

**The Heat is On!**



**Creating a Viable Future in the Face of Climate Change**

**HOLLYWOOD  
HEALTH & SOCIETY**

Entertainment Education for Television, Movies & New Media

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An edited transcript of a panel discussion held on March 9, 2011 at the Academy of Television Arts & Sciences



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### THE HEAT IS ON!

Climate change impacts human health and the future of life on earth. Here, health and entertainment experts speak about the science behind climate change, the way it affects human health, emerging solutions, and the entertainment medias portrayal of these issues.

A video of the program can be watched in its entirety online at:  
<http://youtu.be/NK6hvEjsEfA>



### HOLLYWOOD, HEALTH & SOCIETY

Hollywood, Health & Society (HH&S), a program of the Norman Lear Center, provides entertainment industry professionals with accurate and timely information for health storylines. Funded by the Centers for Disease Control and Prevention, The Bill and Melinda Gates Foundation, The California Endowment and the National Institutes of Health, HH&S recognizes the profound impact that entertainment media have on individual knowledge and behavior. HH&S supplies writers and producers with accurate health information through individual consultations, tip sheets, group briefings, a technical assistance hotline, panel discussions at the Writers Guild of America, West, a quarterly newsletter and Web links to health information and public service announcements. The program also conducts extensive evaluations on the content and impact of TV health storylines.

For more information, please visit:  
[www.usc.edu/hhs](http://www.usc.edu/hhs).

## PARTICIPANTS



**GEORGE LUBER, PHD**, is an epidemiologist and the Associate Director for Climate Change in the Division of Environmental Hazards and Health Effects at the National Center for Environmental Health, Centers for Disease Control and Prevention (CDC). Since receiving his PhD in Medical Anthropology from the University of Georgia and joining CDC, Luber has served as an Epidemic Intelligence Service Officer and staff epidemiologist at the National Center for Environmental Health. His research interests in Environmental Health are broad and include the health impacts of environmental change and biodiversity loss, harmful algal blooms and the health effects of climate change.



**RICHARD JOSEPH JACKSON, MD, MPH, FAAP**, is Professor and Chair of Environmental Health Sciences at the School of Public Health at the University of California, Los Angeles. A pediatrician and public health leader, his prior academic appointments were at the University of Michigan, Ann Arbor, and at the University of California, Berkeley, where he was recognized as the Distinguished Teacher and Mentor of the Year.

He served in many leadership positions in both environmental health and infectious disease with the California Health Department, including the highest, State Health Officer. For nine years he was Director of the CDC's National Center for Environmental Health in Atlanta and for this work received the Presidential Distinguished Service award at the White House. While in California his work led to the establishment of the California Birth Defects Monitoring Program and state and national laws that reduced risks from dangerous pesticides to farm workers and children.



**BARBARA MARX HUBBARD** is co-founder and chairperson of the Board of The Foundation for Conscious Evolution. An evolutionary educator, speaker and social innovator, she is the author of five books communicating the new worldview of conscious evolution. She has worked closely with some of the great innovators of our time such as Dr. Jonas Salk, Abraham Maslow and the great Buckminster Fuller who said of Barbara, "she

is the best informed human now alive regarding futurism and the foresights it has produced." She is the producer and narrator of the award-winning documentary series entitled *Humanity Ascending*: A

*New Way through Together. Part One: Our Story*, is now translated into seven languages, and in Part Two: Visions of a Universal Humanity, she brings together some of the finest minds of our time, presenting us with positive, future scenarios for humanity. She is offering the worldview of Conscious Evolution as a major evolutionary teaching on The Shift Network to identify, connect and communicate positive options for our future, helping to build the evolutionary community of social, spiritual and scientific/technological activism worldwide. As a founding member of The Evolutionary Leaders Council she has assisted in the Call to Conscious Evolution, stimulating the development of the evolutionary movement worldwide.



**ED BEGLEY, JR.** As environmental issues become more pressing, there are two possible responses: forget it and hope that government and corporations will figure it out, or take action yourself. In the "take action yourself" camp, a few individuals are leading the way. One such person in California is Ed Begley, Jr. Turning up at Hollywood events on his bicycle, Begley has been considered an environmental leader in the Hollywood community for many years. He serves on the boards of The Coalition For Clean Air, The Thoreau Institute, The Environmental Media Association and The Earth Communications Office, among many others. His work in the environmental community has earned him a number of awards from some of the most prestigious environmental groups in the nation, including the California League of Conservation Voters, the Natural Resources Defense Council, The Coalition for Clean Air, Heal the Bay, Santa Monica Baykeeper and the Cesar E. Chavez Foundation.



**MICHAEL NASH** is a Irish/American filmmaker who was recently an honored recipient of the "Global Innovation Award," Senator Boxer's 2010 Conservation Champion Award and the 2010 Neiman Marcus Environmental Visions Filmmaker Award. Nash's current documentary, the multi-award winning *Climate Refugees* was the only film screened by the United Nations at the recent IEA Copenhagen Climate Change Conference for world leaders and policymakers. Nash has served on various panels as an expert on climatic migrations and green solutions. *Climate Refugees* had its world premiere at the 2010 Sundance Film Festival in Park City, Utah, and was noted by Robert Redford in the *New York Times* "as an agent for social change." Nash's first feature, the critically acclaimed film titled *Fuel*, won top feature film honors around the globe. Nash has created a digital-video exploration montage for the Getty Museum and has been involved in television programming development and music video production

development and music video production



**CAROLE KIRSCHNER** spent fifteen years as a television development executive. A former vice president of Steven Spielberg's Amblin Entertainment and a Comedy Development exec at CBS, she's had the privilege of working with some of the most respected writers in the industry. Using her inside knowledge of the business, she created and runs two innovate training Programs: CBS Writers

Mentoring Program and The Assistant Training Program for Television. She also had the pleasure of helping Jeffrey Melvoin develop the curriculum for the WGA Showrunner Training Program and as the Director is responsible for overseeing it. In addition to these programs, Carole leads popular pitching, networking and career development seminars through her consulting practice and has just completed a book on breaking down the barriers to success in the entertainment industry for Michael Weise Publishing.



**SANDRA DE CASTRO BUFFINGTON, MPH** is director of Hollywood, Health & Society, a program of the USC Annenberg Norman Lear Center that provides Hollywood's entertainment industry professionals with accurate and timely information for health storylines for TV, film and new media. Her research demonstrates the profound impact that entertainment media have on individual knowledge and behavior. Sandra is known for her award-winning

work in global health, entertainment education and social transformation. She has 30 years of experience working in global leadership, entertainment and emergence technologies; 20 years were spent working internationally, and five of those years were spent in residence overseas. Sandra has received numerous honors and awards including the USAID Maximizing Access and Quality Outstanding Achievement Award for her social change programs, and Brazil's Award for Leadership in developing the Bahia State Reproductive Health program.



**MARTIN KAPLAN, PhD** is the Lear Center founding director Martin Kaplan, a former associate dean of the USC Annenberg School, holds the Norman Lear Chair in Entertainment, Media and Society. A summa cum laude graduate of Harvard in molecular biology, a Marshall Scholar in English at Cambridge University, and a Stanford PhD in modern thought and literature, he was Vice President Walter Mondale's chief speechwriter and deputy presidential campaign manager.

He has been a Disney Studios vice president of motion picture production, a film and television writer and producer, a radio host, print columnist and blogger.

# THE HEAT IS ON!



**Martin Kaplan:** Hi, everybody. Thank you so much for coming. My name is Marty Kaplan. I'm the Director of the Norman Lear Center, which is the auspices and umbrella organization under which Hollywood, Health & Society comes. I'm thrilled to see a full house.



Marty Kaplan

This is an exciting evening on a really important topic, and we're really happy to be involved in it. Some people here have helped us getting to this point. I want to thank all of them, and to thank the Academy for this venue.

It was either Aristotle or Dr. Phil who said, "Without conflict, no drama." boy, do we have conflict tonight.

This topic is all about conflict between people and nature, nature and people, people and people. There are plenty of stories to be told, and we're going to hear lots of them. we hope they provide inspiration to all of you.

In the car yesterday, I heard an interview with a writer named Mark Hertsgaard who has a new book called *Hot*, which came out. He was asked about whether he thought the verdict was in for the science of climate science. he put it in an interesting way. He said, "Say you had a sick kid, and you went to 100 doctors and 97 of them said your kid needs an operation and three said 'no.' What would you do?" That made the point.

This morning there was an account of a congressional hearing

that took place yesterday: "At House EPA hearing both sides claim science." This is right on point. I wanted to quote you what one member of Congress said after listening to what had gone on at the hearing. He said, "If Copernicus, Galileo, Newton and Einstein were testifying today, the Republicans would not accept their views until all the Arctic ice has melted and hell has frozen over, whichever comes first."

(Laughter)

I am simply quoting. It's my great pleasure to introduce to you the Director of Hollywood, Health & Society, who will introduce the panel in turn. Please welcome Sandra de Castro Buffington.

(Applause)

**Sandra de Castro Buffington:** Thank you, Marty. Good evening everyone and thank you all for being here with us tonight. I see so many friends. It's really lovely.

As many of you know, Hollywood, Health & Society has spent the last nine years working with Hollywood's entertainment community to help writers and producers get accurate health information for their scripts. When we ask writers, "What is your goal?" they say to us, "To tell the most compelling story I can tell." We help writers and producers make those stories more compelling by making them more accurate and more realistic.

Scriptwriters are the master storytellers of our time. Their stories transport millions of viewers around the world and invent what happens in our culture. There may be no more important story today than climate change.



Sandra de Castro Buffington

**“** *The magnitude of this crisis is calling for dramatic change of the kind that can be inspired only by great storytelling.* **”**

Sandra de Castro Buffington

Human survival is dependent on managing climate change. An evolutionary biologist, Elisabet Sahtouris, said, “Crisis is an evolutionary driver.” Incremental change is no longer sufficient. The magnitude of this crisis is calling for dramatic change of the kind that can be inspired only by great storytelling.

So tonight, we are pleased to bring together this extraordinary panel of experts for “The Heat Is On: Creating a Viable Future in the Face of Climate Change.” Tonight, we will hear from an expert on climate change from the Centers for Disease Control and Prevention, a UCLA scientist and professor on the health impacts of climate change, a futurist with a view on how climate change fits into the evolution of humanity, a well-known actor and longtime activist, and an acclaimed documentary filmmaker.

I’m delighted to introduce our keynote speaker for this evening from the CDC, Dr. George Luber. Dr. Luber is an epidemiologist and the Associate Director for Climate Change at the CDC’s National Center for Environmental Health. His research interests include the health impacts of environmental change and biodiversity loss, and the health effects of climate change. Most recently, his work has focused on the prevention of heat-related illness and death, and the application of remote sensing techniques to model vulnerability to heat stress in urban environments, and I hope he’ll tell us what that means.

So please join me in welcoming Dr. George Luber.

(Applause)

**George Luber:** Thanks, Sandra. Thank you for this space to tell our story from the scientific point of view. I’m really grateful for this opportunity. I’m also extremely honored to be able to share the panel with one of my heroes in environmental health, Dr. Dick Jackson, who was my first boss at CDC. It’s truly an honor to see him again and to share this space.

“Climate change isn’t about polar bears and penguins and plants. It’s about people.”

George Luber



George Luber, Associate Director for Climate Change at the CDC’s National Center for Environmental Health

Today, I’d like to give a human face to climate change and talk about why you should care about climate change. Climate change isn’t about polar bears and penguins and plants. It’s about people. So I’d like to talk about what we know about climate change and how it impacts people, and finish with a few thoughts on what we can do about it. What is the path forward?

This is what was revealed by a report from the International Panel on Climate Change (IPCC) in 2007. On this side of the country, it’s not a dirty word. The IPCC report is the authoritative summary of what we know about the state of the climate science. 99 doctors in the room out of the hundred conclude unequivocally that the earth’s climate is changing; we are observing it, and it is caused by the things that we do.

This should be the end of the story. We should say, “Okay, let’s start working on it.” Instead, it’s the beginning of our story. What this story tells us is that this warming is unequivocal, both in the observed record and in the impact that it has on earth systems – not in the poles, not in glaciers. We’re seeing physical and biological systems on all continents, from the tropics to the northern latitudes already affected by climate change.

But what’s most frightening is that the changes that we’re observing in the environment are the result of emissions that were put into the atmosphere in the last 50 years. The emissions that we put into our atmosphere now don’t change the climate now, because there’s a big lag in the system – a big delay – from when



we put the emissions in to when the effect occurs. The emissions that we're putting in the atmosphere now are not going to cause effect for about 40 years. The commitment that we have made to climate change is already apparent. So we're committed to more warming, even if we took every car off the road today.

What are the future projections to this? First of all, all of these things impact public health in some way, and this is what I'll be talking about. We're going to get heat waves – more intense and more frequent. We're going to get heavier precipitation. Heavy rainfall where it doesn't come down softly like it used to. It's going to come very fast and very quickly – three inches of rain a day, four inches of rain, sometimes 27 inches of rain – as I'll show you in a minute.

Tropical cyclones will become more intense. As we put more heat into the system, it churns things up even faster. Not a whole lot of evidence that we're going to get more hurricanes. Because mind you, the observational window that we've been tracking hurricanes has really come into play with the advent of the satellite era. Before satellites, we didn't know if hurricanes were in the middle of the Atlantic and went to sea, unless a ship passed it and recorded it.

But we do know that they're becoming more intense, with more damaging wind speeds and heavier rainfall. That's what we care about – the ones that matter to us are the more intense ones. I'm from Florida, so when we get the Category 2s, we don't even worry about it. But the Category 3s and 4s, then we start paying attention.

We're more likely to have areas affected by drought – that's the big issue in this part of the country. of course, sea levels will rise very close to the ocean, where we have most of this nation's critical infrastructure, including schools and hospitals, and power plants, et cetera.

Some of these weather events are going to be beyond anything we've ever experienced. The 2003 heat wave in Europe was one of those events that were so anomalous that Europeans had never encountered anything like this before.

I was on-call when that heat wave hit and had to go to France the next day. The confirmed mortality – the ones who died of heat-related mortality – was 30,000 in an 8-day period. Excess mortality was 70,000. No other environmental disaster that I can think of has even come close to that amount of impact. This was in an area that has a very well-developed public health and emergency response infrastructure. We weren't prepared for it.

Why weren't we prepared? Why should we be worried about heat waves? Heat waves don't occur in a vacuum; they occur in the confluence of multiple systems, multiple things that either protect us or harm us.

Thermal remote sensing is one of my areas of specialty. We use satellite images to take "thermal fingerprints" of cities. This is a fingerprint snapshot of nighttime Phoenix. Phoenix is in a dry desert environment, like Los Angeles. It typically cools down at night, giving a great respite from the heat for the three people who might not have air conditioning; and more importantly reducing the burden on another critical system—the electrical system—by reducing the peak energy demand.

Phoenix had its record nighttime low in 2007 of 99 degrees. That's the record low, that's the low for the day. peak can get up to 120 degrees. It puts a tremendous stress on the electrical system, causing the potential for a massive catastrophe when the power grid fails. You could imagine Paris with 70,000 excess deaths. I can't imagine what would happen in Phoenix if we had multiple system failures.

Part of the reason is because of the engineered infrastructure, the built environment, of our cities. Cities are great at capturing

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George Luber

heat, trapping it and holding it, and elevating that nighttime temperature. You can't get a respite from the heat. Los Angeles spends a quarter of its annual energy budget accommodating for the effects of the urban heat island. Black top, or concrete, surfaces not only radiate out heat, but they prevent water from seeping in, making it necessary for us to handle all that water. I'll explain what that does later.

The heat island not only intensifies heat within the city, certain pockets of the city are hotter than others, and some are significantly hotter. That's why we do this mapping, to find the hottest spots of the cities. How can we predict where deaths are going to occur within the cities? It affects temperature, which can cause a lot of deaths as heat-related illness is the number-one cause of weather-related death in the United States. But it also affects air quality. It interacts with smog precursors or other pollutants in the air to produce a pollutant called ozone.

In urban areas, as the temperature rises, ozone rises. What happens afterwards? We get a lot of kids going to the ER. We get a lot of elderly, those with preexisting respiratory conditions flooding the ER. The hidden costs of that are tremendous. The numbers of over-the-counter medications, the number of prescription medications, the numbers of ER visits, go through the roof. Tremendous costs are incurred.

Climate change is a pretty poor term. First, we started with global warming. That really didn't capture what was going on because it was whole climate regimes that were changing. We have rainfall and drying and we get more intense winters because the earth's system is churning and moving things around in unpredictable ways.

We also have fundamental changes to the earth's atmosphere chemistry that seem to impact health as well. This is not a function of temperature or rainfall, but the actual amount of CO2 in the atmosphere – which is now creeping up towards 400 parts per

million – is affecting plants. One of the plants that are most sensitive to this extra CO2 in the environment is ragweed.

This researcher from USDA, Louis Cisco, planted this ragweed plant across a line in Baltimore, from the urban area to the suburban area to the rural area. The urban area has a higher concentration of CO2. Locally, it's called the CO2 dome. Because of the cars and because of the mobile-source emissions, cities have a higher concentration of CO2 versus rural areas.

Higher concentrations of CO2 stimulate this plant production. The pollen production of the urban plants is about 12,000 pollen grains per cubic meter of air versus 2,000 in the rural area. A dramatic increase in the amount of pollen that's available in the air causes a lot of medical costs with hay fever, allergic disease and, for the most vulnerable, visits to the ER. We can expect not only CO2 fertilization to increase the amount of pollen, but also longer growing seasons because spring is coming earlier. The amount of frost-free days is much less. Growing seasons are then increasing; in some areas, by as much as 27 days extra in a year.

Poison ivy's another one that's stimulated by the CO2 fertilization. It doesn't produce more pollen, but it produces more of its allergenic compound, urushiol. Thus, super-poison ivy is growing now with CO2 stimulation and the effects of climate change.

I mentioned heavy precipitation. As the earth's atmosphere warms, its ability to hold moisture increases. So we get more moisture in the air. That moisture cycles much faster too. The evaporation and precipitation cycles increase much more dramatically. This leads to heavier rainfall, and more violent storms.

In Mumbai in 2005, 37 inches of rain fell in a one-day period leading to 1,000 deaths. But I guarantee you that this is an underestimate. This number represents the deaths they could count. Who is this most affecting? In most developed countries, you have great migrations to the urban areas and there's not enough housing. So people live in squatter settlements on the

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George Luber



edge of towns, and they're usually on the most undesirable land in drainages, on the sides of hills and in the bottomlands, where nobody has built before for good reason. That's where you get most of the deaths.

There's a convergence between exposure, heavy rainfall and runoff, with vulnerability. The poorest are the ones most affected, and conversely the least able to cope with it because they don't have many resources. Hurricane Katrina was a great example of how those with the fewest resources were the ones most impacted. We have families in New Orleans. They picked up and went to Houston and put their kids in private schools. When all the stuff cleared out, they moved back and went back to life like before. But that's not the case with many of the poor who are still having trouble recovering from this.

I chose a few other impacts that might be relevant to this part of the country. Another is pine bark beetles. Pine bark beetles have a massive impact on the pine deaths in Colorado and many parts of the west. We get a lot of thunderstorm activity from this heavy convection in the atmosphere causing a lot of wildfires. This leads to fire damage, property loss and really bad air quality.

The city of Denver is having a hard time dealing with all the extra sediment runoff from the Rocky Mountains. It's getting into the waters because the forests are not able to hold the moisture. Whenever it rains, you get a lot of runoff into the streams. Their public water system cannot keep up with the sediment load that's coming downstream from the mountains into their public drinking water systems and their reservoirs. They're having a difficult time maintaining safe and clean levels because the system is overburdened with all this sediment.

The timber industry is affected, another interesting example of how some of the global changes can really cross boundaries. The Sirocco winds that come off of Western Africa and the Sahara are intensifying because of the warming of the earth's system. These



George Luber

dust storms are transporting these fine particles across the Atlantic Ocean and depositing them in the Caribbean.

Whenever we have these Sirocco winds and if you ever go out to the West Indies, you can see the hazy sky as a result of this dust transported from the Sahara. When the sediment lands, it increases asthma rates and also brings with it some novel critters. This *Aspergillus* is a fungus that can cause respiratory infections.

I'm from Florida, so I always like to show something related to home. Harmful algal blooms – we call them HABs, but you might know them as red tide – are made up of a wide variety of algae and algal-like organisms. We're seeing a dramatic redistribution of some of these harmful algal bloom species.

One called slender, or spore maxis, is a formerly tropical harmful algal bloom and a potent liver toxin, usually found in tropical waters. But now we're starting to see it all over Florida and in many warm-water areas. This is because the surface water is now maintaining warmer temperatures. The increased rainfall is pumping lots of sediment and nutrients into these waterways, enhancing the capacity to bloom.

We get red tide every once in awhile in Florida, and the tourists gripe about it. It turns out that this produces a pretty serious respiratory toxin called brevetoxin. It's not a big concern for healthy adults, but consider who lives on the beaches in Florida – the elderly. We're supposed to send a message about going out

and being active, maybe taking a walk along the beach. During a red tide, that might be the wrong message. They are increasing in frequency as so we really have to monitor this

I had an idea for a story. It's a real story, where we monitor harmful algal bloom-related illness. Most of the cases we get are dog deaths. Unfortunately, people walk their dogs and the dogs jump into the scummy pond. They come out, and about 20 minutes later, they die.

There was one case of a couple kids who were diving for golf balls in and around golf courses. Golf courses represent an interesting convergence of these kinds of risk factors. We get a lot of nutrients that have been pumped on the grass, and you get rainfall or irrigation that feeds these ponds with a lot of nutrients in increased temperatures and rainfall, and you get scummy ponds.

There were two kids who were diving for golf balls to sell on the side of the road, because that's what kids do in Florida. One of them came out of one of these ponds with this harmful algal bloom and died, unfortunately. The death was not confirmed as a harmful algal bloom-related death, because the person had some preexisting conditions, but it certainly looked that way. His buddy became sick.

So we might not think much of these exposures if you only have a few dog deaths. But it can be really serious when they happen in places that we're not expecting it. That's why it's important to monitor it and make sure that we know what's going on.

These harmful algal blooms and these toxins that are in water are not regulated under EPA Safe Water. So we need to put a lot of resources into figuring out how to characterize these toxins and what do they do to us, and figure out how to monitor them routinely, because we aren't doing that.

Here's another one that we're not really monitoring very well. It's a

tropical Caribbean seafood poisoning. The most common seafood poisoning worldwide is ciguatera fish poisoning. Usually only found in the Caribbean little fish eat the algae on the reefs which contain a toxin. It's associated with climate change because when you get a storm, or when you get warming temperatures and a coral bleaching event, this is the algae that colonize first.

When you get a disturbed reef habitat, these opportunistic algae come in and fill in all the cracks first. the little fish, the herbivorous algae-eating fish, eat all this algae. Then the bigger fish eat the little fish, and the bigger fish eat those fish. the biggest fish on the reef – the barracuda, amberjack, grouper, ling, et cetera – can accumulate this toxin in their flesh.

We've been monitoring this in the Caribbean for a while. We've got increased temperatures in the Gulf and we've also got 4,000 oil rig platforms. Prior to the oil rig platforms, there was no coral ecology in the Gulf of Mexico. Now, within the past 40 years, we have a hard substrate. We've got these rigs and they're great. My brother used to go and dive and catch big fish. Because it's very vertical, you have lots of different species.

We did a study with the University of Texas suspecting that we'd find cases of ciguatera on these reefs. Sure enough, we found a bunch of cases. What this demonstrates is that this formerly tropical bug is now finding its way into the Northern Gulf of Mexico, where previously it couldn't have survived. We also found a case off of South Carolina.

The changing distribution of these illnesses is really quite staggering. We have some that are cropping up in places that we really wouldn't suspect.

Malaria gets most of the press when it comes to health and climate change. The IPCC says that because of warming temperatures, we're going to get a redistribution or spreading change, a change in where we might find these bugs. Not mosquito-borne diseases,



“*The changing distribution of these illnesses is really quite staggering.*”

George Luber

but all kinds of other ones as well. It's not only the decrease in latitudes northward and southward, but also in altitude as up the sides of mountains.

If you look at Africa, at Zimbabwe, for example, most of those cities and populous areas are built outside of the malaria zone. As we have an increase of the altitude, we have a whole range of naïve populations that don't have malaria. We can expect some quite serious outbreaks.

But this one is important for the United States. Lyme disease is number eight on the list of CDC's list of notifiable diseases. Not a rare disease at all, and increasing in frequency. When we model future climate, future population, and where we live, we're living in the woods a lot more, we're doing a lot more outdoor activities and this is a map of how that ecology changes. That 20/80 Lyme disease is going to be our newest export to Canada. They're quite concerned about it because it's spreading northward and even eastward in certain areas.

We have plenty of surprises in store. This was one. *Cryptococcus gattii* is another fungal infection that came out of nowhere—formerly subtropical, mostly tropical—and moved up to Vancouver Island, Columbia. Since 2004, we had 216 cases, eight deaths. This is a fungus that you inhale by being out in the woods and walking. Most of the early cases were people who were on some immune-compromised rheumatoid arthritis or something. They were taking some medication that would lower their immune capacity.

But now we're finding strains that are affecting non-immunocompromised people. This is from walking in the woods, because the fungus grows on the trees in the old-growth areas. We're finding it in Oregon and Washington as well. So there are very surprising jumps in these organisms that we have to become prepared for.

Okay, that was the good news.

(Laughter)

The bad news is that we're really unprepared to deal with this. I'm wearing my CDC hat now. Despite the fact that the energy, the transportation, the agriculture, the insurance industry are the leaders in climate change research, the reinsurance industry is so far ahead of everyone else because they know what the risks are. They're the ones doing all the good work. Despite the amount of organizations and initiatives on climate change, we really haven't begun to address what it means for health. Health provides a perfect frame for engaging the public in these issues because people care about their health.

I'm going to give two examples of the path forward, and what might be ways to engage people or how we, at least, think about framing climate change. Not about polar bears and penguins, but about people and the path forward.

The first path is to identify these co-benefits and synergies. What I mean by co-benefits is the efforts to mitigate climate change, to reduce emissions or adapt to these effects by building more resilient communities by building climate-ready cities that can have other societal benefits.

It is black and white in at CDC in Atlanta. Walking to school is something I don't think we've seen in Atlanta for 50 years, but it is an example of a type of activities that we can promote and design



(From left): Richard Jackson, Barbara Marx Hubbard, Ed Begley, Jr., and Michael Nash

“Climate change is a mainstream issue. Maybe not the most popular topic, but it must be framed as a human welfare and a public health issue.”

George Luber

into our lives. It can have such a wide variety of benefits that it won't matter if we're addressing climate change; it matters that we're improving people's health.

For example, by getting people out of their cars, we reduce emissions. Pretty simple, right? But we also increase physical activity in kids, and obesity is the number-one pediatric crisis affecting this country. We also reduce air pollution, which impacts rates of asthma and a number of other conditions affecting kids.

Getting people out of that metal-and-glass box allows them to talk to people. You can meet your neighbors and talk to other people in your neighborhood. That is one of the criteria for a resilient community – building social networks and building connections between people. If you have a crisis, who are you going to turn to? Your neighbors are there first.

But we also have shown that physical activity in women reduces depression, reduces injuries. The number-one cause of death for people 3- to 33-years-old is motor vehicle accidents. So get them out of their cars. By the way, we wouldn't have to spend so much darn money on infrastructure. This is an example of the co-benefits that we can get from doing a simple activity that can be centered on climate change.

The second path is to really frame this message in a better way than we have been. We can draw on some great successes. If we can get people to get a colonoscopy, to quit smoking, to take their heart medications, to use a condom, increase physical activity; we can move the world. Come on. Why can't we give climate change some traction?

This is the current stage of climate change communication. But we got the alarmist approach, which is very popular. We've got the accusatory approach, which is equally popular. That's the tone people get when they hear about climate change. If you're not doing this, you're killing the planet. Why can't we find a better

frame?

Scientists are equally guilty of this blame game. For example, the fatter you are, the more emissions you have, because you take more gas to drive you around and more food to feed you.

This is how we frame it in the popular media. It is not a positive message because we really need to engage people. But we also have to be very careful because climate change is pretty scary. I have a whole bunch of scarier stories. But we have to be careful which alarms we're going to ring. Is this an epidemic that will sweep the country? Or that we can make life better by doing healthy things that can affect the climate as if we pay a little attention to it. We have to choose the right alarmist message, indeed, to get action.

My final thought to you today is that we really need to reframe the climate change dialogue away from polar bears and onto people. Where better to focus than on children? They're the ones who are going to inherit our climate future.

To conclude, climate change is a mainstream issue. Maybe not the most popular topic, but it must be framed as a human welfare and a public health issue. The opportunity costs of not acting on this are far too high, not only for us but for our children.

Thank you.

(Applause)

**Sandra de Castro Buffington:** Thank you, George, for sharing this important information and for the extraordinary work that you do.

Next, I'd like to introduce to our distinguished panelists. I am very pleased to introduce Dr. Richard Jackson. Dr. Jackson is Professor and Chair of Environmental Health Sciences at the School of Public



Health at UCLA. A pediatrician and public health leader, he's served in many leadership positions in both environmental health and infectious disease with the California Health Department. For nine years, he was the Director of the CDC's National Center for Environmental Health in Atlanta. For his work there, he received the Presidential Distinguished Service Award.

He's been a true leader, visionary and innovator in the field of environmental health, making great strides in reducing risks from pesticides; monitoring birth defects and combating asthma and childhood lead poisoning. His passion is how the design of the built environment impacts our health.

Next, I'd like to present Barbara Marx Hubbard. Barbara is co-founder of the Foundation for Conscious Evolution. She's an educator, a speaker and a social innovator who has authored five books on the new worldview of conscious evolution. Barbara is the producer and narrator of the award-winning documentary series entitled "Humanity Ascending: A New Way through Together."

Buckminster Fuller has said of Barbara, "She is the best informed human now alive regarding futurism and the foresights it has produced." in 1984, her name was placed in nomination for the Vice Presidency of the United States on the Democratic ticket, calling for a Peace Room, as sophisticated as our War Room, to scan for, map, connect and communicate what is working in America and around the world.

We are also very glad to be joined tonight by actor and activist Ed Begley, Jr. Ed began his 40-year eco-journey in 1970 and has been considered an environmental leader in the Hollywood community for years. He's a popular speaker on eco-living and is known for his theme: live simply, so others can simply live.

He serves on the boards of the Coalition for Clean Air, the Thoreau Institute, the Environmental Media Association, and many others. His work has earned him a number of awards from groups such

as the California League of Conservation Voters, the Natural Resources Defense Council, the Coalition for Clean Air, Heal the Bay, and more.

He lives in a self-sufficient home powered by solar energy with his wife and co-star, Rachelle Carson, and their daughter, Hayden, who are sitting here in the front row tonight. Welcome to you both. I'd also like to give personal thanks to Ed for all that he does. He gives his time so generously to environmental causes. We really appreciate what you do for us.

(Applause)

Next, I'd like to introduce documentary filmmaker Michael Nash. His award-winning film, *Climate Refugees*, was the only film screened by the United Nations at the 2009 UN Conference on Climate Change in Copenhagen. Nash has served on various panels as an expert on climatic migrations and green solutions. He was recently an honored recipient of the Global Innovation Award, Senator Boxer's 2010 Conservation Champion Award, and the 2010 Neiman Marcus Environmental Visions Filmmaker Award.

*Climate Refugees* had its world premiere at the 2010 Sundance Film Festival and was noted by Robert Redford in the *New York Times* as an agent for social change. Nash's first feature, the critically acclaimed film, *Fuel*, won top feature film honors around the globe.

Please join me in welcoming all of our distinguished panelists.

(Applause)

I'll turn this over to our moderator extraordinaire, Carole Kirschner. Carole spent 15 years as a television development executive. She worked as an executive in comedy development at CBS and held the position of vice president of Steven Spielberg's Amblin Entertainment. She now runs the CBS Writers Mentoring Program

and the Assistant Training Program for television, as well as directing the Showrunner Training Program at the Writers Guild of America West. She has been working with Hollywood, Health & Society on a special project to take a group of Hollywood’s writers on research trips to South Africa and to India.

Thank you, Carole, for serving as our moderator tonight.

**Carole Kirschner:** Thank you, Sandra.

I’m really happy to be here this evening. This topic promises to be a fascinating conversation. We’re going to hear from our panelists first. Everybody’s going to make a short presentation, and then we’ll have about 15 minutes for questions and answers at the end.

To start things off, we’re going to hear from Dr. Richard Jackson of the UCLA School of Public Health. Dr. Jackson, the floor is yours.

**Richard Jackson:** George did a wonderful job laying all this out.

When I open my course at UCLA, I say to my students, “Can you dream for me what a really healthy city would look like?” Their response includes having gardens growing and fresh food, and we’d have a farmer’s market. We would have cafés. People could sit outside, and they could say “hello” to their neighbors. It wouldn’t be loaded with cars. You could get where you needed to go without being white-knuckled, stressed out, and dying to get to work every single day. It would have nice parks and would have schools that really taught children how to be healthy.

So I ask them to describe for me an environmentally smart city. They say things like, “people would walk a lot. They wouldn’t use cars. They would use transit. They’d have gardens.” Sound familiar? I ask them to describe for me a prosperous city. They say, “It would have lots of smart, young people. Because that’s the most important thing you have for a prosperous city. Then after that, you’ve got good core industry, and everybody has a job, and

really meaningful lives, and all the rest.” I say, “Did you notice that they’re all the same?”

The theme of the whole course is how do we bring together an intentional world that really is meeting our needs for economy, needs for environment, and needs for health. We are facing a crushing set of epidemics.

First is the obesity epidemic. I was the state health officer and I remember saying to my boss that I thought obesity was the number-two biggest threat that we were facing. He said, “ I was a puny boy in Bavaria.”

(Laughter)

But the real truth is that we’ve created a population shift towards obesity, and then we blame the individuals who end up having to bear the brunt of this.

We are now spending \$1.7 trillion on medicines and drugs. We’re spending \$1.2 trillion in the United States on food. What kind of country spends more money on medicine and drugs than it spends on all the food that we eat inside the house and outside the house? The truth is that the medical care system will collapse. It cannot take care of this tripling of obesity in our teenage kids, the quadrupling of obesity in our preteen kids. The fact is that we’re now seeing old-age diseases in people who are 17, 18 years of age.

The other negative trajectory – and George didn’t mention this – but George, when I was born, the planet’s blood CO2 was 300. When my kid was born, the planet’s CO2 level was about 370. Today, it is 390.

Any doctor who ignores a patient who is retaining CO2 in their system, retaining carbon dioxide – that person is dying – has to intervene. If you don’t intervene, it’s malpractice. Los Angeles is



“*...the real truth is that we’ve created a population shift towards obesity, and then we blame the individuals who end up having to bear the brunt of this.*”

Richard Jackson

(From left): George Luber, Sandra de Castro Buffington, Carole Kirschner and Richard Jackson



four degrees hotter at night than it was 100 years ago, with the way we've changed this landscape as well. We have to intervene with our environment, we have to intervene with these disease entities, and we have got to come up with a positive vision.

My friend, Beverly Baroff, is here. Beverly had a film of me arguing with my youngest son, who was a Peace and Conflict major from Berkeley. He's decided he is going to go to "peace" college, not to "war" college. I was arguing about these big issues. He's saying, "Dad, I can't deal with all that stuff. All I can do is lead a life that makes sense. I'm a vegan, I don't own a car, and I bicycle where I need to go. I get my clothes out of the free pile, and I refuse to buy into the system that you people have committed generational child abuse upon my generation. I can't change the world, but I'm going to change myself, and my friends are going to have a new vision."

Maybe I'll close with that: casting a positive vision of communities that foster health, foster economy, foster the environment, that create places for our children to have meaningful, healthful lives. This is really the great task of our generation. Thank you.

(Applause)

**Carole Kirschner:** Dr. Jackson, what are our biggest challenges in making progress towards mitigating the health effects of climate change?

**Richard Jackson:** Ed Begley will talk a lot more about this than I will, but one is reducing our carbon footprint. If you drive to San Francisco, you buy about a one-in-200,000 chance of dying. If we had high-speed rail, you would produce 20 times less carbon dioxide and greenhouse gasses. The Japanese have had high-speed rails since 1964; they've carried five billion – not million – passengers and they haven't had a single fatality. I'll bet it's rare that Highway 5 goes a week without a fatality.

How do we create this win-win-win? How do we reduce the carbon footprint? You get to San Francisco going up on the train. You're rested, you're relieved, and you want to go about your day. You've impacted the environment less, and it's a win-win-win. Yet, the political opposition to this is a disgrace.

This country has brilliant people. If we decided we wanted high-speed rail, if we decided we wanted transit systems, why in God's name do we not have light-rail going down the center of the 405 freeway? Instead, people sit in stopped traffic. How could anyone be happy in the situation we're in? What we have is a failure of vision, of creating places that really work for people. I'm sorry if I sound angry, but I am angry. I'm a pediatrician, and I don't like what we're doing to our kids.

**Carole Kirschner:** Understandably. What's a more effective approach from a policy change regarding these issues? How will we get there?

**Richard Jackson:** It's probably a set of clichés. One is the change in the Middle East. Does anyone think it won't be \$5 a gallon this year? This will have major impacts. We're already seeing this. For example, teenage driving deaths dropped by 7,000 per year during the last gasoline shock when gasoline got more expensive.

**Carole Kirschner:** Wow.

**Richard Jackson:** Charge the real costs of things. There are

“...teenage driving deaths dropped by 7,000 per year during the last gasoline shock when gasoline got more expensive.”

Richard Jackson

serious people who say a gallon of gasoline really costs \$15 if you factor in air pollution and environmental impacts. Then we have this enormous military complex to support all the fuel that we are bringing in.

One of the efforts at CDC is—how do you do lifecycle analysis and figure out what things really cost? They say that socialism failed because it didn't tell the truth about the prices, and capitalism will fail because it doesn't tell the truth about the environment.

**Carole Kirschner:** Thank you.

Next, we'll hear from Barbara Marx Hubbard, who will speak about the climate change from her perspective as a futurist. Barbara?

**Barbara Marx Hubbard:** Thank you. This is very wonderful and fascinating for me as a futurist. What futurists are really longing to understand is the new story that can give us a sense of direction, hope and a positive future. Without vision, people will perish.

What seems is happening here is that the mounting awareness of crisis starting in 1945, when the United States dropped the first atomic bombs on Japan, ended the story that progress was inevitable. It really showed up that we could destroy ourselves with all this power.

My father was a friend of President Eisenhower's. In 1952, I went into the Oval Office. I said, "Mr. President, I have a question for you. What do you think is the meaning of all this new power that's good? If there is anything good about all of this science, industry, technology? What, Mr. President, do you think is good?" He looked very startled. He shook his head, and he said, "I have no idea."

(Laughter)

So then, I thought, we'd better find out. Because the power is not

going to get less, it's going to get more. When you look at the range of problems, a lot of them are caused by the acceleration of human population, human power, and human technology.

So I went on a quest. I was telling this earlier today. When I was a young student in Paris, I went alone to lunch one day. I had a habit of asking every young man I met, "What do you think is the meaning of our power that's good? What's your purpose?" An artist came in and sat across from me. I said, "What do you think your purpose is, and what is the meaning of this power?" he said, "I'm an artist. I'm seeking a new image of man commensurate with our power to shape the future." And I thought, "I'm going to marry you."

(Laughter)

I did. I did. I had five children.

After that, we began to really track the new story. I'd like to tell you briefly what we tracked.

Basically, it started with the American Apollo program, the space program. Going into space, seeing earth from space, suddenly we realized that we're one living body. Not only that, we realized that for billions of years, nature has been evolving, crisis after crisis after crisis, to an earth system where the crisis is mounting. For the first time, we're seeing ourselves from the overview of space.

We began to see that maybe the sense that all these crises – environmental and social – climate change may be the biggest of all of them. It is a crisis that's causing innovation and transformation; a crisis of the birth of some kind of civilization that wants to be more cooperative and sustainable, and that wants to have more ice. What if we started looking for innovations that work? Because in the entire news industry, most of the drama is about crisis and what doesn't work.

**“What futurists are really longing to understand is the new story that can give us a sense of direction, hope and a positive future.”**

Barbara Marx Hubbard

The reason I ran for Vice President was inspired by Buckminster Fuller. He said to me, “You’ve got to take positive options for the future into the political arena.” I did.

Here was the idea. It was the only idea I could think of that could happen fast enough to affect the rapidity with which the crisis is occurring. Because it’s a timing issue; we don’t have hundreds of years to change.

Sandra mentioned it briefly, but here was the simple idea: We need a new social function that would have as its purpose to scan the world. Going to all these different countries looking for climate change issues – how to describe them, where is it working? Where is somebody solving this problem – even if it’s a small way or a very large way? How would you map it?

If you map what’s working, you begin to see the organic growth of a new civilization. But you have to have eyes to see that something is growing. If you start connecting what’s working in health, in education, in business, in energy systems; you begin to see the outlines of synergy. Social synergy causes a jump in creativity.

I began to study evolution. The key lesson of evolution is crises precede transformation. Problems are evolutionary drivers. The way nature jumps these problems is through greater connectivity of innovation and mutations.

I wondered why we didn’t do that. If nature’s been doing that for billions of years, why don’t we have a function on Internet and media and storytelling that has as its purpose to continually scan for where it’s working; to celebrate it, and to tell the stories about it? When Earl said to me way back there in the ‘40s, “Until the artists can tell the story of where we’re going and where we want to go, our culture cannot continue to grow.”

That’s when I became a futurist. I saw that the nature of our story is a crisis of birth toward a co-evolving, co-creative species. Or not.

The “or not” is the greatest wake-up call that human consciousness has ever had – to realize we’re affecting evolution by everything we do: the food we eat, the babies we produce, the cars we drive. Since we are affecting it negatively, we can also affect it positively.



Barbara Marx Hubbard

So, when I ran for Vice President, it was the most impossible task you could imagine. I was told I would be lucky to get one delegate if she were my mother. I was a grassroots futurist who headed out into the country in 1984, asking the question, “What do you know that works?”

I arrived at the Democratic National Convention with no money, no media, and no passes to the floor. I wasn’t really a politician; I was an idea candidate. But I got in. I made five-minute speeches at South Dakota caucuses at 5:30 a.m. That’s what I started with. I said, “I’m running for Vice President.” Our purpose is to put a new function in the office of the Vice President to find out what’s working in America.

They signed up. And in two days, I had more votes than Jesse Jackson and all the others. I was the other woman nominated, along with Geraldine Ferraro.

Now, when the guard walked me up there, he said, “Now, honey, they won’t pay any attention to you. They never do.” You’re saying this for the universe. So I said it for the universe. When the United States of America and other countries take on the task of identifying, connecting and communicating what’s working among their people, we will have a new world very quickly. I really believe that’s true.

“*The key lesson of evolution is crises precede transformation. Problems are evolutionary drivers.*”

Barbara Marx Hubbard

So I'm absolutely thrilled to be here with storytellers. Because here's the question, "How can we tell the story of what's growing, what's emerging, what's creative?" Because they say you have to have the drama and the distress. The drama is evolution or extinction. You were telling me what really would happen as global warming continues, and how many hundreds of millions, if not billions, of people may die. See, but it's a long-range crisis. It doesn't show up fast enough for the nervous system to get it.

“...we have to reframe the message, and we have to keep it positive.”

Ed Begley

So my question to everyone here is, how do we do this? Because it may be a survival issue that the storytellers know how to do this. Thank you.

(Applause)

**Carole Kirschner:** That's very inspiring. Let me ask you this. Because as a futurist, you inspire, you have a positive take on some big problems. How do you combat the cynicism and the despair, and the fear of what's going on, and the information that's being talked about tonight?

**Barbara Marx Hubbard:** Personally, after having really studied Cosmogogenesis...

**Carole Kirschner:** What is Cosmogogenesis?

**Barbara Marx Hubbard:** Cosmogogenesis is the story of how the universe got from nothing at all to everything that is.

**Carole Kirschner:** That's a big story.

**Barbara Marx Hubbard:** How did it get from, let's say, 13.7 billion years ago, as now assumed, to create energy, matter; and then, on this earth, life—animal life, human life—and now our life? You place yourself in that story.

Norman Cousins once said to me, "Barbara, there's arrogance and

pessimism when you study what nature has been able to do so far." With human intelligence, having been created by the process of creation itself, we are capable of figuring this out. Not only that, the crisis of having to figure it out is going to grow our species from a self-centered, infantile stage to a grown up one.

**Carole Kirschner:** That would do it. Thank you. Thank you very much.

Our next speaker is Ed Begley, Jr., actor and activist. We're going to start by watching a clip of Ed's new show, *Living with Ed*. Let's watch.

(clip plays)

(Applause)

**Ed Begley:** I'm not going to stand, because I don't want to expend more CO2.

(Laughter)

But the truth is I've been doing this stuff since 1970. I've got to thank George, and I've got to thank Richard and Barbara, for their wonderful observations. I agree, we have to reframe the message, and we have to keep it positive. I've had some good luck in the past many years going around the country talking about these matters. I go regularly to red state areas and I do very well, because I don't bring up climate change. But if somebody brings it up, I don't hide from it.

But I talk about something that I know I can win them over on – and I have in each instance. And that is something that they agree on. When I go to other parts of the country, I say, "Does everybody here want to lessen our dependence on foreign oil? Everybody here want to clean up the air here in Houston? Everybody here want to put money in their pocket?" That's what I'm talking about.



And, by the way, in case these wacky scientists happen to be right about climate change, you bought yourself an insurance policy against climate change that costs you no premium. You're doing these other things with them, and I've had great success with that.



I want to briefly give a plug to my friend, John Quigley, who regularly sits in trees to keep them from being cut down. I've visited him up there. But he's been up there for weeks and months sometimes as part of the Global Campaign for Climate Action. They're trying to reframe the message, as everybody here is. They're doing it in a different way.

We're not really winning on the facts. They start to pick out some little thing from the Intergovernmental Panel on Climate Change, or an East Anglia scientist wrote something wacky in an e-mail, and that suddenly becomes a reason to throw it all out. Like the O.J. Simpson trial – wow, Mark Fuhrman said some racist stuff. Let's throw out 38 pieces of physical evidence because he said some wacky things once when he was on the force. That's what they did with East Anglia and those e-mails – they found a couple wacky things that somebody said in an e-mail, and they threw out all the science.

We can certainly win on the scientific front, and we have. Again, it's 99 doctors out of 100, as George suggested. But that's not enough for some people, so we have to begin to frame it in a different way.



(From left): Barbara Marx Hubbard, Ed Begley, Jr., and Michael Nash

I started doing all this stuff in 1970. I can promise you I didn't have a TV series back then so I didn't have a lot of money. What did I do? Definitely not solar panels. I couldn't afford it. I'm a fiscal conservative. I did all the stuff that I could afford. I started recycling and composting and planting some fruits and vegetables. I even bought an electric car in 1970. People don't believe that, but it was a tailor-done electric car for \$950. When I say "car," I'm being quite grand—we're talking about a golf cart with the windshield wiper and a horn.

(Laughter)

I drove it around here. I lived in Burbank and I drove around the valley. Even though it was slow, it was good for a week's worth of groceries or laundry. I realized right away, as is suggested with the price of gasoline, it was much cheaper to plug it in the wall and get around the San Fernando Valley then to buy very cheap 1970 gasoline. Electricity was a lot cheaper than 1970 gasoline, the same way it is today.

So it was very inexpensive then. There was no tune-up or oil change, or fan belt or radiator flush, or smog check or valve job. Suddenly, I had all this extra money in my pocket from all the things I was doing, these green things. I liked it. I felt like I was doing my part to cut down on the smog, and I had extra dough. So I bought a little rain barrel to collect some rainwater. I saved extra money; my water bill went down. I bought a little solar oven to cook some meals outdoors, and I saved more money. I put in some attic insulation.

Pretty soon, after 15 years of doing it, I could afford solar hot water. Not solar electric yet. So my bills went down further. I bought a wind turbine in the California desert as an investment that still gives me checks 26 years later and still puts out many homes' worth of power. So I know that wind power works. I know that solar works. Then finally, in 1990, I put solar on my rooftop. It

The audience at the  
Television Academy of  
Arts & Sciences



runs my house and charges my car.

But we can afford this stuff today. The big lie is that, “oh, we can’t.” Some people say we’d love to do this stuff to address climate change. Some people say we can’t afford it. I’ve heard those arguments before about the smog in LA. The early ‘70s, “We can’t do it. I hate the smog myself, Ed, but we can’t afford to do it.” We did all that stuff, and it was not bad for the economy; it was good for the economy. The ‘70s, the ‘80s, the ‘90s, when we did most of that cleaning up of smog, people made money selling catalytic converters. There are jobs making catalytic converters, and combined cycle gas turbines, and spray paint, and all the stuff that cleaned up the air in Los Angeles.

For those of you who don’t know—the people who are not my age, but a little bit younger—the air was much worse in 1970. Some people labor under the delusion, that smog’s getting worse all the time. It’s a lot better because of all the stuff we did that worked; the catalytic converters, the combined cycle gas turbines. All those many things made the air better, even with four times the cars in Los Angeles from 1970 and millions more people moving in.

Now again, there’s still smog in Los Angeles, and horrible pockets of smog near the ports. Some communities are bearing an unfair burden of it, with a lot of diesel around them and that has to be addressed. We can do that; we’ve proven we can do it.

**“Some people labor under the delusion, that smog’s getting worse all the time. It’s a lot better because of all the stuff we did that worked.”**

Ed Begley

You don’t need to go broke doing it. There’s a tremendous amount of prosperity. You need to move away aggressively away from all these jobs being in oil derricks and coal mines and refineries, and move them towards building wind turbines and solar panels and energy-efficient homes, and all those things. But it’s not going to happen overnight.

Again, people love to cite things: “I can’t afford solar like you. I can’t afford an electric car.” Neither could I in 1970. Can you afford a light bulb? Can you afford a thermostat? Can you afford some weather-stripping? Do those things and you will make a difference that you can afford. That will address climate change.

The earth can be miraculously resilient in some instances. Look at the ozone depletion. We discovered how bad that was in 1987. We really got tough with it with eliminating CFCs from a lot of things. They told us that we’d never be able to have a refrigerator again. We won’t be able to have an air conditioner. We have both, of course. That ozone hole is smaller, ahead of schedule. We can do this.

Again, I’m not saying it’s all going to be fine from light bulbs. That’s not going to get it.

(Laughter)

But we should start with what we can do today. Everybody should do every one of those cheap and easy things. We need to write about and talk about it, and deal with good science.

I belong to a lot of environmental groups, and I certainly look at the information they post on their site. But I always go to someone with a PhD after their name, like the prestigious scientists and doctors that we have before us today, and read that peer-reviewed science stuff – science magazines, nature magazines.





Ed Begley, Jr.

For the doubters on climate change, the people who want to know about the science – visit NASA’s website and type in the words “NASA climate” on their search engine. If anybody wants to read some good science about the loss of sea level ice, and of that stuff comes from NASA and National Oceanic and Atmospheric Administration. These are people who don’t seem to have a dog in the race. They’re people who are talking about

the science.

We can talk about that, and that’s fine for the people who want to hear it. Otherwise, talk about our health, and about how we can save money doing it. When you think that we spent \$500 billion to \$700 billion a year on foreign oil, that’s a lot of money. We can build a lot of wind turbines with that. We can build a lot of solar panels with that. We need to move aggressively away from oil.

Twenty-nine people died at Madison Coal last year, and people died in the Deepwater Horizon rig, and we’re still being wasteful with energy. The least we can do to honor those people who are dying for our cheap energy is to be careful with it, and not waste it. That’s the very least we can do.

“*It’s human nature to doubt and be skeptical. And that’s good, up to a point.*”

Ed Begley

In World War II, everybody got together and brought together pots and pans and metal to recycle. They collected tires to recycle the rubber. People did things and got active. We need to do that, and spread the message about what we know for sure, and ways that we can have a healthy, prosperous future, and not go broke doing it.

So that’s all I have to say. I’m anxious to hear from Michael.

(Applause)

**Carole Kirschner:** Thank you.

Out of curiosity: the doubters, why do you think they doubt?

**Ed Begley:** It’s human nature to doubt and be skeptical. And that’s good, up to a point. But there’s something else going on. There is, as some suggest, a great deal of denial. At some point you see so much evidence about climate change, and there’s so much good science about it.

Some people don’t want to change. They think they’re not going to be able to drive around. They want to believe some of the people who are promoting fear. So they literally think it’s going to upset their world; they won’t be able to get from point A to point B. We’ll all be shivering at night and won’t have any heat, et cetera. But we can still have a cool beverage and a warm shower, just do it more efficiently.

When certain news outlets feed people, they’re more inclined to doubt. There’s a lot of bad science out there on this matter, as you know. So we have to counteract that with good science if people want to hear it. If not, emphasize other advantages of doing this stuff to have a healthy, prosperous future. That should be the goal.

**Carole Kirschner:** Your show is doing something towards that, in terms of changing people’s minds and giving them specifics that they can do.



(From left): Sandra de Castro Buffington and Carole Kirschner



Thank you very much. Our next speaker is filmmaker Michael Nash. He has directed the films *Climate Refugees* and *Fuel*. So let's start by playing the trailer for *Climate Refugees*.

(clip plays)

(Applause)

**Michael Nash:** First of all, let me thank Barbara and the Hollywood, Health & Society, too, for having all of us here.

About four years ago, I started this journey as a filmmaker, as a storyteller, as a writer, as a producer. I really wasn't sure what story I was going to tell. I'd heard both sides of the story on climate change – that climate change was happening, and that climate change wasn't caused by man. After doing a lot of research, I thought a lot about the human face of climate change, if indeed, it is an issue. So I spent three years traveling around the world in search of the human face of climate change. Was there a human face? If there was, what did it look like? Could we do anything about it?

I really had believed that climate change was about polar bears and Greenland. If it was going to happen, it was going to be 50 or 100 years away. I used to think,



Michael Nash

“So what if the temperature goes up two degrees?” – so I'll playing golf in 82-degree weather instead of 80-degree weather.

Until I started speaking to some experts, the difference between those two degrees is no different than the difference between someone having a 104 temperature and a 106 temperature. At 104, you're pretty

sick; at 106, you're dead.

I really started looking into the human face of climate change, and traveled to over 47 countries. What we saw was really more than we bargained for. We found an intersection in civilization where overpopulation, overconsumption, and lack of resources are all colliding with each other for the first time. It's forcing tens of millions of people to have to relocate to places. We now live in a border nation system.

About 2,000 years ago, people used to relocate; it wasn't an issue. But now, as people are starting to relocate to different countries, it's really become a national security issue. I'm very excited to be here with a bunch of storytellers, a bunch of writers and showrunners because I believe that we can pay it forward here.

You guys have the opportunity to take this information to millions and millions of people. I find that intoxicating; I find that exhilarating. I can't think of a time when we've had such an opportunity for growth.

There are currently 25 million climate refugees in Pakistan. Overnight, 20 percent of Pakistan went underwater and the United Nations called me up. They said they'd given birth to 21 million more climate refugees. What was really frightening was the Taliban, the terrorists, were in there recruiting these people who had no food or water.

That has the Pentagon and our national security people really thinking about this issue unlike they'd ever thought about it before. In fact, the Pentagon right now frames climate change second only to avoiding war with China, as the biggest issue in American foreign policy.

So when you get the military looking into this whole story, things change. The Pentagon is traditionally a very conservative outfit. But I interviewed a lot of these folks. When I wrote the treatment,

“...the Pentagon right now frames climate change second only to avoiding war with China, as the biggest issue in American foreign policy.”

Michael Nash

when I wrote the outline, never in any part of it did the two words “climate” and “war” ever go together. But it does at the end of act two in the film.

We are heading toward climate wars. We are heading toward resource wars. When we screened this to the Pentagon, they said that I was conservative in my approach on it. In the film, we predicted it would happen within 10 years.

As writers, we tell stories about people. In speaking with members of the military, there was one vice admiral who said something that I thought was really poetic. He said, “There is going to be time in the very near future, in the next decade, where we will be in resource climate wars, where parents will have to deal with the death of their children who wore the uniform of our country, who died in a war, in a climate war, in a resource war. That never had to take place had we gone green.”

When I heard that, it changed the game for me. We’re living in some fragile times. You asked the question earlier, why is it so hard to get people to change? What is taking place right now is no different than what took place in the tobacco industry in the 1950s, 1960s and 1970s. There is a lot of money paying for a lot of really strong documentation to be written stating that man isn’t causing this. Much like they said that cancer won’t kill you or smoking won’t kill you. When they couldn’t sell that anymore, they went on to secondhand smoke. They knew they’d never win the war. But if they could postpone it for three or four decades, they’d make billions.

That’s exactly the game that’s being played here. We need to do something about it. Fade in. There are 100 writers sitting in a room in North Hollywood.

(Laughter)

A couple showrunners, a panel up front. The question is, “Will we

take what we’ve learned today and institute it into the bandwidth that we are so blessed to work within?” From a person who traveled around the world and got lucky on this whole journey, the human face of climate change is out there. It’s unbelievable how climate change has a target, a bull’s eye, on children and on women. It’s not going away. Every day that we wait, it’s only going to get worse.

I’ve been screening this to colleges and governments, and parliaments and NGOs, and high schools all around the world. After each screening, we have a Q&As. It’s interesting to get the feedback of what these kids are saying and what they’re thinking.

There are a couple of young kids here today, but the youth should be represented much more. At most of our screenings, they are not. And it’s a little frustrating.

We need to reach our youth, and we can get them through television. Growing up, I was always very careful when I went into the forest. Why? Because “Smokey the Bear” told me that only I could prevent forest fires. Okay? All of us have the opportunity to put those messages out to the public. I never polluted, because “Woodsy the Owl” told me to give a hoot, don’t pollute. Right?

(Laughter)

Is there “Eco the Bear”? Be cool, live green. Whatever it is and whatever your minds come up with, we can greatly affect this



The audience at the Television Academy of Arts & Sciences.

“There is a lot of money paying for a lot of really strong documentation to be written stating that man isn’t causing this.”

Michael Nash



message throughout the world.

“*It is very clear that people are looking to America for the answers.*”

Michael Nash

In screening this film abroad, it's a little bit embarrassing being an American because there're so many countries that are so clearly ahead of the United States on this issue. You ask what you can do. To a team of creative writers and producers— what is your passion? If you're a designer, if you're an architect, if you're a doctor, your passion is whatever motivates you when you wake up every day. Here, it's telling stories. So find a way to tell these stories, and you will change the world.

As we were leaving Bangladesh in the southern region of Sundabar, the largest mango forest. It had been wiped out by Hurricane Stitter. A million people overnight basically were displaced, most of them are still living in the city of Daka, those who are still alive.

As we were packing up, a seven-year-old boy came up to me and tugged on my shirt. He asked that when we get back to America, he said, “will you tell the people there that Bangladesh is not going to survive unless you help us?”

When I left Los Angeles to go to Bangladesh, half of my friends could find Bangladesh on a map. But here's a seven-year-old boy and all he was thinking about was: is Bangladesh going to be okay, because America's going to do the right thing?

It is very clear that people are looking to America for the answers. Wherever we went, wherever there was food in all these refugee camps, there were always American flags. It's not like we're not doing a lot, we're doing unbelievable things. But in this room tonight, we can really become ambassadors in spreading the message.

I will leave you with this. I believe that as we preach this message, it's very similar to the first person who discovered that the world was not flat. I doubt that by that evening, the rest of the world knew about it.

(Laughter)

So how long did it take for that first person who realized that the world wasn't flat to get it out to the rest of the world? Right now, we're at that point where there are a lot of people out there who have seen that the world is not flat. They have proven it, they've talked to the scientists. You can't dispute it.

We need to look at these folks and realize that we've been someplace that they haven't. We need to help them understand that the world is not flat, so we can all live on this beautiful blue planet that has been created for us.

So, thanks.

(Applause)

**Carole Kirschner:** Thank you to all of our panelists.

So you've heard now from the scientific community, from the futurist community, and from the entertainment community about climate change. Now's your time to ask questions.

**Audience Member:** Thank you for being here. I'm so excited about this question I'm going to ask you.

Dr. Jackson, you mentioned that your son is a vegan. We've known for several years now that veganism can totally help the methane gas deplete in the atmosphere. Yet, it's not being discussed like it should be. I'm not sure who funded the study that proved cows were polluting the air more than all the world's transportation combined. But if that study was made, why aren't we talking about it more? I was shocked that it wasn't talked about in Copenhagen. But I ask all of you if you could address it.

**Richard Jackson:** Americans need to eat a lot less meat. The environmental impacts of meat consumption are considerable in



terms of all the water that's required and the fertilizers to grow those grains that are often subsidized with American commodities programs that then turn out large amounts of meat.

I never heard that cows are producing more methane and CO2 equivalent than transportation. I can't vouch for whether that's true or not. I'd have to defer to George or someone else who knows more about it.

But it's back to this win-win-win. We eat less meat, it's better for our hearts, it's better for how we feel, and it's better for the planet. It probably costs us less, too. So while I don't know all the details, your larger point is correct.

**Carole Kirschner:** Great. Anybody else want to speak to that?

**Michael Nash:** I agree. It certainly needs to be talked about more. The experts who I spoke to said two and a half cows equals one car that gets 30 miles an hour driving 15,000 miles a year.

I can say this, though—there's a big campaign gaining ground, Meatless Monday, which would be certainly a start. But yeah, it certainly needs some more press time.

**George Lubber:** You could quickly polarize people when you take their meat away.

Meat might be an easy target. But the science is there, and it's not. The industrial food production system ought to be the target, with its resource-intensive and large investment in moving commodities back and forth. But if you grow meat sustainably, with cows on small farms, and you eat less of it, you promote an ecosystem approach to cattle-raising that helps fix the methane that the cow produces. So you can have a net – no net loss, no net gain – in methane output if you do cattle production the right way.

Look at sustainable farming systems as the goal, not getting rid of

“ Look at sustainable farming systems as the goal, not getting rid of meat. ”

George Lubber

meat. Because you have the same problem with corn and with all our food systems – not only the production, but the distribution. If you focus on sustainable food systems, you can grow meat, poultry and pork. But you can't do it the way we've decided to do it.

There, in that sense, you've gained the true economic costs of that production system and you will encourage less consumption.

**Carole Kirschner:** Great. Another question?

**Audience member:** I have a question for Barbara. Since you're a futurist and children are the future – when we're growing up we watch a lot of Internet and TV, and we talk about a lot of stuff. How would people incorporate being green on websites?

**Barbara Marx Hubbard:** I was reading somewhere of the enormity of video games—warring games, et cetera. One idea would be go-green games.

**Carole Kirschner:** It's an interesting idea.

**Barbara Marx Hubbard:** We could have kids design a green world. My friend, Elisabet Sahtouris, was telling me when she talked to teenagers in Brazil – and she calls this the Hot Age – she said, “Congratulations, you're going to have to redesign civilization.”

(Laughter)

Going green and redesigning how we like to live, from the simple all the way on up to the complex structures of society – even democracy, which now is causing so much opposition. Do you see the enormity of the game of life in that sense?

**Carole Kirschner:** Great. Thank you. Next question?



**Audience member:** This is a question for Barbara. I teach courses in creative problem solving. I do a little thought experiment where I ask my students to think about the world as it was a generation ago. Think about what innovations we see around us now that didn't exist a generation ago. The first half is easy – iPads, cell phones, et cetera.

The second half of the thought experiment looks a generation ahead. What innovations can we expect to see in a generation that we cannot conceive now? I'd like you to frame that answer through this notion of what works. I'd like to know from you, what do you think we'll see in a generation that really works that we have trouble conceiving of now? Thank you.

**Barbara Marx Hubbard:** That's a really interesting question. I'm part of a group called the "Starship 100 study group." It was called by someone from Defense Advanced Research Projects Agency and NASA. Thirty people were invited to meet and to see what would it take that in 100 years humanity would have an interstellar starship?

I thought, "Why don't we have Starship Humanity study group?" What would humanity be like in 100 years?

This group said the most amazing things. J. Craig Venter was there, the scientist who led the Genome Project. He asked the group, "Would you like to go in person, or digitally?"

(Laughter)

Because, he said, "if you went digitally by light, almost like 'Star Trek,' and you hit another planet, you can be reconstituted." Now, they said you would have to have warp drive and wormholes, and nonlocal communication.

Now, these are very improbable. They were science fiction very recently. But they're not science fiction anymore. Here's a question



(From left): Sandra de Castro Buffington, Ed Begley, Jr., and Michael Nash

that I don't think anybody has really faced, except maybe Ray Kurzweil. It's called "Singularity." He wrote a book called "Singularity Is Near."

The idea of singularity is that robotics and intelligence are going to go quantum. Intelligent machines are not becoming more human, but they're becoming self-correcting and self-evolving. We've never faced this degree of technological capacity before.

My intuitive view on this is that we're going to become a universal species. We're going to restore the earth, free ourselves from this immediate problem. We're going to discover we're born into a universe of multi-dimensions.

**Carole Kirschner:** Fascinating.

**Barbara Marx Hubbard:** That's what I think. Our crisis is the birth of a universal species.

**Carole Kirschner:** Another question?

**Audience member:** I am the kind of person who likes to deal with really practical things. I can't wrap my brain around what you were talking about.

But I have a grandson who lives in Oakland with my daughter. I used to live on the East Coast and go up and down from Cambridge to



Washington to New York on the train all the time. We don't have a train that goes up and down California. I have the need to get my brain around something really simple, like why can't this room full of people figure out how we can get a train that goes up and down the West Coast? It's so practical, it's so easy compared to some of the issues, that we could almost solve it tonight.

“When you put transit systems in place, you double the percentage of population that will meet the physical activity guidelines of the Surgeon General.”

Richard Jackson

(Laughter)

**Carole Kirschner:** That's optimistic.

**Richard Jackson:** When you put transit systems in place, you double the percentage of population that will meet the physical activity guidelines of the Surgeon General. It's amazing. When Charlotte, North Carolina, put it in place, the people who were using transit on average weighed six pounds less a year later. That's a health benefit; that's a genuine benefit. They used a lot less energy. They probably socialized; spoke to people, got home a lot less stressed, and didn't have to run down to the fast food place for dinner.

**Ed Begley:** When this is over, go outside in this very neighborhood and look at this area built here as the terminus of the "Redline." People complained after it was built, "I can't believe it. There's a subway to nowhere in North Hollywood. There's nothing there at the end."

(Laughter)

Look at the density that's happening here and tell me how many vacancy signs you've seen. People were drawn to this area because they could get on the subway and get to Hollywood, get to downtown, get to many other parts of the city, because of this transit hub.

**Barbara Marx Hubbard:** Good point.

**Richard Jackson:** They no longer build subdivisions around golf courses, partly because the people get sick from them. But they're beginning to build them around Agriburbia. People are doing local food production. One more time – it's a win-win-win.

**Carole Kirschner:** Great. We had one question over here.

**Audience Member:** I hate to be the bearer of bad news, but we're all going to die.

Unfortunately, that includes me. How I deal with that, generally, is denial. That's a trick we play on ourselves. That's our biggest enemy in trying to get involved in this issue. Unfortunately, the leaders of the parade of climate change denial are people like the Koch Brothers, who spent several million dollars trying to overturn the pollution laws we've already got. I don't know how we deal with that, exactly. But organizing politically is an absolute requirement.

I'm not sure how much we can do. I did some research for a TV movie called *The Fire in Its Time*. It was about global climate change in 1991 that created a hurricane of monstrous proportions that came ashore in New Orleans, with disastrous effects. And it happened. It did not ignite the public, as we would've expected it should. A lot of people talked about it and did make the connection. But we glide right past it.

Michael is getting very close. He may be central to the argument that he's making. For example, even the Koch Brothers would be impressed with the fact that their castle is going to have to have a deeper mote. Because it's going to be surrounded by millions of starving people who would like to get in there and eat them up.

**Carole Kirschner:** Right.

So we've got to concentrate on going after the wealthy. Michael Moore pointed out that there are 400 individuals in this country



“*We have to find a new way of structuring our stories so that it will penetrate much further into the DNA of the storytelling that is part of what makes a human a human.*”

Audience member

who have more wealth than 50 percent of Americans put together.

We have time for one more question. Yes?

**Audience Member:** Most of us in this room are not urban planners or legislators. But most of us are filmmakers, myself included.

In terms of dealing with this emergency, it's not enough for us to do one more blockbuster hit, with the climax being this or that. We have to find a new way of structuring our stories so that it will penetrate much further into the DNA of the storytelling that is part of what makes a human a human. Thank you.

(Applause)

**Richard Jackson:** The way I deal with my obviously manifest depression—

(Laughter)

—is I get so energized by the students, by the young people, and by the vision that these problem-solvers think across domains far more powerfully than those of us who grew up in a much more linear way. That is my hope.

**Carole Kirschner:** Thank you. Sandra?

**Sandra de Castro Buffington:** Thank you all for a very inspiring evening.

For the writers out there – know that you can call Hollywood, Health & Society any time you're working on a health or climate change storyline. As a free resource, we will connect you to experts and get you the information you need for your scripts.

I'd like to extend a warm welcome to all tonight's panelists and to our moderator. Thank you so much for being here.



(Applause)

