6 LET THE TRUTH BE TOLD

Interviews with David Fanning, Mark Gerzon, Shinichi Takemura, and Hans Rosling with Ola Rosling and Anna Rosling Rönnlund

All media exist to invest our lives with artificial perceptions and arbitrary values.

Marshall McLuhan

← **Truth**
photo by Emdot/Creative Commons

ALL OF THE PEOPLE INTERVIEWED for this chapter would disagree fiercely with McLuhan's assessment of media. All of them have dedicated their lives to revealing the truth and have harnessed the power of the media to help them. They welcome the new media of clouds and crowds and are convinced that the truth will be told by communities at large—in contrast to the traditional media, which were controlled by a few powerful and potentially information-distorting entities. To be fair, McLuhan was living at a time when the media was in the hands of the elite, and even with his philosophical vision, he may not have imagined the connectivity of the Internet and the power of user-generated content and reporting.

David Fanning has made investigative documentaries for public television since 1983. He is keenly aware that he works in a medium that is prone to manipulation, as the journey of discovery always produces enormous amounts of material. This causes a dilemma for the editor, who is both trying to create a dramatic narrative and honor-bound not to manipulate the truth in favor of the drama. It is tempting to allow political or personal bias to influence the output, or to be swept along by the story. The spread of the Internet allowed David to support his broadcasts by putting the evidence online, with documents, audio, and video (as soon as the bandwidth increased). This made the journalism transparent, with a new contract between viewer and maker to reveal a more complete version of the truth.

Mark Gerzon saw Ronald Reagan using the power of the media to tell stories that made Americans hate Russians and that dehumanized the people of the Soviet Union. At the same time he saw anticapitalist films coming out of Russia that were the mirror image of what was

happening in Hollywood. This was just the kind of bias that McLuhan was referring to. To counter the propaganda, Mark put together the Entertainment Summit to bring filmmakers together across the Cold War divide. His efforts may have accelerated the thaw and helped Mikhail Gorbachev's policy of glasnost. Mark is encouraged by the changes caused by the presence of ubiquitous camera phones and Internet communications; he believes that in the future it will be much more difficult to manipulate the media unchallenged.

After years conducting field research as an anthropologist, Shinichi Takemura decided that he wanted to harness the media to communicate the reality of what is happening to our planet. He adopted a new career as a media producer and founded a nonprofit organization called the Earth Literacy Program as a base for his activities. His Tangible Earth project is a multimedia globe that allows people to understand the condition of the world using interactive technology, based on information provided by scientists from various fields. He wants to communicate the truth by designing a social infrastructure—a public sensory platform for the global age.

Hans Rosling spent two decades studying outbreaks of disease in remote rural areas across Africa. In 2005 he cofounded the Gapminder Foundation with his son and daughter-in-law, who had been helping him by designing animated presentations for his lectures that reveal surprising truths about social, economic, and environmental development all over the world. Ola Rosling and Anna Rosling Rönnlund were studying to become artists but taught themselves to design software to convert the statistics into emotionally compelling and enjoyable media presentations that have won awards by being "humorous yet deadly serious." Ola and Anna are now working at Google, supporting their Trendalyzer software, which Google acquired in 2007.

DAVID FANNING

Interviewed November 12, 2008

David Fanning
photos by author

DAVID FANNING

A self-taught filmmaker from South Africa, David came to the United States in 1973 and began producing and directing local and national documentaries for KOCE, a public television station in California. In 1977 he joined WGBH Boston, America's most prolific public broadcasting organization, to start the international documentary series *World*. He has been executive producer of *Frontline* since its first season in 1983. In 2007, after 24 seasons and more than 485 films, *Frontline* remains America's only regularly scheduled investigative documentary series on television. The series has won all of the major awards for broadcast journalism, including the Gold Baton (the highest duPont-Columbia Award) in 1990, 1996, and 2002, for its "total contribution to the world of exceptional television." David is happiest thinking through how best to edit complex narratives, sketching diagrams of how information fits together. He revels in deeply involved reporting of difficult subjects, in trying to explain topics by taking his audiences on journeys and adventures, and in going out into the world with all his senses alert.

David Fanning lives in a house overlooking the ocean, not so far from Boston. I arrived there to interview him on a bright fall day, with the sun streaming into his living room through the generous windows and patio doors, with the sparkling sea just outside. Everything about the atmosphere was comfortable and friendly. David still speaks with a pronounced South African accent. He was dressed in blue jeans and a shirt worn as a jacket over a colorful T-shirt. The room was made cozy with wooden tables, a rich Persian rug, comfortably upholstered chairs, potted plants, and a gilded mirror.

Regina Mundi, Soweto's largest Catholic Church
photo by Woodlouse/ Creative Commons

FRONTLINE

David grew up without television. He became a journalist, finding himself drawn toward trying to tell stories about politics. One day he talked his way onto a film crew that was working in the South African countryside and was captivated by the mechanics of putting everything together. At the end of the film he was fired and told by the director that he had no future in the business, which made him really want to try it. He borrowed a camera and with a friend managed to get into Soweto, outside of Johannesburg, and made a small film about African churches. As he was making that film, inventing the grammar of what he was doing, he got pulled into the structures and syntax of documentary.

He made a second film that was seen by someone from the BBC, who invited him to go to London and reedit it, so he found himself in a real editing room, with professional editors at the BBC. As a teenager David had enjoyed some time in Newport Beach, California, through a high-school exchange program, and the memory of the sunshine pulled him away from rainy London. He went back to southern California as soon as his editing was finished, discovered a little public television station in Huntington Beach, charmed his way into the film department and got hired as a cinematographer and editor. His dream had come true! There he was with an editing table in his office, a cabinet outside with cameras in it and a fridge full of film. He made short pieces for the local television station and little documentaries for instructional television. Four years later he moved, already an accomplished documentarian, to join WGBH in Boston.

> I think that making a great documentary is in many ways tougher than making a great feature film, which stands or falls on its script. Of course, the director can take it to places that are much more profound, and actors can do the same thing. But a documentary is an investigation; a journey into the world

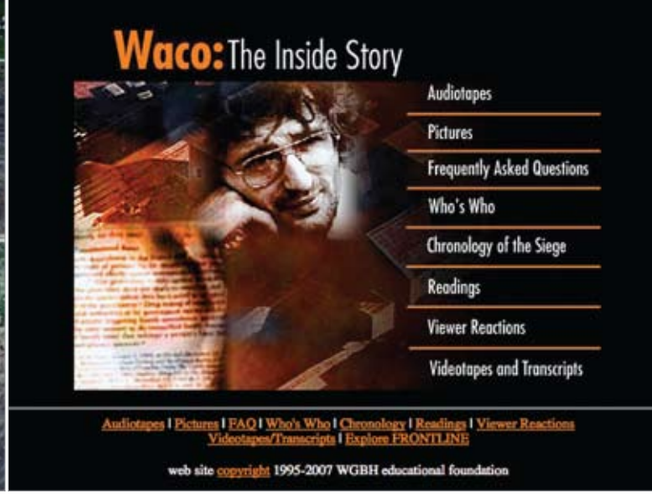
in which you grab fragments of the world and bring them back. Because of the accidents of what you happen to get, or because somebody in an interview tells you something that they probably shouldn't tell you, or tells you something really quite emotional and profound, or the accident of finding a piece of stock footage that shifts and changes the kind of sequence you might build out of it, you're faced finally in the editing room with an enormous array of options. And so you begin to manipulate those options towards a kind of shape, a narrative.

It is such a deeply manipulative medium, which is why as a journalist it has a kind of double bind on you. On the one hand you are trying very hard to respect the art of storytelling and to really make a dramatic narrative out of it, and on the other hand you are also bound by the fact that you don't want to manipulate the truth in favor of the drama. You are edging your way towards a combination of *dramaturgy*, with a beginning, middle, and end, and rigorous reporting of a difficult subject. You try to both steer through the conclusions you've drawn in your reporting and respect the opposing view, leaving the audience saying, "I have now gone to a place I have never been before, in a way I've never been before." You are bound by respecting and being true to the facts, and therefore how you manipulate them.

David started producing *Frontline* in its first season in 1983. For a dozen years his teams collected huge amounts of material, but much of it was wasted because the broadcast medium was so limited by time constraints. The films were long and complicated, taking many months to make, and on a Tuesday night they were beamed into the air to be watched by the viewing audience. All of the unused material—the rest of the interviews, all the documents—was dumped in boxes and ended up in the trash somewhere. That was suddenly changed by the arrival of the Web.

In 1995 we were making a film about the Branch Davidians in Waco. We had come across the tapes of the negotiations between the FBI and David Koresh and they were tremendously interesting. We used 45 seconds here and another 45 seconds there in the documentary, but afterwards I was sitting in the office saying, "It's too bad we can't use the rest of these

Waco inferno
photo courtesy of LIFE Magazine



"Waco: The Inside Story"
screen capture

materials. Could we make a radio program out of them?" And somebody said, "You can put them on the Web!"

I said, "Well, if we can put them up as Real Audio, what else can we put up? Can we put the rest of the interviews up?" And the producer said, "Why would we want to do that? Those are our outtakes. You know, we never show those to anybody." And I said, "No, no. We'll publish them at length; we'll still edit them for legal reasons and for repetition, perhaps, but we'll publish them at length. And we'll put documents up as well."

And in that moment everything changed for us because now we were able to publish all of these additional materials. In that moment we made our journalism transparent. We were able to say to anybody, "If you looked at the documentary and have some question with it, go to these interviews and read them yourself and see what conclusions you draw about them." That was both a great act of connection to our audience, and an editorial investment in the producers themselves, to be that much more aware of what they were doing. It was a new contract between the viewer and the maker.

That was a paradigm-shifting moment in documentary journalism. The 1995 Web site was one of the earliest deep-content editorial sites in history. The next week they did it again, and they kept doing it. Soon David was asking how soon they could put film online, but they had to wait until 2000 before they were really streaming pieces of *Frontline* on the Web.

My first image of the Web, when I first got excited about it, was an enormous warehouse of information. I opened the door and I could run down long corridors and go to a filing cabinet way down in the back of the stacks and pull something out and say, "Look what I've got!" I got very excited about the idea of being able to move through material that way.

We were doing a film at the time called "Smoke in the Eye," which was about CBS and the tobacco story—about Jeffrey Wigand, the whistleblower. In the film was the story of the five thousand pages of Brown & Williamson documents that were dumped on a professor's doorstep in San Francisco in a FedEx box. UCSF had posted them online and had prevailed over Brown & Williamson lawyers. We mentioned the story in the course of the documentary, but I challenged a friend who designed for the Web and said, "Why don't you figure out how we can make a journey through those documents?" We decided to call it a "Webumentary."

The Webumentary was called *The Cigarette Papers: A Docu-Drama in Three Acts*. It was a simple click-through summary on the Web site, with each page offering a key point in the story, illustrated by images from the actual documents. Links on the pages gave access to the full documentation on the Galen II Web site. The first act recorded the evidence that the tobacco companies realized that cigarette smoking is dangerous in 1953, but by the end of the first act they had decided that they could deal with it through public relations. The second act was the Surgeon General's warning, and by the end of the second act it was, "call in the lawyers." Then the third act was the real battle for the future of the tobacco companies.

It was this journey through it all, a kind of Shakespearian tale, using just the documents, that gave the idea that you could fly through the information around the world. Instead of me picking up a camera, or you coming across the country to interview me, there is going to be a way for me to find you,

← **"Smoke in the Eye"**
screen capture

and to interview you long-distance, and be able to place you in the context of those documents and that journey that I'm on. I'm not quite sure how it will work or how we'll do it, but the technology keeps getting better and better, and it gets easier and easier for me to gather stuff from a distance.

We have a wonderful executive editor at *Frontline* who's been with me for many years called Louis Wiley. I call him Mr. Wiley and he always calls me Mr. Fanning. I always imagined in the early days that we'd actually have a little character called Mr. Wiley who would welcome you in and say, "Let me take you to places and show you things I found out." And I still have this dream that one day we'll do a *Frontline* Web site that has a little bespectacled gentleman called Mr. Wiley who will lead you through the information space.

David is frustrated by the two-dimensionality of Web sites. He thinks about navigating a three-dimensional world and taking advantage of his spatial memory. He imagines browsing an Internet that is represented as a warehouse or a rollercoaster ride, or arranging his information in small piles around a room, so that he can remember where things are. He would like to be able to explore by moving in a general direction toward an objective but stopping at will when unexpected treasures come to light.

FREEZE THE BROADCAST

In 1997 the Corporation for Public Broadcasting was asking for suggestions for new uses of media. David took a film about the Clintons from the *Frontline* archives called "Once upon a Time in Arkansas" and shot a little video of somebody watching television in the future. He had experimented with Web markers embedded in documentaries before, but this was a demonstration of the possible future connectivity between television and online material. On a screen with the piece about the Clintons airing, a Web marker came up saying, "www.pbs.org | More of this interview," pointing to material about the Castle Grandé scheme, which was the real Whitewater scheme. The person who was watching had a PDA-based remote controller, allowing them to navigate a room full of artifacts. There were piles of disks, videotapes, and documents containing depositions from the Clintons, links to the Paula Jones lawsuit, and transcripts of interviews. As the cursor rolled over items in this three-dimensional room, selectable annotations and links popped up. The viewer could follow the information path or continue watching the documentary.

> I remember at the time everybody saying, "Well, how're you gonna do that? You can't freeze the broadcast! And I said, "I have no idea, but these guys will figure it out for us somehow or other." Now, as television and computers are converging, we're right on the brink of really being able to use a concept like that elegantly. It could be a very powerful way to allow people to browse through the material, a kind of cabinet of curiosities that we have found on your behalf.
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> The challenge, I think, is that I've dedicated my life to long-form narrative journalism: literary journalism in the tradition of the *New Yorker*—the idea that you take a very complicated subject and spend some time to get deep enough into it to understand its subtleties. But the experience of people on the Web, with the opportunity to stop, to browse, breaks that narrative, so I wonder if we are building into this the seeds of our own destruction as a form?

David is pushing his producers to reevaluate the nature of storytelling for the Web. Experienced documentary makers realize that many parallel efforts are needed to make a good product, and this approach works well in the Web-enabled environment. You can edit, post, and publish stories as you go along. You can harvest crowd-sourced material as part of your process. You can embed tags and links into the main feature to indicate connections in the broadcast version but allow direct linking for the versions that reside on the Web, continuously time shifted to the viewers whim.

> We're doing a film that's a follow-up to "Growing Up Online," to keep exploring the world of the "digital natives." We've been in South Korea, which is as digital as can be. The story will get edited quite soon and will go up on the Web a good nine months before the film actually gets made. We'll start to post and hope that those stories are good enough, and smart enough, and interesting enough to go a little viral—to see if they can't go out into the world on their own and sail away.
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> At the same time we will gather more material, get responses to it, and perhaps even get some connections to interest groups, in this case some particular classrooms in schools, and ask them to participate with us. We hope that this will begin to shape the final documentary, before we know what the final *dramaturgy* is going to be. We will be building a new kind of engaged narrative.
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> There's a story that we played with a little while back that I think is a template for this. We have a series called *Frontline/World*,

Experiment in connecting television and online material
screen captures

an international newsmagazine. A journalist called Mark Schapiro from the Center for Investigative Reporting came to us and said, “I want to report a story about the exporting of nuclear triggers to Pakistan via South Africa.”

It was a difficult story to tell, and it was not going to be easy to pay for doing it, so I said, “Well, I’m not sure we can afford to do this story. Good luck.” But he came back to us and said, “Well, I’m going to go to Cape Town because I think I’ve isolated three people who will talk to me about the middleman, the South African who was arrested in Houston.” So I said, “I’ll tell you what. I’ll give you the cheapest cameraman I can find in Cape Town to shoot those interviews. Bring them back and we’ll figure out what to do later.”

So he goes off to Cape Town. He’s got an assignment for *Mother Jones*, and he comes back with the three interviews. We decide to post his *Mother Jones* story and the three interviews on our Web site. The result is that the Commerce Department, which hasn’t been prepared to talk to him about all of this, sees it on the Web and calls him up, so then he calls me back and says, “It looks like the Commerce investigators are going to talk to me.” And I say, “I’ll give you the cheapest cameraman I can find in Washington, D.C., and for five hundred bucks, go and shoot those as well.” So we posted those interviews.

The result is that Humayun Khan, who was the end receiver in Pakistan, was so exercised by all of this on the Web, because he was named in the story, that he then called the reporter who turned his recorder on and got the interview on the telephone, and we posted that. At the same time the *L.A. Times* was doing a story, which we could post and link to.

The result was that this thing grew organically over a period of time. The investigation began to unfold on the Web and the result was that *The News Hour with Jim Lehrer* came to us and said, “Can’t you cut a story out of this?” We made a fifteen-minute story for the *NewsHour* called, “Nuclear Underground: U.S. Uncovers Plot to Export Nuclear Weapons

“Nuclear Underground”
screen capture

Parts to Pakistan.” It was broadcast in July 2005, with a parallel printed story in *Mother Jones* magazine.

Now that’s a kind of prototype for what one could be doing. The idea that you could start to investigate a territory, post newsworthy pieces of a story that people will contribute to, you could have a fairly active engagement with experts who come to you, and then in the course of that actually develop a seminal film. That is perhaps some kind of new territory for us to travel.

Of course, you get a lot of whacky stuff coming at you that you have to filter. You’ve got to be very careful that you’re being journalistically responsible in what you publish, so you remain an editor. This is not just an open door through which everybody throws stuff. I think there is a difference journalistically from a political blog or a message board. Ultimately we are editors.

WAR

On the fifth anniversary of the Iraq invasion, *Frontline* launched a four-and-a-half-hour film called "Bush's War" as a two-part series. The broadcast drew on footage from the more than forty films on Iraq and the war on terror made by *Frontline* over the seven years since the 9/11 attacks, and more than four hundred underlying interviews. While they were preparing the documentary, they built a unique interactive timeline on their Web site, presenting segments from the films and interviews with annotations and commentaries, so that anyone could access the extraordinary depth of the research that backed up the main features at any time and browse the content in an elegantly presented interactive format. This is an amazingly rich historical source for students, scholars, and anyone from the public. People who are obsessed about the politics and history can spend years digging their way back through the material. The documentary itself had already had more than 5 million viewings on the Web site by 2008, and there were over 100,000 inquiries deep into the annotated documents.

A week before the 2008 election, *Frontline* aired a piece called "The War Briefing" to give viewers an inside look at the policy choices that the next president would face in foreign policy. It started off as a film about Iraq and ended up being about Afghanistan and Pakistan.

> It became a deeper film about Afghanistan because we got lucky. A terrific cameraman who works for us was embedded with a company in the Korengal Valley and filmed the extraordinary experience of young men under fire against the Taliban, showing the nature of that war right now. That became a sequence for the first third of the film. It was very experiential and powerful.
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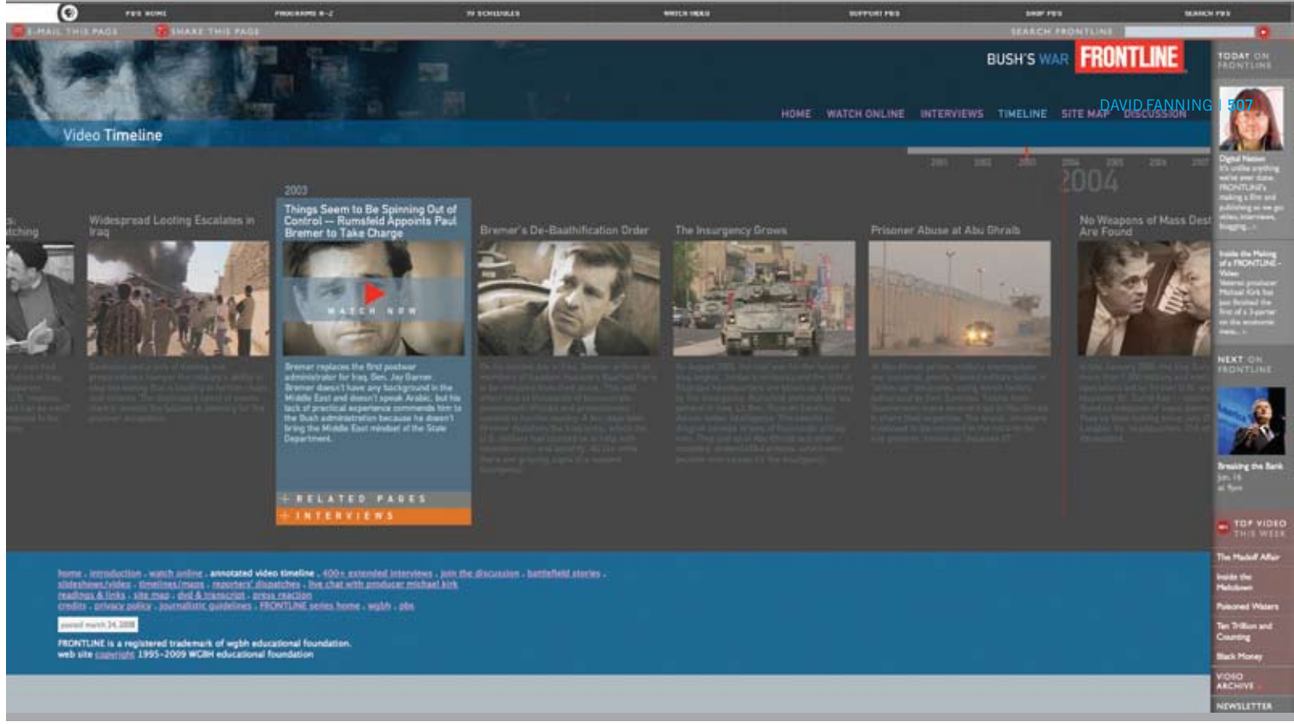
> It was followed by a larger contemplation of the surrounding people, the "ghosts" they call them, the Taliban coming over those mountains and their war against Afghanistan. But very quickly it then takes you up into the tribal areas to understand who they are, the Pashtun of the tribal areas, but then shifts and begins to show the emergence of the Pakistani Taliban and their attempts to move down towards Islamabad and threaten Pakistan itself, a near failed state with fifty nuclear weapons. That's a pretty damned important story for people to understand!



"Bush's War" timeline
screen capture

The film of real action in the mountains could easily be its own short story in the world of new media, as sequences of what it's like to be under fire have a viral quality. The more complicated narrative of the Taliban and Pakistan is much harder to communicate if it is separated from the action context. Why would people care about a bomb in Lahore if they didn't understand what it was like for young soldiers under fire in the Korengal? Those two pieces are connected, and if the connection is broken, so is the audience's collective understanding of the world we live in.

New media is evolving to be delivered in ever-shorter chunks, endangering the journalist's ability to communicate the truth about complex issues, as it is the complicated narrative that gets cut first in

← **"The War Briefing"**
screen captures

the editing. David has kept the conscience of American television alive for two and half decades. Let's hope that a new generation of journalists can master the balance between the impatience of the media-savvy public and the ability to explain our increasingly connected and complex world.

OUR NEXT SUBJECT, MARK GERZON, understood all too clearly the power that movies have to misinform and create propagandist effects. He tried to counter that by putting together the Entertainment Summit to bring filmmakers together across the Cold War divide. He sees evidence that camera phones and Internet communications will help to tell the truth in the future.

MARK GERZON

Interviewed December 5, 2008

Mark Gerzon
photos by author

MARK GERZON

Transitioning from a career as a screenwriter and producer in Hollywood, Mark has been the president of Mediators Foundation for the past two decades as well as the founder and cochair of the Global Leadership Network. He teaches leaders and their organizations skills that are critical for dealing with conflict and collaborating across difficult social divides. He helps competing groups and splintered organizations find alignment around shared goals and values. He has directed and supported many projects with a goal of building a more just, peaceful, and sustainable world. His work in the film industries of the United States and the former Soviet Union helped to catalyze the end of the propaganda war between the two superpowers. He has designed bipartisan Congressional retreats, conducted leadership training, and lectured throughout the world. His most recent book is *Leading through Conflict: How Successful Leaders Transform Differences into Opportunities*.

I carry my video equipment in a shoulder bag (cameras) and a large cylindrical container (tripods and lights). On the day that I planned to interview Mark Gerzon in his apartment in Boulder, Colorado, my cylinder of gear failed to appear on the oversized-baggage claim carousel at the Denver airport. After tracking the claim tag and waiting an hour and a half, I was just about to cancel when the gear showed up, leaving me time to arrive at Mark's place at around four o'clock. The snow on the ground made the natural light beautiful, so I tried recording the interview by the window without artificial lighting, but the light started to fade fast as the looming Rocky Mountains obscured the setting sun, resulting in uneven lighting during the course of the conversation.

Nuclear explosion
photo by Kastehimself

THE POWER OF STORIES

Even while he was still at Harvard, Mark wanted to eliminate the boundaries between disciplines. He couldn't understand why academia has separate departments for history, economics, political science, and philosophy, as it seemed obviously wrong to divide the world up that way. It was like asking which finger of which hand you want to use for the rest of your life. That desire to break down barriers and make connections between people has stayed with him and provided the belief structure for his career. After a start with a global newspaper and a series of other experiences, he moved to Hollywood to work as a screenwriter and producer, to learn more about the power of stories.

> I went to Hollywood in the first place because of my concern about the stories that Americans were telling themselves about the world, making us behave in ways that I felt were disastrous. Ronald Reagan made the power of stories clear. He was a master storyteller, and he told stories that made you hate the Soviet Union, and want lots of nuclear weapons, and feel that you should be ready to use them at any moment. In Hollywood we told stories that dehumanized the Soviets, and if you dehumanize someone that's step one towards saying that killing them is okay.
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> I'm sensitive to the dehumanization that happens in the media, because the media can be used to humanize or dehumanize. I'm particularly sensitive to it because part of my family was killed in the concentration camps, so I'm very aware that dehumanization is not some abstraction. During the Reagan period we were becoming an extremely bellicose, warlike, aggressive power, threatening the evil empire with our nuclear weapons.

Mark tried to make movies in Hollywood that took a different approach to the relationship between the United States and the Soviet Union, hoping to counterbalance the norm of aggressive *Rambo*-style films that portrayed Russians as evil barbarians. When he pitched concepts to the big studios in Hollywood, he was told, "You're not going to get these made! They may be good movies, but they're not going to get made because they don't fit the ideological paradigm that we want."

THE ENTERTAINMENT SUMMIT

He had started a for-profit company with investors who wanted movies that changed the way Americans think about the world and about politics, so they were supporting him to make movies that would challenge the anti-Communist status quo, and he had made several trips to Moscow to research the content. He decided to resist the pressure to write different scripts that would be easier to sell, and to take a stand.

> I said to myself, "I'm not going to accept this! I want this industry to wake up!" But then I thought, "How are we going to wake up?" I noticed that in the Soviet Union there was an anticapitalist grip on the film industry, the exact mirror image of what was happening in Hollywood. The Communist Party was running the film union, but Gorbachev was just coming in and they were just starting to change. And I thought, "Wait a minute, if they can break out of their anticapitalist trance and we can break out of our anti-Communist trance, we might make better movies." And that was my pitch to both sides. We ended up bringing the top Soviet filmmakers to Hollywood and the top Hollywood people to the Soviet Union, a series of exchanges we called the Entertainment Summit, or встреча на высшем уровне развлечения in Russian.

With the help of the American Film Institute, Mark assembled clips that revealed the stereotypes, from a century of Soviet filmmaking portraying capitalists and almost a century of American filmmaking of Communists. He condensed the collection down to two thirty-minute reels of clips, which they then showed to hundreds of people on both sides.

McCarthy hearings
photo by Bettman/Corbis

It was so powerful! It was just like being hit by a truck! I remember we showed it in Hollywood at the American Film Institute. Alan Pakula, the director of *All the President's Men*, said, "My friends, we have a problem!" That quote hit a nerve with the media and found its way onto the *CBS Evening News*, the front page of the *New York Times*, and was reported all over the world.

Reagan had originally worked in Hollywood, and when he saw what was happening there, he felt the shift. Combined with the shift that was happening in Moscow with Gorbachev, this created a different climate, largely due to the power of the media to reflect back to human consciousness a new reality,

Gorbachev and Reagan signing ceremony
photo courtesy of Google Images

> a new level of awareness. If you had to say, "Mark, what was the project you've done that had the most tangible and immediate effect on history?" it's clearly that project, and it was totally media-driven.

The full thirty-minute reels were only shown privately, but three-minute excerpts of each were shown on all kinds of media, including entertainment and news programs, and at schools and universities. The widespread media coverage derived from the combination of the high-level political message and the sensationalist imagery, as the clips were full of violence and brutality. On the American side it ended the Cold War on the big screen. If you look at the films before and after '86–'87, it's as if the world changed. This was a case where politics and media imagery were moving in exactly the same direction and reinforcing each other to end the Cold War. You could suddenly talk to people in the Soviet Union. An organization called the American Soviet Film Initiative was started to make coproductions, an attractive proposition in Hollywood, partly because they were less expensive to produce in Russia.

> It was a reframing, and I got to experience that reframing up close and personal. People in the White House told me that this moved Reagan, because he was a product of that blacklist McCarthy period. He was doing "evil empire" talk for the first part of his administration, but in the last part he was reaching out to Gorbachev, shaking his hand and saying, "Let's go to Iceland. Let's ban nuclear weapons!"
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> I saw the late Sydney Pollack a couple of years later. He was a great director who was active in the Entertainment Summit, and I said, "Sydney, I still haven't made a movie and you've made so many great movies." Sydney said to me, "Mark, you may not have made any movies, but you did something that I never did. You changed this town!"

THE IMPACT OF TERRORISM

The storyteller looks for protagonists and antagonists, in Hollywood usually the good Americans and the evil enemies. After 9/11 it became clear that Muslim Arabs are the new favorite enemies. There was a period of uncertainty in American filmmaking after the end of the Cold War, but even before 9/11 you could see Arabs as villains. The Middle East had become the new Soviet Union. Mark watched this happen and started to wonder if it would be valuable to try a second summit.

> I said to myself, "Something needs to be done!" I tried to do it first in film and a number of people said, "But film isn't what's actually impacting people, it's television." I had no professional history in television, so it was more challenging than the first time. I had to try to organize a community that was not my professional community, and that's one reason why it hasn't quite worked yet. The other reason is that we're in a different arc in terms of the enemy. The Soviet Union was our enemy for sixty years before the thaw. Now we're in the ascendancy of a time when the Muslim Arab is seen as our enemy, so I don't think media is powerful enough to influence a change, either here or in the Middle East. In the Middle East the Western infidels are hated quite profoundly, and in the West there is a great fear of terrorism. You saw what happened to Barack Obama during the election campaign. "He's a Muslim!" was the worst thing you could say about him, even though it wasn't true. If you had said to me five years ago, "Mark, somebody with the middle name Hussein will be the president of the United States," I would have said, "What have you been smoking?"
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> We had a meeting in Dubai last year of television professionals from Al Arabiya, CNN, the BBC, and a number of other television enterprises, having a conversation about why they

(top left) **Civilian Casualties**
photo courtesy of Google Images

(top right) **Statue of Saddam**
photo courtesy of Google Images

(bottom) **9/11 Aftermath**
photo by Slagheap/Creative Commons

put certain images on the screen. They all said the same thing. As they work in a commercial field, there is pressure to screen and repeat images that attract viewers. The Al Arabiya folks said, "It's a lot better for us to put on images of Western or Israeli aggression against poor and defenseless Muslims and Arabs, so when something happens that fits that model, we play it again and again." The Western news people said, "It plays better for our audiences to show a car that attacks Heathrow and starts to burn; when that happens, we'll play the image of the burning car again and again and again. We'll play 9/11 till Hell freezes over. Our audience wants to see those images."

The economics of the media drive a reinforcement of existing worldviews, and simplistic heroes and villains make good stories—people are always looking for easily identifiable targets. The optic nerve has a unique relationship to the brain: when someone with a certain attitude sees images repeated, it can imprint opinions. An example of that is the toppling of the Saddam Hussein statue in Baghdad.

After 9/11, one of the most widely seen images around the world was the toppling of the statue of Saddam Hussein in Firdos Square in downtown Baghdad, and then Iraqis stepping on the statue and dancing and hitting it with sledgehammers and celebrating, and some hitting it with their shoes. It was shown around the world, implying, "Look how glad the Iraqi people are, how jubilant they are to be finally free." The statue was actually toppled by a U.S. Army tank, and it was a psychological operations unit of the U.S. Army that brought a group of Iraqis in by bus to stomp on the statue.

We have video on YouTube showing this second version, so you've got the official version that went around the world and you've got the alternative version. And that's the difference now compared to when I was a boy. Then I would only have seen the official version, because there wouldn't have been a second version. Now you see a second version, a third, and a fourth. Why? Because someone's there with a video camera,

or somebody's there with a second camera. The human brain through the optic nerve is now being fed multiple stories, not one story. I believe that is one way that media is liberating our level of consciousness.

CAMERAS EVERYWHERE

A dramatic incident of reporting from a second camera occurred in downtown Rangoon in Myanmar in September 2007, when the army was breaking up a crowd of demonstrators. Kenji Nagai, a seasoned Japanese photojournalist, was on the edge of the panic-stricken crowd when he was pushed to the ground by a soldier and shot dead at point-blank range. Video of the incident was captured on a cell phone and smuggled out of the country. In the few seconds before he was killed, Nagai appeared to be filming the military as it faced down the crowd.

I got curious and tracked down the person who smuggled the images out of Myanmar. The story was very simple. A friend of his was standing on a rooftop in Myanmar watching the riot; he pulled out his cell phone and shot a video with it of the soldier killing the Japanese photographer. When he realized what was recorded, he sent it to his friend in Los Angeles, who sent it to CNN, who put it up on their iReport, and then it went around the world. Within three days the statement by the Burmese military dictators that it was a "stray bullet" was proven wrong. It only took three days to travel around the world.

I was just so struck by this story because it woke me up to the fact that anywhere there is a cell phone with a camera in it, or anywhere someone has a video camera, we now can get an alternative view of whatever happens. I think that the new media is empowering democracy in ways that not only dictators, but even democracies can't understand—that now it's not what the government tells us happened to Kenji Nagai, or the government tells us what happened in Firdos Square, or the government tells us what happened in Afghanistan: we now have the government's version, and some citizen's version, and a whole set of other versions.

The death of Kenji Nagai
photo courtesy of Google images

I think this will allow us to witness the world in a new way. The media is now saying to every human being, "You can have a direct relationship to the world." A direct relationship, not mediated by your government or your national intelligence services. You can have your own relationship to the world. You can use your own eyes, your own ears, and listen and see the world.

The technology for recording is becoming ubiquitous, since many people have access to inexpensive devices and can communicate through the Internet. The barrier of the "technology divide" seems to be melting away, eroded by the microphones and cameras built into cell phones and the accessibility of video cameras and editing software. Mark is optimistic about the impacts of these changes. The dark side exists, of course. Terrorist groups can use Google Earth to help target bombs, for example, but then anything can be used for evil purposes. On balance, Mark thinks that maximizing connectivity among people is good.

My sense is that, on the whole, the democratization of the media is a very positive thing, because it holds people accountable and it democratizes words and images so we can access them without the control of a dominating power. I think that's an overwhelmingly positive force.

I guess the place I see it most clearly is China. If you said to me, "Are these new media having a positive or negative impact in China," I'd say, "Overwhelmingly positive. They're not being used for terrorism; they're being used by people to get a new view on the world," and China is a quarter of mankind.

There are a lot of people now who can't be fooled by that old trick of saying we have an enemy, follow me. That's the game

leaders have been playing since tribes were born. I feel that that is ending, and why is that? One media project actually illustrates it. They are putting television sets in Arab villages, and television sets in Israeli villages, and television sets in America, and they're hooking people up one to one to talk to each other, so they can have their own interactions. When you can actually talk with your enemy, say "Hello," have a phone conversation, see each other on the cameras on the computer, governments can no longer mediate that relationship. In the past authorities could convince people that they had an enemy. I think that's much, much harder today, and the media play a key role.

PROFESSOR SHINICHI TAKEMURA IS CONCERNED that we are hiding information about the condition of the planet as a whole from ourselves, and he has set out to produce media to reveal the truth. He talks about his efforts in the next interview.

SHINICHI TAKEMURA

Interviewed June 1, 2008

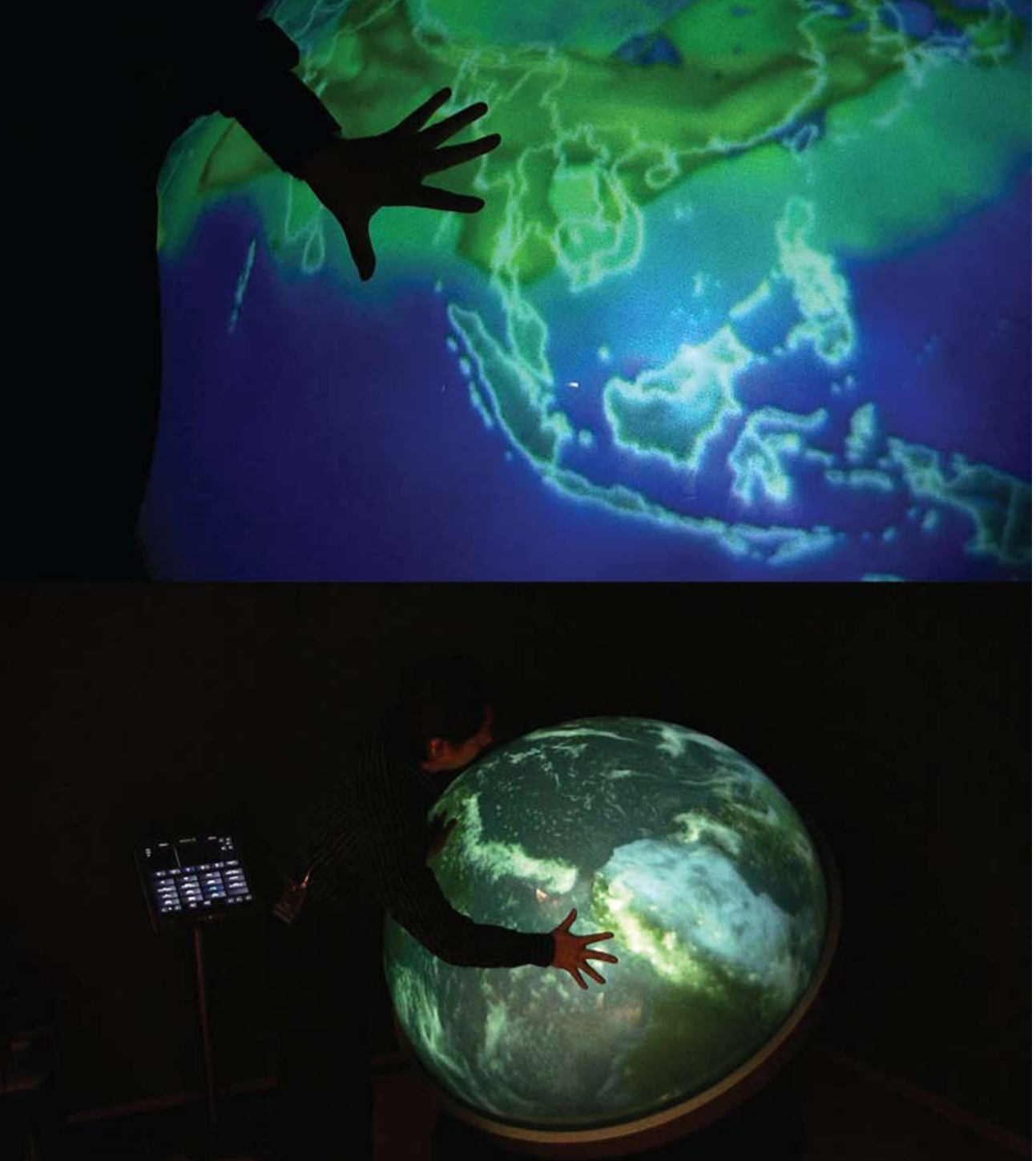
← **Shinichi Takemura**
photos by author

SHINICHI TAKEMURA

After a career as an anthropologist conducting field research in the Amazon, Tibet, India, and Africa, Shinichi Takemura returned to Japan to teach and work as a curator of museums of cultural anthropology. He became interested in changing the way people understand the world, rather than just observing as a researcher. He looked for new ways to communicate the reality of what's happening to the planet. This led him to embrace new technology and adopt a career as a media producer, harnessing the power of the Internet to develop social information platforms. He founded the Earth Literacy Program, a nonprofit organization that he runs as a base for his activities. He produced the Japanese virtual pavilion Sensorium for the first online Internet World Expo held in 1996, for which he won the 1997 Gold Ars Electronica Nica Award. In 2001 he started developing the Tangible Earth project, a multimedia globe that allows people to understand the condition of our planet using interactive technology, based on information provided by scientists from various fields.

I first met Shinichi Takemura at the Indaba design conference in Cape Town, South Africa, where his presentation captivated everyone in the audience. I immediately asked him if he would like to be interviewed for *Designing Media* and he enthusiastically accepted. When next in Japan, I arranged to meet him at the site of one of his Tangible Earth installations. On the evening before the interview he invited me to his home for dinner, an unusual privilege in Japan.

Shinichi lives in a generous house owned by his extended family, with his parents in a separate apartment and a living space that's richly adorned with sumptuous plants and surrounded by bookshelves and paintings. His retired father Kenichi is a well-known television personality, recognized by many viewers by his habit of smoking his pipe during interviews. As we consumed a delectable dinner of many courses, Kenichi frequently stepped out onto the balcony to light his pipe and take a few puffs. Shinichi's teenage son Taiki joined us for dinner in traditional Japanese dress, moving about the room with the lightness and grace of a young samurai. It was a delightful evening, followed on the next morning by a fascinating demonstration of the project.



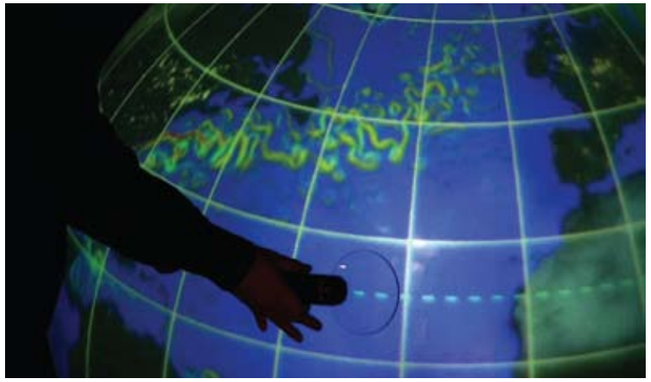
TANGIBLE EARTH

Shinichi Takemura reveals a glowing model of the earth, showing every detail of the continents with the vividness of a satellite photo, but in three dimensions. This is the Tangible Earth installation, a translucent hemisphere containing a high-resolution computer projector with a fish-eye lens located at the center, so that the image of our planet is visible on the frosted inner surface of the sphere. The weather patterns of clouds move slowly over the landmasses, as Shinichi stands ready to demonstrate the full story. He touches the surface with both hands and the world begins to spin under his control.

> Let me introduce our Tangible Earth. It's the world's first interactive digital globe. It's interactive in the sense that you can spin it in any direction. The borderline between the daylight and the shade of the earth is in real time, so you can tell in which area the people are greeting sunrise and on the other side of the planet enjoying the sunset. We can also obtain near real-time data of the cloud movement from the satellite, updated every thirty minutes through the Internet, so you can make the weather forecast.

He interacts with the globe by pushing on the surface. The force is recognized by sensors on the edge of the hemisphere and translated into control of the direction and speed of rotation, giving the uncanny sense that it is moving in spite of the fact that it is really static. The scale is ten million to one, with a diameter of 1.28 meters, making it easier to understand relative sizes intuitively. At this scale the troposphere, the layer of the air surrounding the planet, is only 1 millimeter thick, so all of the cloud movements, thunderstorms, and typhoons are contained in that thin layer, communicating its fragility. At this scale, the moon is the size of a basketball, located 38 meters away.

⟵ **Tangible Earth demonstration**
photo by author



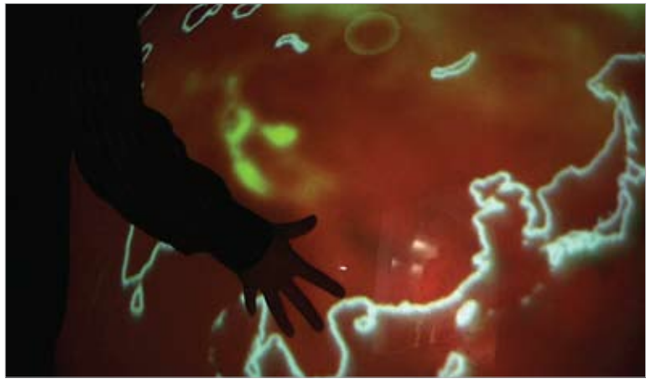
Gulf stream
photo by author

Shinichi continues his demonstration with some animations of dynamic changes in the world, taking data that has been rigorously collected by scientific observation and speeding up the changes to show what is happening. First he shows the ocean currents, with the fast flowing streams illuminated in yellows and reds and serpentine movements indicating the direction of flow. The importance of the Gulf Stream in keeping Northern Europe temperate is dramatically evident, but Shinichi warns that this conveyor of heat is in danger of being deflected by the ice melt caused by global warming. Next he shows the sea surface temperature changing seasonally, expanding and contracting with the strength of the sun, like breathing.

The history of earthquakes and volcanic eruptions is captured in a sequence showing the accumulation of seismological events. The shapes of the tectonic plates become more vivid as the animation builds. The Japanese archipelago is located at the juncture of four plates, showing how vulnerable the islands are to earthquakes, particularly as most of the big cities are located on silt plains.

The tsunami of December 2004 is recreated, showing the waves speeding across the Indian Ocean from the epicenter of the event, which occurred off the coast of Sumatra. Shinichi picks up a pointer that looks like a magnifying glass and uses it to select specific locations on the affected coastlines, which then triggers images of the destruction caused by the disaster to show on a screen behind the globe.

Next he shows the movement of the air pollutants. Sulphur dioxide shows as blue, with nitrogen dioxide and carbon oxide forming a mingled cloud of green and yellow. The greatest concentrations of swirling clouds are emitted from the vehicles and factories of the



Global warming in 2050
photo by author

Northern Hemisphere, especially from China, Russia, and eastern Europe. The photochemical smog can be seen moving around the whole globe, demonstrating that anything but international regulation is pointless. Shinichi then shows a predictive animation of global warming:

> Now you can see the global warming process in this century. The blue color indicates the average surface temperature in 1900. If the temperature rises three degrees it gets red, and plus six degrees it gets yellow. Let's predict the future of our planet, let's see what happens. I stop around 2050. This is the predicted future if we continue our civilization along current growth paths. The whole globe gets red, especially in the polar regions, Siberia, and the Himalayas in Tibet. These areas are covered with snow and ice and reflect the sunlight, but if the ice melts because of global warming, they lose the ice-albedo effects and the warming process will be accelerated. We see lots of symptoms in these areas even now.
>
> This is the source of fresh water for more than a billion people in the southern part of the Asian continent. If the glaciers melt in these areas, they will lose the source of the fresh water for the Yangtze River, the Yellow River, the Mekong River, the Ayeyarwady, Ganges, and the Indus. The areas downstream will be affected by flooding, followed by more severe water shortages.
>
> We may be the first generation to start to understand the mechanism of the spaceship Earth, and how precious this kind of well-tuned planet is in the universe. It's a pity that we seldom think of that, and we never have this kind of global

G8 Summit in Hokkaido
photo by author

> media to help us understand the mechanism, the beauty, and the preciousness of our planet.

The Tangible Earth project was chosen for display at the G8 Summit in Hokkaido in 2008. Shinichi and his team from the Earth Literacy Program assembled five units, so that the visiting leaders could experience the interactivity themselves.

New connectivity and data is being included, and the next stage of the project will be able to compile and synthesize knowledge from diverse fields, with the globes connected to one another through the Internet. People will be able to upload and download data from anywhere and link the globes, so that, for example, if one is spun, it will cause another to rotate.

A BOAT FOR THOSE WHO NEED A BOAT

Shinichi is careful and rigorous in using scientific data for his media productions, but he is motivated by a passionate belief that our world is under threat—and he is determined to let people know about the issues. He explains how new technologies can be harnessed to spread the information.

> There is a Japanese saying that there should be a boat for those who need a boat. The Internet was a kind of boat for me in that sense.

> One of the vital problems for energy consumption is the matter of peak load. An electric power company has to be ready to supply enough electricity for peak load, which occurs only one or two times a year. This leads to the overgeneration of electricity on normal days and overinvestment in conventional and nuclear power plants. So what should we do?
>
> I thought, it's not a matter of politics, it's a matter of the information environment! If we can design a social signal system to let people know that they are operating in peak load, we could save electricity in real time. For example, if you get an urgent email to your cell phone in your pocket, then you can stop wasting electricity and decrease the peak load by voluntary action.
>
> I think that we can do many things by taking advantage of this kind of information. What we need is to design the socially responsible use of the information infrastructure. It is there, but it is not used properly. This is what I call the "social-ware" or "social sense-ware," to make us more conscious and sensitive toward what is going on in the world and how we can affect the environment and society in real time.

When Shinichi came across the writings of Buckminster Fuller and Marshall McLuhan, he recognized many of the ideas that had inspired him to become a media producer. He felt that the Internet could help to "launch the boat" and turn these conceptual thoughts into reality. In 1995 he had the opportunity to design the Japanese theme pavilion for the Internet World Expo. He started a project called Sensorium to create a museum of senses for the Internet age. One of the projects for this was Netsound, listening to network traffic by attaching sounds to each kind of packet.

Another of the projects was called Breathing Earth, which communicated the occurrence of earthquakes, motivated by the 1995 earthquake in Kobe. Shinichi grew up in that area, and some of his friends suffered severe damage. He was shocked both by the disaster of the earthquake itself and also by the lack of people's sensitivity to the likelihood of its occurrence; they seemed to think of the earthquake as an exceptional event that would only occur once in a hundred years.

He decided to compile the seismological data on a computer graphics animation of the planet to try to visualize the fluctuation. The data is updated every day and thus acts as a dynamic communicator of the level of risk in any location. This project proved to him that we are living in an age when even a layman can compile this information using the Internet. The Sensorium project won the Golden Nica award at Ars Electronica, the famous electronic art festival in Linz, Austria. He explains his motivation.

> My interest is to design social infrastructure, a public sensory platform for the global age. I don't feel that I fit to a particular title, like anthropologist, media producer, or artist. I want to enhance our sensitivity, as we are living in a global age. I feel I'm doing my work on behalf of something. It's a strange way of saying, but I'm motivated to do this. In a way, I might be a spiritual person, but again, I don't need those kind of words. Rather, I think if there is a Great Spirit, the Great Spirit needs us to realize these kinds of ideas. We have to work for Great Spirit. We don't need Great Spirit. Great spirit needs us!

FROM SHINICHI'S SENSITIVE COMMUNICATIONS of the holistic truth about our planet, we move on to an interview with Hans Rosling, Ola Rosling, and Anna Rosling Rönnlund, who demonstrate the complex truths about international social changes, making them simple to grasp and engaging with sophisticated computer graphics.

HANS ROSLING WITH OLA ROSLING AND ANNA ROSLING RÖNNLUND

Interviewed October 31, 2008

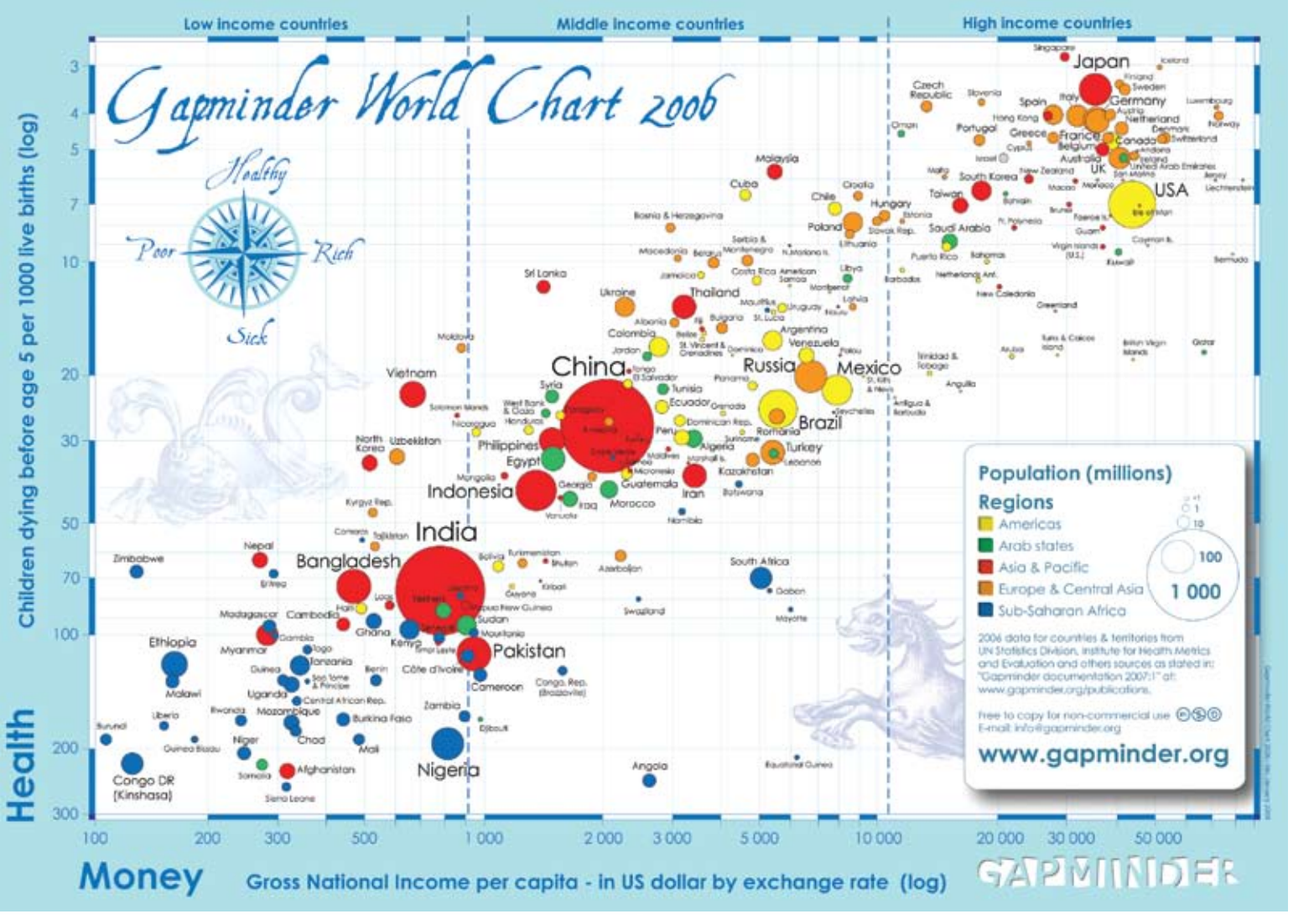
← **The Rosling family**
photos by author

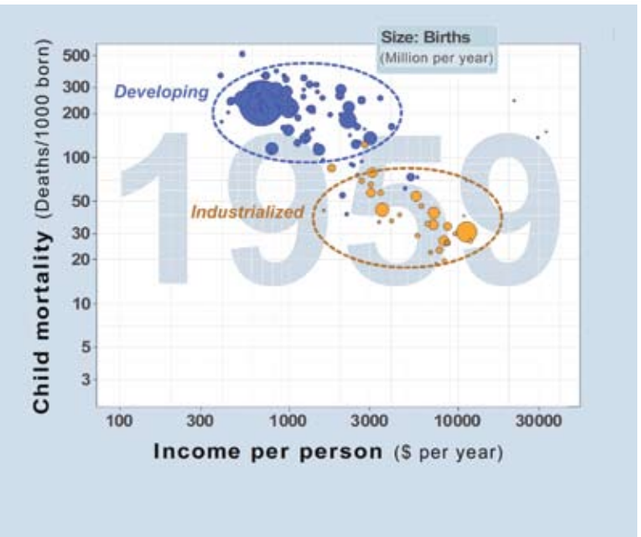
HANS ROSLING WITH OLA ROSLING AND ANNA ROSLING RÖNNLUND

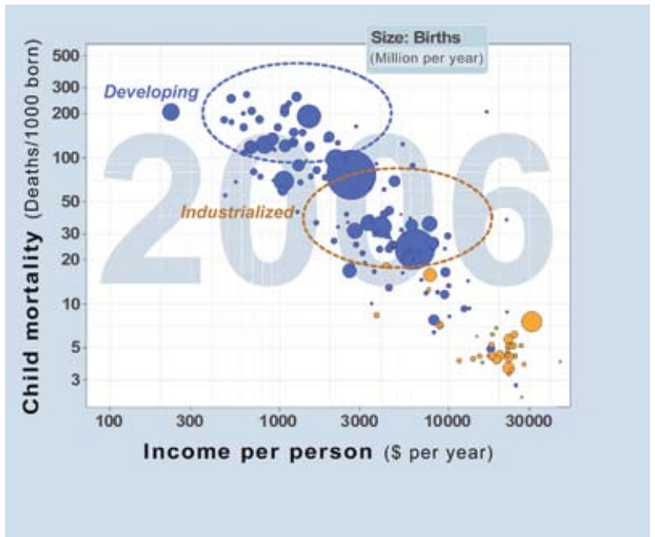
Hans is a professor of international health in Stockholm, Sweden. He spent two decades studying outbreaks of disease in remote rural areas across Africa. In 2005 he cofounded the Gapminder Foundation with his son and daughter-in-law, who helped him by designing the animated presentations for his lectures. Gapminder is a modern “museum” that helps to make the world understandable using the Internet and animated graphics to communicate statistics and other information about social, economic, and environmental development at local, national, and global levels. Ola and Anna were studying to become artists but were fascinated by the information that Hans was using for his lectures. They taught themselves to design software to convert the statistics into emotionally compelling and enjoyable media presentations. They have won awards by being “humorous, yet deadly serious.” Ola and Anna now work at Google, supporting their Trendalyzer software, which Google acquired in 2007.

I invited Hans Rosling to present as the opening plenary speaker at CONNECTING'07, a meeting of designers from around the world. I served as congress chair. Our theme for the first day was "People and Places," and based on his presentation at TED in 2006, I thought his analysis of social changes would be an ideal way to start. When I met with him to plan the details of the presentation, he asked for a ladder and a long pole with a black painted arrow stuck to the end of it to look like a screen cursor. When he climbed the ladder he was just able to reach the top of our huge projection screen with the cursor, demonstrating the animation with a delightful combination of virtual and physical, explained by a commentary in his charming Swedish accent.

His command of multiple media made me decide to follow up with an invitation to be interviewed for this book. He suggested that I could interview him together with his son Ola and daughter-in-law Anna, as they had helped him develop the designs for his Trendalyzer software for the animations. Google had acquired the software and Ola and Anna were working at Google headquarters, near my home, so I was able to invite all three of them to be recorded for the video interview together. The result was a very lively conversation, as you can see from the video segment on the DVD and from the transcript that follows.







Gapminder statistics
courtesy of Gapminder.org

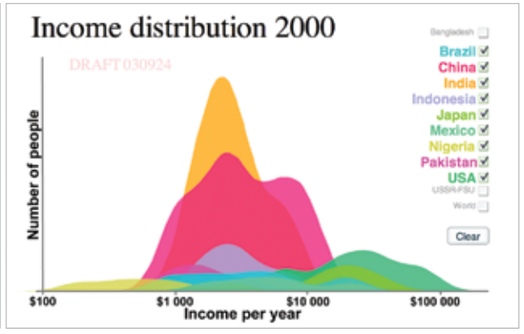
BRINGING STATISTICS TO LIFE

After studying statistics and public health, Hans Rosling qualified as a medical doctor in Sweden. Next he went to work for the government in Mozambique, with responsibility for the health service for 360,000 people. In 1981 he found himself facing thirty women and children with a paralytic disease that was not in the textbooks, forcing him to become a researcher in real time. He tried to solve the dilemma by understanding more about health, food, income, and economic development. The investigations that followed earned him a doctorate at Uppsala University in 1986, and he spent two decades studying outbreaks of this disease in remote rural areas across Africa, eventually discovering that the paralysis was caused by a combination of malnutrition and toxic exposure to food. He gradually gained a reputation as a lecturer about these experiences.

> I used to be a professor who was good at lecturing, and once in a while I got invited to Copenhagen. In '98 Ola and Anna started to develop software technology with which I could really explain what I was talking about. Then I got invited all the way to California. So really, it was a way of improving the way to communicate changes in the world, and that's what we've been doing together since '98.

At first sight Hans seems like a normal academic, with a professorial air and an engaging conversational manner. The Swedish accent brings a certain credibility to his English phrases, balanced by a touch of quaintness. How surprising it was to learn that he performed circus acts for a living as a young man, and to see the video of his 2007 talk at the TED Conference, when he finished his presentation by swallowing a bayonet.

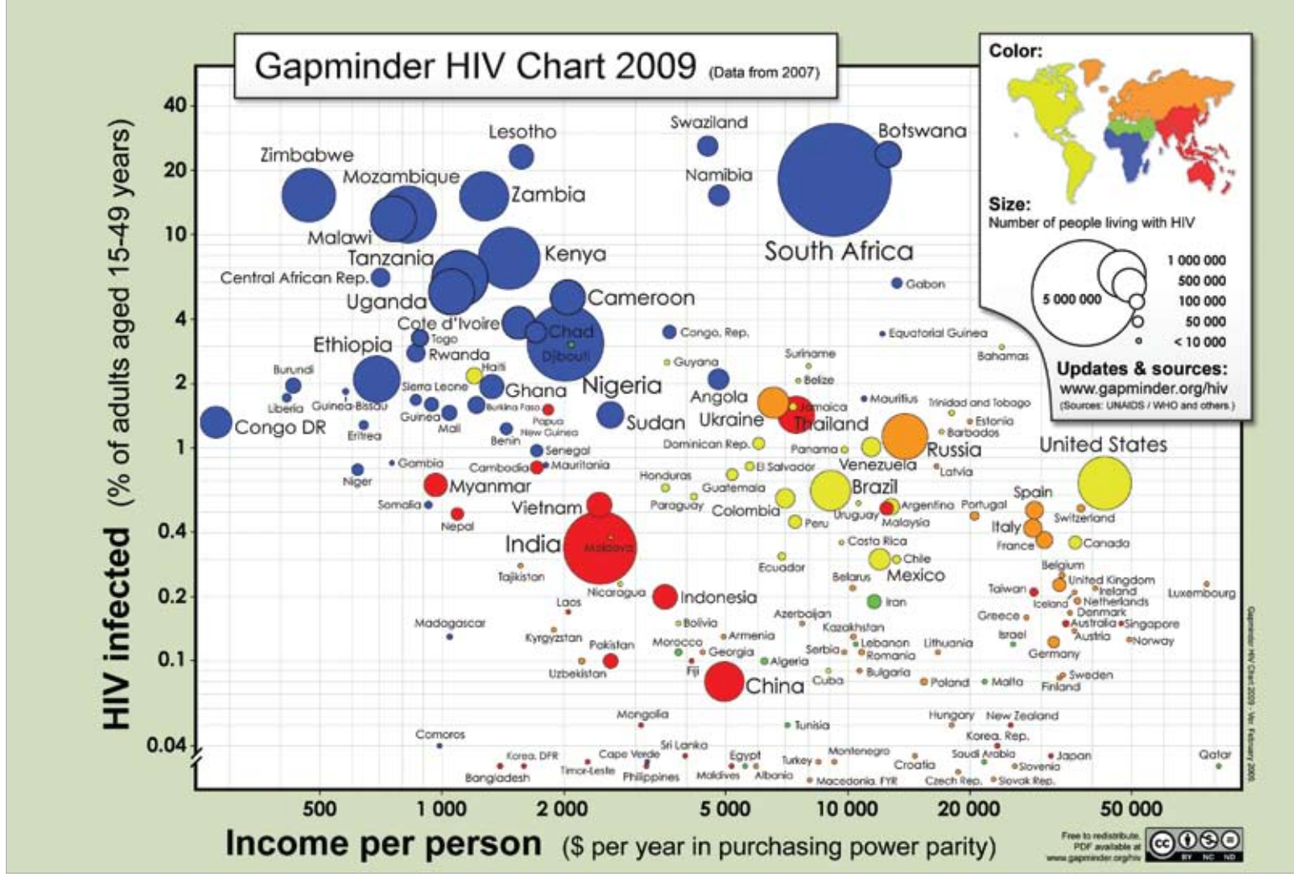
Hans Rosling presenting
courtesy of Gapminder.org



Animated graph of income distribution
courtesy of Gapminder.org

He normally starts by explaining to the audience that he has spent ten years teaching undergraduate students about global development and health at the Karolinska Institute, after spending the previous twenty years studying hunger in Africa. He finds a hook to convince people that there are many misconceptions and preconceived ideas about all sorts of issues of human development, even among the academics of the West. For example, in his first presentation at TED in 2006, he described a test that he had given the elite incoming students in Sweden about their knowledge of the rates of child mortality in different countries. He asked them to identify the higher mortality rates in each of a set of pairs of countries, and then revealed some surprising answers. For example, the mortality rate is twice as high in Turkey as in Sri Lanka, and half as high in Malaysia as in Russia. The students failed the test miserably, and the professors were nearly as bad, so he amused his audience by comparing the students and faculty unfavorably with chimpanzees, who would at least have achieved an average of 50 percent.

The magic of a Hans Rosling presentation starts when he shows the first animated graph, using the software developed by Ola and Anna. He chooses the *x*-axis and *y*-axis to demonstrate a trend, with bubbles representing groups and the animation making the bubbles move over time. In one example the *x*-axis is the fertility rate indicated as the number of children per woman, the *y*-axis is life expectancy in years, and bubbles represent countries, with the diameter of the bubble showing population size. The animation shows the changes from 1962, when good data was first available, up to the present, with large numbers in the background showing the passage of the years. In 1962 the industrialized countries were clustered at the top left corner of the graph, indicating small families and long life expectancy, with the developing countries grouped in the bottom right quadrant, indicating large families and short lives.



Gapminder HIV Analysis
courtesy of Gapminder.org

As Hans lets the animation run up to 2003, he gives a verbal description of the changes in an excited voice, like a sportscaster at a crucial moment of a horse race. The nature of the changes is immediately comprehensible. All the countries have converged on the top left quadrant except those in Africa that have been decimated by the AIDS epidemic. He emphasizes the convergence by another version of the animation, in which the United States is compared directly with Vietnam, but this time the bubbles leave a trail as they move. The convergence is dramatic, with Vietnam reaching exactly the same position in 2003 as the United States experienced in 1974 at the end of the war. He changes styles of the graphical representation to illustrate different attributes and show the trends across the world in various aspects of social development and health, but in every case

the animations have a magical quality of liquid movement, gentle and insistent in the way they inform the onlooker. Here is the story of how those animations came to be designed.

BUBBLES ON THE MOVE

Hans developed his knowledge of statistics over three decades, collecting information from the data recorded by the United Nations, UNICEF, and national agencies around the world. His research was rigorous, examining the relationships between health, food, income, and economic development in the world. He wrote more than a hundred papers and supervised a dozen PhD students, whose studies helped him analyze the implications of the data. For thirteen years he was teaching preparatory courses for Swedish volunteers in missionary and humanitarian organizations—nurses and medical doctors who were going to work in Africa—providing intense training in how to run health services with very limited resources.

As a teacher he was always interested in how to open his students' consciousness to make them really understand the material, so he developed some tricks to help them learn. He evolved a method that he came to call "evidence-based vulgar simplification," trying to present information with the attention-getting qualities of a tabloid newspaper in front, but also rigorous academic information underneath.

He normally illustrated his lectures using overhead transparencies. He tried using Statview, a program that generated graphs, but he didn't like their appearance, so he printed them on paper, put a transparency on top, and then drew his own version by hand. The most startling truth that emerged from his analysis was the way in which the world was becoming more homogeneous in certain ways. The preconception that the world is starkly divided between rich and poor was no longer accurate. He prepared many graphs to show health plotted against wealth, with the countries distributed in a surprising continuity rather than in distinct groups. He used bar charts, pie charts, and graphs with points representing the countries, but although the information was there, the visualization was not compelling. The breakthrough came in 2006, when he prepared a colored version of the chart, with bubbles representing countries and the diameter of the bubbles indicating population size. He showed the chart to Ola and Anna.

> **Ola:** When you first showed us this bubble chart, Anna said immediately, "This must be the same chart you showed us a year ago, but that one was black and white with just dots, which was very ugly, just a regular chart." But you realized yourself that these black and white boring charts were not attractive enough!
>
> **Hans:** This graph had an impact because people saw that the bubbles were evenly spread all the way, meaning that there are not two groups of bubbles, poor and rich, but that there are bubbles on all levels. After students had been rejecting my bar charts and my attempts to show this data in other ways, I thought of this one evening in a split second. And then, when students saw it, they asked, "But how did this happen? How did Singapore end up ahead of Sweden? When did that happen? And why is South Korea just like west Europe?" And then gradually the idea came for animation.
>
> **Ola:** You had actually created this colorful and nice paper chart together with another person at your institute in Uppsala. Suddenly you showed us this beautiful chart with colorful bubbles, which was aesthetically very attractive. So we looked at it, "Wow, this is fun. This looks so nice. This is interesting."
>
> At the same time I was studying economic history, and I was about to write a paper. I hate writing papers, so I saw an opportunity, "Okay, maybe we can make this thing move, and then instead of writing this boring paper for five weeks I can learn Macromedia Director." I saw this win-win situation for myself to animate this thing as a part of the five-week course. I went to my teacher in economic history and I said, "You know what? I wanna make a little software." And this guy, Jan Jörnmark, said, "Yeah, do whatever; nobody will read your paper anyway."

I told you, "In five weeks you're gonna have an animated version of that," because I knew Director had a timeline that could be animated.

Hans: I still remember that second when I saw the first bubble move smoothly and I saw the beauty in the movement. It really moved, and I could see the year pass by. It was like seeing x-ray from your own body. You knew how it was inside there, and more. And suddenly it was there in front of your eyes!

Ola: And then you came to Gothenburg. We were sitting in this publicly funded computer lab where they had a lot of computers that I could use for free. We sat there one evening after your lecture at the university. I was just playing with the mouse-over the timeline in Macromedia Director, and you said, "It's hard to follow this Chinese bubble moving." And I said, "Well, there is a trail feature in Director," so I just turned on "Leave a trail," for the Chinese layer and we could immediately see how China moved. That's how we innovated the trail feature.

Hans: We created the different features step by step, based on the need for understanding the content. We should give a lot of credit to Macromedia and Adobe, who put that technology at hand for easy prototyping. It was very fast. I used the animations for the first time in a big lecture, for all of Scandinavia, and then I really saw the impact. I used to make relatively good lectures, but I had never before had a reaction of that kind. People just got stunned when they saw the movement of the different countries.

You call it mental model or mind-set in English. You say to yourself, "This is how the world is, industrialized separate from developing, and I know things about it," and then we store all the detailed information in this macro mind-set we have. But that mind-set is wrong. It doesn't help to be given detailed information about malaria in Tanzania and traffic accidents in Thailand, and so on, because you have a fixed idea that Africa and Thailand will never be like Europe, so you don't see the catch-up that has happened.

The animations have given us a way of breaking down that mental model of the world using data and beautiful design and showing time as time. Showing time on an *x*-axis never changes a mind-set, but when it is that movement, year, by year, by year, it's almost like hypnosis. Those flipping numbers which you designed: 1950, 1951, 1952, 1953, 1954 … People get hypnotized!

Ola: We had small numbers in the corner, but then it was hard to follow. Then we moved them into the middle of the screen and made them big, but pale gray to stay in the background. By having Director there in front of us, we could just move things around, and play again and again, and see how it worked as we went along. Anna started to add a lot of design suggestions in the middle of this.

Anna: I think the most important part is that all the time it has been based on the real content. We haven't really thought about design separately in the process at all. Hans has been frustrated about certain content. He brought it to us and we've tried in different ways to make it understandable. We tried a lot of different ideas for different types of data. We've had many, many late nights with heavy arguing.

The setting I remember most often is Ola sitting in the middle with his hands on the keyboard, and Hans and me behind his back complaining constantly. And he actually managed to survive that!

Ola: Yes, you were complaining behind my back. I listened to both of you, and I tried to do the things you were talking about. And then I got a third idea or something, "Maybe like this?" And you were, "What are you doing? What are you doing?" And I'm like, "Wait, wait, wait." And I'd rearrange something and you'd say, "Ah," and then you'd continue.

Hans: This is the process between you two when you were working. It was like Anna was the captain standing behind Ola saying, "No, to the right, to the left. No, a little greener. Oh no, that doesn't work. Ah, that does work!"

Anna: But you were actually bringing the content. We never designed anything generic in the beginning. We were basically trying to communicate certain content. Ola has been super good at coming up with ideas about how things could look, but I think I'm a bit boring.

Ola: But you can pick winners!

Anna: Yes, but I've been a bit boring standing behind, like the angry mad captain, saying, "Nooo," complaining all the time.

Ola: Yes, Anna is a no-sayer. I often get this beautiful advanced idea that would prove that I'm intelligent, but you just don't care because you are not impressed by intelligence, which is very, very good resource!

Anna: When we got feedback from expert people, they always tend to give suggestions about adding more complex features, so they basically want us to create a numeric analysis tool, but I think the important part has been that we never wanted to do that. These tools exist. Experts can use them, but there's nothing out there that normal people understand, so that is what we focused on. Until quite recently we never considered developing software at all. We just wanted to make these lectures understandable.

Ola: Let's help Hans a little bit and make this thing look nicer. And this is an alternative. Wow, this is cool! Let's try to help Hans. At the same time we were in art schools, and we liked that creative environment. We were both studying social science, economic history, art, and theater, but this was more interesting to work on so we spent our time on it.

Anna: I was studying social sciences and photography but started getting interested in this more and more. Suddenly, here was a project where you could actually work with images and design and try to explain something really important to the social sciences.

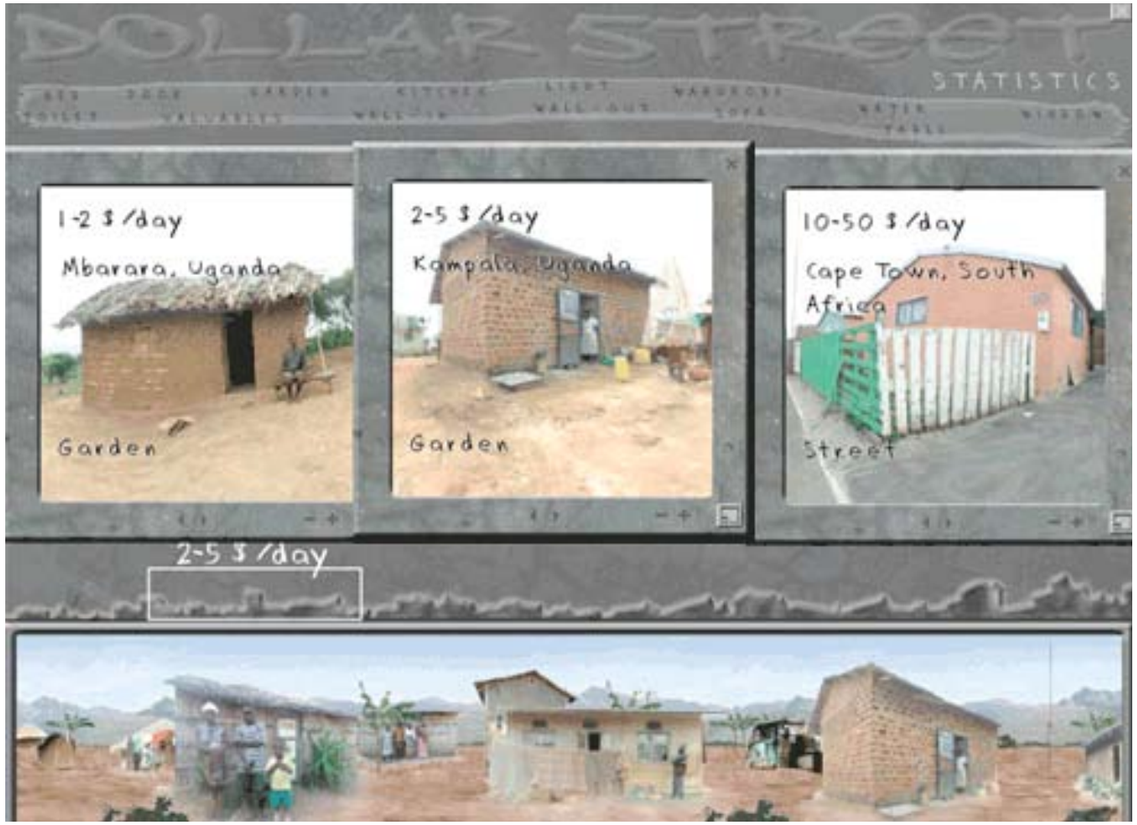
Ola: Some people at the World Bank had collected household data about income, and there was also data about infant mortality rate per quintile, like 20 percent income groups in a lot of poor countries. We had the success with the animations to answer questions like, How did the countries come to this position? We also knew it was misleading, because even though everybody in Sweden shares similar wealth and health, in Africa and Asia there are some countries with enormous differences.

We started looking for ways to represent the inequalities inside countries and remembered the quintile data. We had the software to plot bubbles so we invented subcountries called "Sweden Poorest 20%," "Sweden Richest 20%," et cetera, so we could put five small Swedish bubbles, the five Indian bubbles, and so on. Anna invented the actual animation, with the idea that you could click the bubble and it could fall apart.

Hans: I can remember a moment when you had done the first split of a bubble, with the different parts flying away and landing. The head of statistics at the United Nations was standing at a conference in Stockholm when you showed him. I was standing fifteen meters away, and I saw when you came to the split, his shoulders went up and back. He really reacted! It was a "Wow" presentation.

DOLLAR STREET

Ola had grown up following his father around the world, so he had a lot of direct experience of different cultures and incomes, but Anna was raised in the heart of Swedish utopia, so she was eager to find a way to communicate the realities of various levels of income. She came up with the idea of Dollar Street, a virtual representation of a street populated by people of various incomes, with the street numbers indicating the daily household spending power, the poorest on the left and the richest on the right. She wanted to show the realities of people's lives and experimented with various recording media, finding that a panoramic photograph worked well, as it showed each room clearly, with more objectivity than video.



Dollar Street
courtesy of Gapminder.org

Anna and Ola built a prototype using a tripod and still camera to record the photographs, and stitching software to create the panoramic views. The first prototype was at the house of Anna's mother. They assembled the views on a representation of a street, so that you could stop at any house and browse the rooms inside. They went to different countries and recorded households on different economic levels within each country.

It was eye-opening to actually visit the bathrooms, kitchens, bedrooms, and so on. If you visited a series of $1-per-day households across different countries and cultures, you could see strong similarities in the living conditions, showing that it is easy to confuse culture with income levels.

Hans: I showed your first prototype in Khartoum, to a large conference of the medical doctors in Sudan. The examples were from the house belonging to Anna's mother and some other houses in the world. I showed the panoramas of her home and came to the kitchen, where her husband was standing doing the washing up. I heard a gasp in the whole room, and then all female MDs of Sudan stood up and clapped. That was strong because it had the feeling of visiting another person's home and seeing the reality.

Anna: The best part of this technology is being able to spin around at your own pace and stop at any point. You feel you can sneak in to the household and spend time on the parts you are interested in.

Ola: We started to think, "So what's the criteria for finding a household that actually can represent all the other households in this quintile? Can we find that?" We looked at the data and tried to find the right criteria. We went to the Dominican Republic and visited people's homes and took photos, but talking to them we realized how hard it is to find one representative household.

Anna: We didn't give up, so we went to Africa as well, to three countries, and tried it further. But after that we got a little bit stuck about how to scale this without funding and without a simple strategy of how to organize it. We had the idea about the street that we believed in, but I think that making the experience more powerful still needs further work.

The word *dollar* had been really sensitive in a lot of settings, either because they are academic or because they are people who hope to save the world and very often they are a little bit leftish. And then *dollar* sounds like something really bad and really mean.

SCALING

The Gapminder Foundation has spread its influence internationally, thanks to the performing genius of Hans Rosling and the design talents of Ola and Anna. The design of the animated presentations helped to spread the ideas, and the presentations at the TED Conference two years in a row triggered notoriety on the Internet. The software grew in sophistication as Ola and Anna built one version after another, ending up with a design that was unique enough to separate it from Macromedia Director. They called it Trendalyzer. In 2007 it was acquired by Google, with Ola and Anna moving from Sweden to Google's headquarters to support development of the design, converting it to a Flash application. So what's next?

Hans: What we need is to scale! The positive response and the kind invitation to talk at TED and work with Google have humbled us, but we haven't scaled yet. This is the challenge now. When I work at Gapminder Foundation, it is to find out how I can bring this into video format, on YouTube and the Internet, and into the TV media. There are a number of amazingly difficult obstacles—small technical details about the software where animation in TV is almost only used for branding.

How do we get this from one, two, three, or five skilled and funny lectures using software, make a breakthrough, and make many people use it and get it on TV?

Ola: There are two possible approaches. One is to deliver one story per day on the actual things that happen today. That requires the data to be well-organized, which it is not, so it's very hard to get all the data to tell the story on a daily basis. The other approach is the one that Al Gore took, to make a very interesting movie and make it perfect. Everything in between is very difficult.

Anna: I get the feeling that this is also a personality thing. I mean, we could settle down and think that we've done the bubbles; they're moving and now everything is set. Or we could be the types that continue to experiment. I think that we will continue to be the ones that experiment, and hopefully others are doing so as well.

We ended up having to develop the software. The best case would have been that somebody else had already done the software so we could have just used it. Let's hope that more people are actually doing this, so it will remove the obstacles.

COMMENTARY

The passion for truth abounds in these interviews, whether in the form of journalistic integrity, political belief, or the desire to make people understand the state of our planet and its people. I like David Fanning's recognition of the dilemma for journalists: "A documentary maker needs to respect the art of storytelling to make a dramatic narrative, but also to resist the temptation to manipulate the truth in favor of the drama." The need to strike that balance makes a valuable design principle that can apply to designing media in general. Mark Gerzon implies something in a more political realm: "The economics of traditional media drive a reinforcement of existing worldviews, and simplistic heroes and villains make good stories—people are always looking for an easily identifiable target."

The Rosling family is more focused on communicating truths that they understand but are not generally recognized. They are helped by the design of their presentations and by the wonderful sense of humor and theatricality that Hans brings to his performances, but they are made credible by the underlying rigor of the data. The information is presented with the attention-getting qualities of a tabloid newspaper in front and rigorous academic information underneath.

Shinichi Takemura changed his role in life from being an academic observer to a media producer in order to communicate information about our situation that he believes to be true. The Tangible Earth project communicates the holistic nature of sustainability for the planet with directness and emotional power.

That direct quality is enhanced by the way the interactions are designed. When you push gently on the surface of the hemisphere with your hands, you ease the world into motion. You can see the border between day and night and follow the weather systems in real time, or change the mode on the control panel to bring up a representation of historical and research

data about earthquakes, ocean currents, and so on. You can then use your hands to feel your way around the globe to find out how it really happens, with your sense of touch combining with the animated projections to leave an indelible memory in your mind.

The video timeline that *Frontline* built for "Bush's War" is another example of excellent interaction design. I love the sense of flowing motion that you get when you roll over the segments, with the menu of choices illuminating right there, so that you can watch a segment of the broadcast programming, find related pages, or link to one of the four hundred interviews. You can also take a shortcut by grabbing the little red marker on the miniature timeline. Move it to a date that you're interested in, and then watch the main timeline whoosh across the screen, slow down, and gently arrive at your destination.

There is also magic in motion in the animations of the Gapminder Foundation. Ola and Anna have evolved the design of the behaviors to have a magical quality of liquid movement, gentle and insistent in the way they inform the onlooker. I really felt Hans's enthusiasm. Hans, Ola, and Anna make a great media design team! They work so well together to generate the design ideas through a process of synthesizing the functionality, and they also know how to create beauty, both in appearance and behaviors, while not having "thought about design separately in the process."

The Internet connects people and information, helping documentarians to expose the truth by giving people access to their research. David Fanning opened the door early on with his 1995 Web site about the Branch Davidians in Waco, with the broadcast combined with rich information online. He also realized the potential of harnessing user-generated content.

Mark Gerzon is also excited by the power of the crowd, realizing that the public's ability to generate content is surging forward, making it much easier to see the big picture and harder for the power elite to keep secrets. As he points out, "We are being fed multiple stories, not one story, because there are people there with video cameras to record a second, third and fourth version of an event." The tools to record and distribute information are becoming ubiquitous, so that media empower democracy to reveal a broader interpretation of the truth.

Every day more and more people gain access to the tools for capturing, editing, designing, and disseminating information, so that the truth is harder to hide and told more often. Even people of my age enjoy learning how to make a video or put up a Web site, and the younger generations are growing up with media savvy fluency as the norm. There will be plenty of examples of misuse of media and of bad designs, but I'm optimistic that the democratization of media design and production will turn out to enhance the truth, and on balance be good for us all.