move to examine entomology from the perspective of hundreds of years, until we zoom back to the protagonist.

Reward your readers with sufficient frequency

"Six thousand characters is not the same as two times three thousand characters", Ed Yong observes.

"I have learned to write with the help of my editors."
Helen Pearson

And Mary McKenna explains that in a long text the reader needs to be rewarded at the end of each phase. Otherwise he or she will stop reading.

A suitable reward could be a good quotation, for instance.

Start from an easy part, focus on sensory perception

Writing the beginning of the story is often difficult, and Mary McKenna will move on to the middle of the story if the beginning does not come about right away.

She often starts her features with sensory perceptions that bring the reader into a situation with a description of what a room smells and looks like, for instance.

Move the piano across the room

"In the dark place of a feature, when you have collected a tremendous amount of material and you no longer have any idea what you want to say with it, go back to the first e-mail that you wrote about your topic", Helen Pearson suggests.

Ed Yong says that when writing seems impossible, he will sleep a night and look at it the next day.

Mary McKenna describes her own technique, which she learned from an old drama teacher:

"When you don't know what to do with your opposite player, move the piano to the other side of the room: use the other half of your brain, do something completely different."

Read the edited texts carefully

"Editing makes us better writers", Helen Pearson says.

"I have learned to write with the help of my editors."

Ed Yong nods and explains enthusiastically how he once got a return mail form Pearson in which she wrote that the text needs only minimal change.

Ask for the dog's name

Sensory perception and detail and vigour in description are important elements of a good story, as are fitting details.

"Always remember to ask for the dog's name", Mary McKenna laughs.

Don't latch on

"You can plan in advance, but leave room for things just to happen", McKenna says. Let the fortuitous coincidences write!

Becoming a good writer through reading

All reading teaches a writer. It is OK to read writers' guides as well.

Mary McKenna's favourite is **Anne Lamott's** ingenious writer's guide *Bird by Bird, Some Instructions on Writing and Life* (Anchor Books, 1994).

Ed Yong recommends Nieman's pages, where accomplished writers dissect and analyse their texts www.nieman-storyboard.org/category/whys-this-so-good/

Helen Pearson studies to write better by reading *The New Yorker.*

"If the first sentence does not reveal everything, the reader will keep reading." Mary McKenna

"When the structure of a text is planned well, it becomes one of the forms of expression."
Ed Yong

MINNA MERILÄINEN-TENHU

Professors on stage

A press release is not enough

LINDA TAMMISTO, HELSINGIN YLIOPISTO

Researchers met with science journalists at the Science Corner throughout the duration of the conference.

Professors Toivonen and Vesala like to appear before different kinds of audiences.

Timo Vesala found a beautiful wind and its soul during the WCSJ week, and Hannu Toivonen (in the picture) described his software for composing music while asleep.

Timo Vesala rises to the stage, sits down, and smiles. There is a screen behind, him, a mouse in his hand, and an audience in front.

"Come closer", Vesala says. "There is too much light, and you won't see my film clips otherwise."

Thus begins a presentation by Timo Vesala, Professor of Meteorology, at the University of Helsinki's Science Corner on the last full day of sessions at the World Conference of Science Journalists.

Vesala uses the film clips to describe weather phenomena.

Buster Keaton falls down, and whirlwinds and turbulence are explained.

At the final event at the Heureka Science Centre that same evening Vesala talks about atmospheric phenomena using his *Science on a Sphere*. The topic had been discussed in the previous week at a scientists' lunch in the Viola Restaurant in the Kaisaniemi Botanical Garden.

The audience was different on the various days, and Vesala was accompanied by younger researcher colleagues, as was the case with **Hannu Toivonen**, Professor of Computer Science on Monday on the workshop day of the conference.

Basic research is hard to illustrate

At this point student **Tuomas Sivula** used a hammock in the foyer of the Porthania building to show how software for composing music during sleep works. Toivonen, for his part, stood at the Science Corner discussing the background of his research work.

There was much talk, but there were few journalists in the audience.

"I like the operational model of the Science Corner, and I was happy to do a demo of our work and to talk about it", Toivonen says later.

"However, it is difficult to present our serious basic research in an interesting manner even though I consider it to be the most important."

Obligation of societal interaction

Science has undeniably been made public always, ever since the theses of Martin Luther, but the University Act of 2010 puts particular emphasis on the obligation of Finnish universities to engage in interaction with society.

"Press releases can attract much attention", Vesala says.

Toivonen also has good experiences from press releases. Both professors feel that appearing before different kinds of audiences is still part of a researcher's work. Preparations take their time, but meeting the audience also feels pleasant.

"When doing research one becomes familiar with communication among colleagues, but I have not had much practice in popularisation. The professional skill of information officers and science journalists is important for popularisation", Toivonen says.

"As a researcher I naturally hope that my work would also be important for people who are not researchers themselves."

The University of Helsinki was the main sponsor, and venue, of the WCSJ Helsinki 2013. The university is constantly looking for new ways to tell about research, the researchers, and the ways of conducting research. The Science Corner will operate in Porthania through the end of 2013, when it will return to Aleksanterinkatu. From 16 September the theme will be the world order of the future.

The writer is the Press Officer of the University of Helsinki

DREAM OF A DOCUMENTARY

The World Conference offered tips for wannabe science documentary producers – me included.

SINI SILVAN

The convener of the documentary workshop, Italian science journalist **Chiara Palmerini**, introduced the subject, but it was a Finn, **Pasi Toiviainen**, who stole the show. His resilience was convincing.

"I am the wrong person to speak, because I am a journalist with a mission", Toiviainen said.

In 1988 he experienced an awakening on the issue of climate change, walked away from his career as an architect, and set his sights on documentary production. His climate documentary, *The Venus Theory*, took three years of background work and arranging the funding. The documentary itself was produced in six months.

"Make sure that you're born in an English-speaking country. If you happen to come from somewhere else, try to be exotic", Toiviainen suggested.

He urged people to network, to get to know the right people, and to acquire an independent producer.

"The Finnish Broadcasting Company (YLE) rejected my project. I was urged to leave the film to the big boys. I was told that the BBC has the resources and that my experiences were limited to four-minute inserts, and that I am an architect. I got a friend with whom I play football to be the producer."

"Develop your ideas so that they are ready", Valentine Kass says.

Finally Toiviainen got a programme slot on the *YLE Teema* channel. He got it in a roundabout way. Toiviainen spoke to the appropriate people at the appropriate moment when the right people had repeatedly turned him down.

"I did things my own way, low-key, slowly, and with concentration. I made many mistakes, but the process led to an award-winning result. By making things small I communicated that decisions with respect to the climate need to be made in everyday life."

Making pearls by honing an idea

Programme director **Valentine Kass** from the National Science Foundation in the United States told a story from her country. The story also suggests that a documentary producer's most important characteristic is resilience.

Kass spoke about a professor who had written a ten-volume series of books on

Producer Valentine Kass and director Pasi Toiviainen see tenacity as principal characteristics for documentary makers.

Pasi Toiviainen believed in himself. The architect's climate documentary became a worldwide success.

materials science. The professor wanted to produce a ten-part television series on the topic one-to-one.

Kass said that it would not work. Although the topic interested Kass, she felt that the approach was boring.

It was not until the professor had honed the topic for three years that a supporting scheme was found for the idea of a series of stories about materials science. The key themes that came out were: stronger, smaller, smarter, and cleaner.

The video clip that Kass showed was not lacking for speed, or dangerous situations. The programme includes a dive among sharks to investigate the antibacterial structure of their skin, which is imitated in a laboratory.

I mainly sighed. Does everything have to be the same kind of entertaining fluff?

"Do your homework, develop your ideas so that they are ready, and think about your audience", Kass says, advising us wannabe documentary filmmakers.

"Move forward slowly to the questions: what kind of a story is it? What is your own approach? Why do you specifically have to do this particular documentary?"

"Create a protect team. Think about where your documentary will be shown. Will it be local television, for instance, or the internet?" Kass added.

The internet is a possibility

Film and television reach a limited public, and producing for them is expensive and painstaking, but the internet opens up the world.

American radio producer **Sue Ellen McCann** feels that documentary makers should think of the whole: produce something for radio, something for the internet, use graphics and maps, give background information.

"The internet is an opportunity, not an obstacle. The internet has massive and cheap distribution possibilities", says McCann, who works for the radio station KQED.

Good teasers sell

Julianna Photopolous of the British Broadcasting Corporation spoke about the strength of teasers and trailers. She is a researcher for the BBC's natural history unit, a science writer, and a filmmaker.

A director would do well to produce a film a few minutes long with which to sell his or her documentary idea.

"I did things slowly, and with concentration. I made many mistakes, but the process led to an award-winning result" Pasi Toiviainen says.

"You need to grab the attention of the viewer in 30 seconds. Know your story. Take the audience into consideration, stick to the title", Photopoulos said. "Make a cliff-hanger that makes the viewer want more."

A teaser has the documentary's topic, its main character, its central idea and the time of production in concentrated form. The important thing is to leave the viewer hungry for more information.

Everything is so big at the BBC, I thought, but on the other hand, Toiviainen succeeded too.

The writer is a science journalist specialised in radiation safety and medicine, who does stories for print, television, and radio.

"An enticing trailer is a good help in selling a documentary idea", Julianna Photopulos says.

MARY MCKENNA'S main character is a hospital bacterum

Award-winning American writer Mary McKenna builds science stories of strong individuals.

When she worked in theatre, Mary McKenna learned many skills that she now uses in science writing.

How did you become a science journalist?

I started as an investigative economic journalist, after which I started to examine the connections between emissions from one company with the prevalence of cancer. My present career started with that.

Did you have any other professional dreams before becoming a science journalist?

When I started to study at university, I imagined that I would become a translator. I also worked in a theatre for a while.

What did you learn in theatre that was useful from the point of view of science journalism?

I learned to build scenes, to write functioning dialogue, and to create a background for a story.

Why did you start to produce narrative science journalism?

I also write on many other subjects, but some topics are so complicated and they have such a strong central character that they are best told as stories. Writing a long story is also more challenging than any other type of journalism.

As I write my stories I can train muscles that I would hardly use otherwise. The stories appeal to people all over the world; we yearn for people to tell us a good story.

"Stories appeal to people all over the world – we yearn for people to tell us a good story."

How do you define narrative science journalism?

Strong characters operate on a time continuum, they have some goal and they encounter disappointments or conflicts when trying to achieve it.

Are science stories something "more" than non-narrative science stories?

In a story it is possible to deeply investigate the motives of a researcher or activist – why a person is acting in the way that he or she does. If the reader is to understand the milieu, the story, of the protagonist, plenty of emotions and a setting have to be written into the story. And because the story takes place in time, it is possible to build several levels and excitement into it.

Maryn McKenna

- Lives in Atlanta, Georgia.
- Spends part of the year in Maine and France.
- Writes a blog in *Wired*, columns in *Scientific American*, and articles and science stories in US, European, and Asian publications. Most recently in *Nature*, *Slate*, and *The Guardian*.
- Studies: BA in English Literature from Georgetown University, MA in Communications Theory at Northwestern University, doctoral studies in Public Health Science at the University of Michigan.
- Currently on a one-year research grant from MIT.
- Won several different prizes.
- Married, no children.
- Books and blog:
- www.superbugthebook.com and www.beatingbackthedevil.com
- wired.com/wiredscience/superbug

How did you end up specialising in public health and food politics?

It was partly by accident. As I already mentioned, I started to investigate cancer cases for an article, and even my following topics were linked with epidemiology. When I noticed the direction that I had taken, I started moving in that direction more purposefully. I wrote my first two books on epidemiology, and in my *Wired* blog I also focused on my special fields.

Tell us briefly about your *Superbug* book. What kind of a story is it?

In the book I investigate the spread of resistance to antibiotics through one resistant organism – the MRSA bacteria. My main characters are hospital bacteria.

My book describes how the MRSA bacteria emerged in the 1960s and then started spreading from hospitals to the outside world and how it is now observed even in pets, and in meat as a result of the use of antibiotics on farms.

The timeline of the story is about 50 years. Throughout that period the reader meets researchers, doctors, and people who have been infected, and the family members of those who have died of it.

Your second book is *Beating Back the Devil*. What is it like?

It differs somewhat from *Superbug*, and tells about an intense year that I spent with people working at the US Centers for Disease Control and Prevention. They are the guys who rush to the scene when a mysterious epidemic breaks out somewhere.

Another story runs alongside the events of the year under research: I tell the history of the institution from 1951 when it was set up to the present day.

Researchers of the unit have had a significant role in investigating the causes of measles, polio and HIV, but before my book nobody had told their story.

How much time did you spend writing your books?

Superbug took about three years, and my second book took about two years.

What will your next book be about?

I have just agreed with *National Geographic* magazine that I will write them a book on the use of antibiotics in agriculture and how the use of antibiotics has led to many of the problems affecting modern agriculture, such as changes in land use and the use of labour, environmental damage, imbalance in international trade and so on.

Not much narrative science journalism is written in Finland, partly because journalists do not have enough time to investigate and to write. Are you able to devote enough time to your stories, and what is the overall situation in the United States?

I don't know what is happening with people with fixed employment, but on the freelance side nearly all publications pay by the word. It is up to the writer to decide how much time he or she wants to devote to the work. A few employers also pay for research. *The Food and Environment Reporting Network,* which I write for, is one of them. (the-fern.org)

What kind of advice do you have for a science journalist who wants to write narrative stories?

A good story only comes from a good topic. The topic should be sufficiently intricate to justify the length of the story and sufficiently appealing so that the reader will stay with it to the end.

The story needs to have a strong main character or several interesting ones, although they do not necessarily have to be appealing as individuals. And the story needs a time continuum and sufficient conflicts or problems that are resolved along the way.

As I said at the conference, finding a good main character is the most important thing – not just anyone will do as a protagonist – and to figure out if the main character's story will withstand an extensive and detailed description.

ANNU KEKÄLÄINEN

PÄIVI KAPIAINEN-HEISKANEN

Kone aims ever higher

As the number-two company in its field, Kone acquainted participants in one of the excursions of the World Conference with research and development that takes place at the company's production facility in Hyvinkää.

Kone, which is growing fast around the world, has kept its knowledge-intensive product development activities in Finland.

Forbes has listed Kone as one of the world's most innovative companies for two consecutive years.

Research and development money is used in cooperation with universities and university research institutes. The company has more than 3000 patents related to elevators.

Half of sales are currently from Europe. On the Continent, ageing elevators are being replaced so that the elderly can stay at home longer. Elevators in old houses with doors that open manually are being replaced by ones with automatic doors – something that saves space and boosts safety.

Composite ropes for high-rises

Kone attains amazing growth figures in places where tall buildings are being built.

There are plans for gigantic buildings one kilometre, or even one and a half kilometres high, with so much space that half of the residents of the city of Tampere could live there. Such a gigantic structure could sway by as much as 100 metres, which is why it might be necessary to stop the elevators on very windy days. This creates new challenges for the design of elevators.

Early in the summer Kone announced its new so-called Ultra Rope, which it has developed out of composites, to replace steel elevator ropes. When a tall building sways, the movement affects steel ropes, but not ropes made of composites.

The innovation boosts safety in extreme situations, and reduces energy consumption by about 15 per cent compared with steel ropes. The innovation crossed the news threshold as far away as Fiji.

Those taking part in the excursion got a chance to try a ride using composite rope in the testing tower at the Hyvinkää factory.

Forerunner in energy conservation

It was emphasised at Kone that the company has been a trailblazer and has brought many innovations to its field. Saving energy has been a top priority of product development for years.

It is estimated that of all energy, as much as 40 per cent goes into buildings, and elevators account for 3-10 percent of that.

The pancake-shaped motors introduced by Kone in 1996 began the sale of elevators without an engine room. At the same time, energy consumption by elevators was reduced by half. The so-called Ecodisc solutions that are now in use have further reduced energy consumption and the need for space.

Anticipatory innovation

Latest trends in the field include elevators that anticipate the number of users. They know how to arrive at a floor where they are most needed at certain times of the day.

Ten years ago Kone hired its first psychologist to help in planning user flows. The products raise interest in Arab countries, for instance, as a way of handling daily prayers in a flexible fashion.

Established in 1910, the listed company is still largely owned by the Herlin family. At present more than 90 percent of the total of 40 000 employees are based outside of Finland.

For approximately the past six years the company has grown fast especially in China and India, where it is the market leader. About 350 000 new elevator units are currently being installed in China each year.

The writer is a journalist from Mikkeli.

Two times Kone

Tournament fatigue was too much for nearly all of the science journalists who had registered for the Kone excursion. I went to learn about the company for a second time a week later.

Kone had clearly prepared for the science journalists' visit. Present were **Tomio Pihkala**, who is responsible for the company's innovation activities in Finland, as well as **Harri Hakala**, who has been involved for 30 years, and **Santeri Suoranta**, the head of the tall buildings' project.

It was therefore somewhat embarrassing that what was supposed to be a full group was reduced to nine visitors who showed up at Senate Square for the bus. The same tournament fatigue could be seen on other excursion buses. Perhaps later conference organisers should reconfirm the advance notifications from those who are leaving, and if there is no cancellation, some kind of an office expense fee could be in order.

A week after the visit I had the opportunity to listen to a presentation by **Antti Herlin**, the Chairman of the Board of Kone, at a symposium at the wartime military headquarters in Mikkeli. In his lengthy presentation Herlin told about memories that members of his family had about Marshall Mannerheim, and described the activities of the Mannerheim Foundation from his vantage point as the chairman of the foundation. The head of a listed company can take on many kinds of roles in a Finnish summer.

Post-Conference Tour Mikkeli 28-29 June 2013

Cleantech and night swimming

TEIJA RIIKOLA

The early morning departure from Senate Square was bleak; the science journalists seemed tired and a third of those who registered for the trip did not show up. The Mikkeli hosts, who were organising a trip like this for the first time, conceal their surprise. The no-shows do not know what they are missing.

In Mikkeli the sun is blazing against the red brick wall when Development Director **Juha Kauppinen** presents Tuma, the Innovation Centre for Safety and Material Technology, which was completed a year ago.

The building has laboratory, office, and product development facilities, a cafeteria for personnel, as well as a small factory. The biggest players in Tuma are Environics, a company that develops and manufactures gas detectors, laboratories of the Lappeenranta University of Technology, and a few start-up companies.

The pride of the innovation centre is *cleantech*, one example of which are nanotechnology-based flexible surface coatings that repel dampness and chemicals.

University centre combines scientific disciplines

The city also includes the Mikkeli University Centre MUC, which refers to scientific cooperation involving the University of Helsinki, Aalto University, and Lappeenranta University of Technology.

The University Centre seeks to combine knowhow involving nature and the environment with entrepreneurship. Professor **Mikko Rantalankila** of the Lappeenranta University of Technology's Laboratory of Green Chemistry works at the University Centre. He explains the importance of clean water in the world and describes how water problems have been solved in different areas.

The Organic Research Institute, which operates under the MTT Agrifood Research Finland and the University of Helsinki, has the task of studying and providing training for business activities in the field of organic food production. The research is multidisciplinary and targets the entire food production chain.

"Organic foodstuffs are imported into Finland because not enough organic food is grown here. We wonder why more farmers have not shifted to organic production, even though it has been shown that it is just as profitable as conventional production", ponders director **Pirjo Siiskonen**.

Most of the group had never rowed before, but they got into the rhythm of the traditional church boat surprisingly well, and reached the destination. The sun glimmered on the surface of Kyyvesi like diamonds.

Safely on dry land, the journalists go to sense the atmosphere of the small island. The cabin, maintained with care and love, the pavilion, and the sauna building are examined closely.

The listeners perk up their ears when Siiskonen says that the institute categorically refuses to accept genetically manipulated foodstuffs. She says that there has not been enough research on their safety.

Several science journalists chime in to say that studies have shown that genetically modified foods are not actually detrimental.

Professor **Tapio Ranta** of the University of Lappeenranta discusses Finland's use of biomass. In Finland the proportion of biomass in the total consumption of energy is the highest in all of the industrialised countries. Wood accounts for 26 percent of the fuel used by industry.

The foreign guests are interested to hear about the private ownership of Finnish forests and how biomass is produced.

Unspoiled nature is enchanting

The official part of the Mikkkeli excursion is over and the local village association starts showing the lake Kyyärvi. The journalists are surprisingly successful in rowing a traditional church boat to a small island. On the island a local couple show their pleasant summer cottage and their sauna. The group rows back to the sandy beach in the church boat, and local women serve fried fish, salad, and strawberry cake.

In Mikkeli Harbour the M/S Jaarli is waiting. The vessel brings the travellers down the Saimaa to the Kyyhkylä Manor. An accordion player provides music.

At the manor house, Regional Mayor **Matti Viialainen** welcomes the journalists. In the evening he gives a brief presentation about Marshall Mannerheim and about Mikkeli as the location of the wartime military headquarters. This is familiar information for the Finns, but new for the international journalists.

The evening continues with a sauna, and the next day the visitors see Mikkeli's old vicarage, the Kenkävero area, and the Tertti Manor, and eat a lunch prepared from local food.

On the way back to Helsinki the critical journalists praise everything that they have seen and experienced. The fish at the Kyyjärvi beach, the cleanliness, and bathing in the sauna and the late night swim in the Saimaa were highlights of the trip.

The writer is a freelance science journalist.

The trip had been organised by the Mikkeli University Centre, Miktech Ltd. the City of Mikkeli and the South Savo Regional Council.

Ilpo Lehtinen, a local farmer from Ihastajärvi, Tabitha Mwangi from Kenia, and Maria Christina Valsecchi from Italy watched as local fishermen demonstrated the use of a dragnet.

Crispy fried vendance prepared by women from the village committee of Ihastajärvi proved a welcome treat after the church boat trip. The meal was guaranteed fresh and local.

On the way back to Helsinki the critical journalists praise everything that they have seen and experienced.

HELENA TELKÄNRANTA

THE CHALLENGE OF ANIMAL

Animal intelligence and emotions fascinate media consumers, but there are pitfalls in news about the research involved. In my workshop I wanted to give science journalists tools that they needed to handle the subject matter with expertise.

What does a dog see in the owner's face? Where are the limits of insight for the smartest animals? What can we deduce from evolutionary origin of the sense of numbers of human children through investigating the development of the visualisation of amounts by animal young?

Animal cognition science investigates these and many other questions.

When it examines the way that animals process information, the results make it easier to understand the activities of the human mind as well.

Cognition research involves more than just intelligence. It also investigates if animals have emotions, and if a fish can feel pain, for instance.

In order to be able to answer this question, we need to know what kinds of research methods can objectively measure if animals have subjective feelings. The development of these kinds of methods is already taken surprisingly great strides.

Overcoming the pitfalls

At WCSJ2013 I held a workshop under the name *Clever birds? Pigs with feelings? How to read results of animal cognition research.*

My purpose was to give science journalists tools for dealing with animal cognition research with expert precision – that is, both in a critical and captivating manner at the same time.

Animal intelligence and feelings fascinate many media consumers, but there are more pitfalls involved in reporting news on the topic than is the case with science writing on average.

The most obvious temptation is to draw personal conclusions that go too far. The opposite problem is surprisingly common – bypassing a real scoop, while concentrating on a detail in research that is easier to understand.

During the three-hour workshop, in presentations and discussions, we gave especially close examination to areas in which research is the most intense at the moment. We pondered how the different types of animal cognition and emotional experiences can be measured, and we pondered where things are going now in animal brain imaging.

We also examined the classical questions of cognition research: what animals are the most intelligent, and to what an extent animals can be shown to understand words.

Lively discussion and flashes of insight

Half of the participants spoke enthusiastically, and it was possible to see from the eyes of the most silent that they were also listening intensely. At times a flash of insight became evident on some faces, which was most rewarding for me as the speaker.

The session, which was to have been three hours long, went ten minutes overtime, and a few participants stayed afterward to continue to talk in the hallway.

There would certainly have been room for improvement. We would have been able to delve deeper if I had not tried to fit so much into three hours:

Heading a workshop was extremely enjoyable, largely thanks to the active participants, but it was also wonderful to get to be part of a worldwide conference.

COGNITION

"Cognition research also examines if animals have emotions", Helena Telkänranta says.

an assessment of the present state and future of the field and the detailed examination of three research projects.

Small heterogeneous group

The participants in the workshop were a pleasantly heterogeneous group. There were many science journalists in the group without any particular animal background, a few university communicators, a researcher into human cognition, who is considering becoming a science journalist, and many more.

The range of nationalities was narrower: participants came from Finland, Germany Britain, Russia, Latvia, and Lithuania.

The array of nationalities may have been a coincidence to some degree. There were few participants, because of a break in communications when the conference was being organised, because of which some who would have liked to participate were not able to.

More in Germany

At the beginning of the workshop I was appropriately nervous while waiting for the participants to arrive. Twelve people showed up. I thought that the topic did not interest any more people than that, and I carried out the programme with this group. Later I heard that only a few participants had shown up at a number of other sessions that had required advance registration, and the next day I was surprised to meet many who said that they would have wanted to join my workshop, but that the conference website had said that it was full. It was only then that I realised that the organisers had accepted the first 24 who had signed up.

Some of those who were left out were so upset that for a moment I considered the possibility of conducting the same workshop for them. However, the programme at the conference was so intense – and rewarding – that it was not possible in practice.

One result of the workshop was that one of the participants, **Robert Muil** of the University of Osnabrück, invited me to hold the same workshop there. **Elena Fotyanova**, a journalist for the Russian publication *Nauka i Zhizn* (Science and Life) wrote a story in the publication about animal cognition. She interviewed me and, after getting permission from the participants, recorded the whole workshop, which she used as source material for her story.

The writer is a freelance science journalist specialised in zoology. She studies animal behaviour and cognition.

Food for thought and fun

An ample programme offered much to think about, but there was also entertainment.

The power of performance

Finally it was time for the live performance that I had heard about, and even read about in *Tiedetoimittaja*: Swedish demographer **Hans Rosling** performing his show in the Great Hall of the University of Helsinki.

What was interesting in Rosling's performance was the balance that he struck between the difficult, the serious, and the funny, and his certain type of self-reflection – neither of which were very easy feats.

Denial of science

More science is being produced than ever before, but the facts that are brought out are questioned more than before and conflicts sell better than great truths in science journalism.

There are many types of extreme thinking to be found in the background of denial of the results of science – economic, religious, and ideological – but there is also deeper criticism of Western progressive thinking. This would be an ingenious target for research cooperation for both natural scientists and anthropologists.

How a killer thinks

The Mind of a Killer working group took on an interesting phenomenon – the habit that journalists have of hasty psychological analysis of murderers and other perpetrators of violence immediately after horrendous crimes have been committed. Unfortunately, a good deal of research material for this can is also available in Finland, and fortunately, there is one actual study on the matter – the doctoral dissertation of **Minna Nikunen** *Surman jälkeen itsemurha* ("Suicide after a Killing") (2005).

Performance

The conference arrangements were largely successful. In addition to being enjoyable, the special programmes also gave food for thought about the increasing focus on the media in science, as well as the notion of presentation in general.

A question that was raised at a plenary by **Ulla Järvi**, on the power setups and cyclical market situations of a small country and big science, provided food for thought. The swine flu issue is a concrete example of the global distortions of information production. That is worth thinking about especially considering that in the future the financing of Finnish universities will be linked more closely than before to the international academic market.

Sanna Kivimäki

The writer is a coordinator of doctoral programmes at the University of Tampere.

Big Brother is watching – can a journalist do anything about it?

A current hot topic – surveillance of the social media by the governments of the United States and Britain – was discussed at an afternoon session that came about spontaneously.

Leading the discussion was **Heikki Valkama**, the new editor-in-chief of the Finnish monthly magazine *Image*. Taking part in the discussion were journalists **Hanna Nikkanen** from Finland and **Dino Trescher** from Germany as well as **Duncan Campbell**, an expert on computers and crime investigation technology from the United States, who has investigated the Echelon surveillance system.

Campbell enlightened the listeners on the activities of the US National Security Agency (NSA), including the PRISM programme with which the NSA snoops on data servers of Google and Facebook. Nikkanen spoke about Sweden's FRA law, which gives the government the right to snoop on data networks. Digital spying affects Finns as well because Finland's online traffic passes through Sweden and Great Britain.

Nikkanen feels that journalists should feel the laws linked with espionage and to focus on reporting on the implications of surveillance methods both financially and governmentally, instead of reporting on scandals. Trescher feels that discussion is needed on the ethics and necessity of surveillance in the digital world.

Amanda Alvarez

The writer is a Finnish-American science journalist who works at the Institute of Molecular Biology in Mainz.

The opening ceremony, plenaries and closing event were webcasted live. The list of the webstreamed events can be found here (click the session name for a recording):

wcsj2013.org/webcast