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Communicating Science through Art

Is art an effective means for communicating environmental problems? In this interview, *Gary Braasch*, nature photographer in the USA, shares his experiences in and thoughts on science communication

Gary Braasch

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- > **For many years, you have documented the tremendous changes in our environment all over the world, from the loss of biodiversity to global warming. What was your original intent for documenting these changes?**

Originally, I was mainly interested in the beauty of nature. But as I tried to better understand my subjects, I read more and more scientific and environmental articles which lead me to appreciate how nature works and the changes it goes through – natural and human-caused. I was able to see and sometimes photograph short-term changes, such as storm erosion along the Oregon coast, and clearcut logging in the forests.

- > **Did the initial intent of your travels change after you had personally experienced these changes?**

What really transformed my sense of change and the direction of my work was the eruption of Mount St. Helens in May 1980. This volcano just north of Portland exploded and collapsed into the valley below, leaving a huge caldera and a steaming, boiling landscape over hundreds of hectares. I was lucky not to be on the mountain, as were three photographers and more than 50 others who perished in the blast, but I was very close, and I got incredible images of the eruption which were thrust into the national media such as *Time Magazine*, *Smithsonian*, and many other journals. This event reminded me that nature is news, that it is always a part of human life, and that humans exist as a part of it. From this point on, my work involved much more environmental photo-journalism and conservation-photography than straight beautiful nature work.

- > **That must have been a very impressive natural event. On your travels, which human-caused change in the natural system troubled you the most?**

I have to say that I find the landscape of the US to be full of bad examples of human change to the natural systems. Currently, there is the vast oil spill from the BP oil well in the Gulf of Mexico, which is finally stopped at the source, but is still visible along coasts and detectable in the food chain. The astounding destruction in Appalachia through coal mining is another example, and it is done in the name of keeping power to the wasteful system of development and transportation in the US.

- > **Science has been documenting changes in our earth system for many years. In fact, there are thousands of scientific and non-scientific articles published on climate change, on the loss of biodiversity, and on the effects of pollution and habitat destruction on ecosystems. Still, effective actions are mostly lacking. In your opinion, what is missing in science communication?**

I think two things are missing most of the time: The implications of scientific results are not brought to an immediate personal level, so that people – voters, politicians and business owners – do not understand how nature and changes to it affect them. Second, science education in general and integration of scientific knowledge with daily life is very poor, especially in the US. Many people do not know basic scientific facts such as the difference between weather and climate. In addition, very little basic science is explained or talked about in daily life such as the newspapers or television. It is therefore not surprising that people do not “get” environmental problems such as climate change and perceive its effects as distant or not affecting them.

- > **Have you noticed changes in the thinking or lifestyle of people that have experienced your art?**

I have often been told of the power of my photographs to convince people that climate change is happening right now. In general, it is the comparisons of changes to landscapes over time,

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such as glaciers and coastlines, and the photos of people and buildings on the edge of a change, which are the most effective (see figure). Proving the strength of their power to inspire and convince is not easy, though. Frequently, individuals approach me to let me know how deeply my pictures have affected them: they were going to try to use less fossil fuel energy. Kids have been inspired to try to change their school's energy habits, according to some teachers. Hundreds of teachers, non-governmental organizations (NGOs), and citizens, quite literally from Indiana to India, have found my photos instructive and inspiring for their own work. I know from two US congressmen (one a committee head) that they used my book *Earth under Fire* in committee meetings. Maybe in parts inspired by this book, the US House of Representatives eventually passed a climate and energy bill in 2009 (but the Senate very unfortunately did not pass it at the end).

> **That is quite an impressive success story! What were the most important lessons in science communication that you have learned from your work?**

As I mentioned above – the photos work, but also I need to be as simple and direct as possible and match my words and the topic I am discussing with the experiences of my audience. The lack of certain scientific knowledge means I must present climate

change with simplicity and directness. In presentations, I often start with photos of our beautiful earth and – if possible – of nature locations near the audience, and then bring in local changes and weather events to try to tie people's love of nature to the danger to it – and by extension, to their lives and work.

> **In your opinion, which changes in communication are needed to ensure that a larger part of civil society understands science well enough to make informed decisions?**

To begin with, the educational system has to improve the transfer of basic science knowledge. It is hard to understand scientific news if one does not have a fundamental understanding about science. As I mentioned above, the results of science need to be brought down to a personal level, and also down to the full cost of our energy use and the effects of global warming. I do not try to set a monetary cost for everything, because I believe in the intrinsic, incalculable value of the earth, its creatures, and what we gain from it. But the danger of sea level rise alone will drive some nations into flight and cost billions in seawalls and rebuilding in coastal cities. How can we calculate the cost of replacing lost drinking and irrigation water as glaciers shrink? Many thousands are poisoned slowly and insidiously by the fumes from coal and petroleum and their byproducts, and we all pay for that.

FIGURE: Children after a flood on an island of Tuvalu. Its inhabitants are under severe threat of losing their home to sea-level rise caused by global warming.



© Gary Braasch

On the other hand, millions of new jobs and new opportunities are going to be created as we learn to switch away from fossil fuels and become much more efficient in all we build and do.

> **How can scientists improve the communication of their results to civil society? Can you give us examples of scientists who have found an effective means of communicating with the public?**

I might point out the effective audience connection which the late climatologist Stephen Schneider of Stanford had – by talking about practical evidence like the number of heat records or floods, and by bringing science to a level of decisions we all make. For example, to show the principle of precaution, he would ask how many people in a crowd had had a serious house fire – typically one to two percent in the US – and then ask how many had fire insurance, which would include nearly everyone (home owners and renters alike). Then he would ask: “Why?”. And tie that decision which so many make about insuring their homes to

are not just about those results. Many in the public and press misunderstand the way research is done, and are thus prone to confusion. The term used often in news reports to describe a scientific finding – “... scientists believe ...” – is particularly insidious because that word is also used in religious feelings. It leads many to assume that scientists are free to think anything they want about what they report as science. Scientists believe in a great many things as do all humans, but their pure science is based on peer reviewed and published data, on observations, and it exists in the real world apart from what anyone believes.

> **So who is responsible for getting scientific information to civil society in an unbiased and clear way?**

Journalists, scientists, educators, scientific agencies, groups like the American Association for the Advancement of Science (AAAS), and of course the United Nations. Governments also must inform their people about it, just as they do about disease and weather forecasting.

“We need more Simpsons and Jon Stewarts and symphonies for science!”

decisions about protecting against climate effects. Damage from climate change is statistically more likely than a house fire and potentially as devastating and expensive, proportionately. I have found that starting with what we do not know or know less well – which scientists often do – causes people to question whatever is said later. Instead, stating the best evidence or describing the most impressive events up front makes a stronger point. Therefore, it is more effective to first mention that we do know a great deal about climate change, and that our knowledge is already enough to be concerned and take action, despite the many questions that still exist. Scientists also improve their connection with audiences and readers by telling more about their own stories, about how they came to study climate or an ecosystem, their personal experiences, how they themselves have been affected, and what they are doing in their own lives and families to reduce their impacts on climate.

> **Stephen is a great example for effective science communication. Another approach that scientists can make is participating in activism, as Jim Hansen is doing. Many scientists believe that such action reduces the credibility of scientists. Do you agree, or do you believe that scientists take responsibility by drawing consequences from their knowledge – “connecting the dots” – as Jim says?**

I greatly admire Dr. Hansen and think he is doing society a great service in speaking out about what his research implies. Most scientists are not being as public – nor as personally involved with NGOs and public demonstrations – as he is. This is clearly a personal decision, and I think the balance lies in separating one’s research completely from public statements which

> **One final question: if you had one wish to each group – the scientists and the artists of this world – what would you ask them to do to help ensure that the necessary changes will be done in time?**

I would ask them to collaborate more, and to bring the results of this collaboration to a wider audience through television and the movies, music, and art. It is sad how little about science is seen by most people in the US daily news, even though nature is all around, and even though we are completely dependent on nature and science for staying alive and finding sustenance and income. I credit more and more websites for pointing out the importance of nature and science, but at least most Americans are staring at the screen much of the day, only getting “news” that is not news but personality reports and gossip. We need a more innovative, enticing way of science communication. We need more Simpsons and Jon Stewarts and symphonies for science!

The interview was conducted by Dr. Maiken Winter.

Gary Braasch



Born 1944 in Childress, TX, USA. Educated at Northwestern University, Evanston, IL, with degree in journalism. Traveled the world covering environmental issues and natural history as photojournalist for the magazines *Life*, *National Geographic*, *Scientific American*, *BBC Wildlife*, *Smithsonian*, and *Natural History*. Winner of the Ansel Adams Award for conservation photography and numerous citations for graphic excellence in nature photography. Exhibit of giant prints and educational captions – *Climate Change in Our World* – premiered at the American Association for the Advancement of Science, Washington, D.C., in 2009. Author of United Nations postage stamps and of two books on climate change.