

AN UPDATE ON THE SCIENCE OF CLIMATE CHANGE



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Motivated by the rapid progress in research, a new scientific synthesis report, *The Copenhagen Diagnosis*, has assessed recent climate research findings. Written by 26 climate scientists, of whom I am one, from eight countries, it is available online at www.copenhagendiagnosis.org for free download, and an updated version will be published by Elsevier in 2011. Among the findings are these:

Measurements show that the Greenland and Antarctic ice-sheets are losing mass and contributing to sea level rise.

Arctic summer sea-ice has melted far beyond the expectations of climate models.

Global sea level rise may attain or exceed 1 meter by 2100, with a rise of up to 2 meters considered possible.

In 2008, global carbon dioxide emissions from fossil fuels were about 40% higher than those in 1990.

At today's global emissions rates, if these rates were to be sustained un-

changed, after only about 20 more years, the world will no longer have a reasonable chance of limiting warming to less than 2 degrees Celsius, or 3.6 degrees Fahrenheit, above 19th-century pre-industrial temperature levels. This is a much-discussed goal for a maximum allowable degree of climate change, and this aspirational target has now been formally adopted by the European Union and is supported by many other countries, as expressed, for example, in statements by both the G-8 and G-20 groups of nations.

The Copenhagen Diagnosis also cites research showing that, in order to have a reasonable likelihood of avoiding the risk of dangerous climate disruption, defined by this 2 degree Celsius (or 3.6 degree Fahrenheit) limit, global emissions of greenhouse gases such as carbon dioxide must peak and then start to decline rapidly within the next five to ten years, reaching near zero well within this century. The document also cites the peer-reviewed research articles on which this statement is firmly based.

One of the most dramatic changes in the climate system since the last Intergovernmental Panel on Climate Change (IPCC) report in 2007 is the rapid reduction in the area of Arctic sea ice in summer. A new minimum in Arctic sea ice extent was observed only a few months after the publication of that IPCC report. In summer 2007, the minimum area covered by sea ice in the Arctic decreased by about 2 million square kilometers as compared to previous years. In 2008 and subsequently, the decrease has been almost as dramatic. This decreasing ice coverage is important for climate on a larger scale for several reasons, including that an ice-free ocean is far less reflective and so absorbs more sunlight than an ice-covered ocean. Thus, the loss of Arctic sea ice darkens the surface and triggers a strong feedback that amplifies the warming.

The global carbon cycle is now in strong disequilibrium because of the input of CO₂ into the atmosphere from fossil fuel combustion and land use change, especially deforestation. Fossil fuel CO₂ emissions have accelerated since 2000 to grow at about 3.4% per year, an observed growth rate that is at, or even somewhat beyond, the upper edge of the range of growth rates considered in IPCC scenarios. Total CO₂ emissions are responsible for about two thirds of the growth of all greenhouse gas radiative forcing. (As used here, radiative forcing is a technical term quantifying the effects of these gases on the Earth's heat balance.)

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Today, atmospheric CO₂ concentrations are already at levels predicted to lead to global warming of between 2.0 and 2.4°C. The conclusion from both the IPCC and subsequent analyses is blunt and stark — immediate and dramatic emission reductions of all greenhouse gases are urgently needed if the 2 deg C (or 3.6 deg F) limit is to be respected. This scientific conclusion illustrates a key point, which is that it will be governments that will decide, by actions or inactions, what level of climate change they regard as tolerable. This choice by governments may be affected by risk tolerance, priorities, economics, and other considerations, but in the end it is a choice that humanity as a whole, acting through national governments, will make. Science and scientists will not and should not make that choice. However, after governments have set a tolerable upper limit of climate change, such as 2 deg C, climate science can then provide valuable information about what steps will be required to keep climate change within that limit.

Not acting, of course, is also making a choice. Humanity, through its *de facto* choice not to reduce global greenhouse gas emissions, is now committing future generations to a severely altered climate. Even beyond the current century, there are major implications for longer-term climate change. Much atmospheric CO₂ remains in the atmosphere for centuries. Warmer temperatures and changes in precipitation caused by CO₂ emissions from human activity are largely irreversible on human time scales. Atmospheric temperatures are not expected to decrease for many centuries to millennia, even after human-induced greenhouse gas emissions stop completely.

We state in *The Copenhagen Diagnosis* that “the required decline in emissions coupled with a growing population will mean that by 2050, annual per capita CO₂ emissions very likely will need to be below 1 ton.” Today, per capita CO₂ emissions are approximately 19 tons in the U. S., 5 in China, and 1 in India. Obviously, that reduction to 1 ton on global average will be very tough to achieve.

Mother Nature herself thus imposes a timescale on when emissions need to peak and then begin to decline rapidly. This urgency is therefore not ideological at all, but rather is due to the physics and biogeochemistry of the climate system itself. Diplomats and legislators, as well as heads of state worldwide, are powerless to alter the laws of nature and must face scientific facts and the hard evidence of scientific findings.

It is a standard tactic of many climate “skeptics” or “contrarians” (terms commonly used to denote those who reject central findings of mainstream climate change science) to try to frame the climate change issue in terms of the whole edifice of modern climate science hanging from some slender evidential thread. Thus, if a given scientist uses intemperate language, or a particular measurement is missing from a data archive, or a published paper has a minor mistake in it, the whole unstable scientific structure comes tumbling down, or so the skeptics would have people believe.

In fact, fundamental climate change science is not at all fragile or vulnerable, and there are multiple lines of evidence in support of every one of its main conclusions. Thus, the evidence is really a thick rope woven from many strands, rather than a single thin thread. That is what the 2007 IPCC report says. It has been endorsed by national academies of science and leading professional scientific societies worldwide and remains definitive.

Although the expert community is in wide agreement on the basic results of climate change science, as assessed in the IPCC report and *The Copenhagen Diagnosis*, much confusion exists among the general public and politicians in many countries, as polling data convincingly shows.

In my opinion, many people need to learn more about the nature of junk or fake science, so they will be better equipped to recognize and reject it. There are a number of warning signs that can help identify suspicious claims. One is failure to rely on and cite published research results from peer-reviewed jour-

nals. Trustworthy science is not something that appears first on television or the Internet. Reputable scientists first announce the results of their research by peer-reviewed publication in well-regarded scientific journals. Peer review is not a guarantee of excellent science, but the lack of it is a red flag. Peer review is a necessary rather than a sufficient criterion.

Another warning sign is a lack of relevant credentials on the part of the person making assertions, especially education and research experience in the specialized field in question. For example, it is not essential to have earned a Ph. D. degree or to hold a university professorship. It is important, however, that the person be qualified, not in some general broad scientific area, such as physics or chemistry, but in the relevant specialty. Accomplishments and even great distinction in one area of science do not qualify anybody to speak authoritatively in a very different area. Nobody would ask even the most expert cardiologist for advice on, say, dentistry.

One should always inquire whether the person claiming expertise in some area of climate science has done first-person research on the topic under consideration and published it in reputable peer-reviewed journals. Is the person actively participating in the research area in question, or simply criticizing it from the vantage point of an outsider? One should be suspicious of a lack of detailed familiarity with the specific scientific topic and its research literature. Good science takes account of what is already known and acknowledges and builds on earlier research by others.

Other warning signs include a blatant failure to be objective and to consider all relevant research results, both pro and con a given position. Scientific honesty and integrity require wide-ranging and thorough consideration of all the evidence that might bear on a particular question. Choosing to make selective choices among competing evidence, so as to emphasize those results that support a given position, while ignoring or dismissing any findings that do not support it, is a practice known as “cherry picking” and

is a hallmark of poor science or pseudo-science.

Mixing science with ideology or policy or personalities is never justified in research. Scientific validity has nothing to do with political viewpoints. There are no Republican or Democratic thermometers. Satellite sensors are not liberal or conservative. Whether a given politician agrees or disagrees with a research finding is absolutely unimportant scientifically. Science can usefully inform the making of policy, but only if policy considerations have not infected the research. Similarly, one should always be alert to the risk of bias due to political viewpoints, ideological preferences, or connections with interested parties. All sources of funding, financial interests and other potential reasons for possible bias should be openly disclosed.

Finally, we must always be alert for any hint of delusions of grandeur on the part of those who would insist that they themselves are correct, while nearly everyone else in the entire field of climate science is badly mistaken. Scientific progress is nearly always incremental, with very few exceptions. Occasionally, an unknown lone genius in a humble position, such as the young Einstein doing theoretical physics while working as a clerk in a patent office, does indeed revolutionize a scientific field, dramatically overthrowing conventional wisdom. However, such events are exceedingly rare, and anybody's claims to be such a lone genius deserve the most severe scrutiny. For every authentic Einstein, there must be thousands of outright charlatans, as well as many more ordinary mortals who are simply very badly mistaken. Furthermore, as in the case of Einstein, the mainstream scientific community typically recognizes true geniuses quickly.

I have attempted to summarize a number of key points and scientific results on climate change in a recently published essay in *Climatic Change* which I paraphrase here. The complete article is published by Springer under an open access policy and is available for free download at <http://www.springerlink.com/content/n31866651q820822>.

1. The essential findings of mainstream climate change science are firm. The world is warming. There are many kinds of evidence: air temperatures, ocean temperatures, melting ice, rising sea levels, and much more. Human activities are the main cause. The warming is not natural. It is not due to the sun, for example. We know this because we can measure the effect on the Earth's energy balance of man-made carbon dioxide, and it is much stronger than that of changes in the sun, which we also measure.

2. The greenhouse effect is well understood. It is as real as gravity. The foundations of the science, and the first careful laboratory experiments showing that certain atmospheric gases absorb infrared energy, are now more than 150 years old. Carbon dioxide in the atmosphere amplifies the natural greenhouse effect and traps heat. We know carbon dioxide is increasing, because we measure it. We know the increase is due to human activities like burning fossil fuels, because we have analyzed the chemical evidence for that.

3. Our climate predictions are coming true. Many observed climate changes, like rising sea level, are occurring at the high end of the predicted changes. Some changes, like melting Arctic summer sea ice, are happening faster than the anticipated worst case. Unless mankind takes strong steps to halt and reverse the rapid global increase of fossil fuel use and the other activities that cause climate change, and does so in a very few years, severe climate change is inevitable. Urgent action is needed if global warming is to be limited to moderate levels.

4. The standard skeptical or contrarian arguments have been refuted many times over in technical papers published in the peer-reviewed scientific research literature. The refutations are now readily available to the broad public and are summarized on many web sites and in many books. Among these, www.skepticalscience.com is a good place to start. For example, the mechanism responsible for natural climate change such as ice ages is different from that causing the current warming.

We know why ice ages come and go. That is paced by changes in the Earth's orbit around the sun, changes that take thousands of years. The warming that is occurring now, over just a few decades, cannot possibly be caused by such slow-acting processes. But it can be caused by man-made changes in the greenhouse effect.

5. Science has its own high standards. It does not work by unqualified people making claims on television or the Internet. It works by scientists doing research and publishing it in carefully reviewed research journals. Other scientists examine the research and repeat it and extend it. Valid results are confirmed, and wrong ones are exposed and abandoned. Science is thus ultimately self-correcting. People who are not experts, who are not trained and experienced in this field, who do not do research and publish it following standard scientific practice, are not doing science. When they claim that they are the real experts, they are just plain wrong.

6. The leading scientific organizations of the world have carefully examined the results of climate science and endorsed these results. It is silly to imagine that thousands of climate scientists worldwide are engaged in a massive conspiracy to fool everybody. The first thing that the world needs to do if it is going to confront the challenge of climate change wisely is to learn what science has discovered, and accept it, and then resolve to act.

Somerville, who has been at SIO since 1979, is a Coordinating Lead Author of the 2007 Fourth Assessment Report of the Intergovernmental Panel on Climate Change, which shared the 2007 Nobel Peace Prize with Al Gore. He is also the author of The Forgiving Air: Understanding Environmental Change (second edition, 2008).



The Great Divide: Science and Public Judgment



By Daniel Yankelovich

America's long tradition of individualism and participation in civic life has evolved in ways that are far more radical than they appear at first. The change began to take off with the dramatic shift in values that took place in the 1960s, when values of expressiveness, individualism, and freedom began to take priority over conformity and self-sacrifice. The greater value placed on individual agency and self-expression had enormous impact on our culture — spurring not only greater civil rights for women and minorities, increased pluralism, and reduced social conformity, but also a dramatic expansion of whose voices “count” in political and social life.

In recent years, the public's willingness to accept the authority of experts and elites has sharply declined. Throughout most of our nation's history, leaders have held a quasi-monopoly on decision making; but recent changes in cultural values have led people to insist on having a stronger voice on issues that affect their lives. The public does not want to scrap representative democracy and move wholesale toward radical populism. But there will be no return to the earlier habits of deference to authority and elites.

What we have instead is a vast divide separating America's experts and elites from the general public and compromising our public judgment process. This

divide is especially acute, and especially dangerous, when it comes to science. Science has reached greater heights of sophistication and productivity, while at the same time the gap between science and public life has grown ever larger — to an extent that now poses a serious threat to our future.

Increasingly critical problems at the intersection of science and society (such as the energy crisis), global climate change, and the danger posed by pandemic disease) are exacerbated by the growing gulf between scientists and the public. Such issues are even more critical and challenging today than in 1991 when my book, *Coming to Public Judgment*, was published. They bring into stark relief the challenge of many complex contemporary issues for the public judgment process.

The unfortunate reality is that experts/scientists and the rest of society operate out of vastly different worldviews, especially in relation to assumptions about what constitutes knowledge and how to deal with it. Scientists share a worldview that presupposes rationality, lawfulness, and orderliness. They believe that answers to most empirical problems are ultimately obtainable if we pose the right questions and approach them scientifically. They are comfortable with measurement and quantification, and they take the long view. They believe in sharing information, and their orientation is internationalist because they know that discoveries transcend borders.

The nonscientific world of everyday life in the United States marches to a different drummer. Public life is shot through and through with irrationality, discontinuity, and disorder. Decision makers rarely have the luxury of waiting for verifiable answers to their questions, and when they do, they almost never go to the trouble and cost of developing them. Average Americans are uncomfortable with probabilities, especially in relation to risk assessment, and have

short time horizons. Most problems are experienced with an urgency and immediacy that make people impatient for answers; policy makers must deal with issues as they arise and cannot ignore those that are difficult to address through rational analysis.

The media serve to deepen the divide with their insistence on presenting “both sides” of all stories that touch on scientific findings. In practice, this means that even when there is overwhelming consensus in the scientific community (as in the case of global warming), experts all too often find themselves pitted in the media against some contrarian, crank, or shill on hand to provide “proper balance” (and verbal fireworks). The resulting arguments actively hinder people's ability to reach sound understanding; not only do they muddy the people's already shaky grasp of scientific fundamentals, but they also leave people confused and disoriented.

When faced with the gap between science and society, scientists assume that the solution is to make the public more science literate, to do a better job at science education and so bring non-scientists around to a more scientific mind-set. This assumption conveniently absolves science of the need to examine the way its own practices contribute to the gap and allows science to maintain its position of intellectual and moral superiority. In addition, on a purely practical level, a superficial smattering of scientific knowledge might cause more problems than it solves.

Emeriti Website

The UCSD Emeriti Association maintains a website: <http://emeriti.ucsd.edu> Clicking the NEWS, PROGRAMS, & MEETINGS button will allow you to view past issues of this newsletter. The website also provides the constitution and by-laws, lists of members, and minutes of meetings.

The timetables of science (which operates in a framework of decades or longer) are completely out of sync with the timetables of public policy (which operates in a framework of months and years). For example, it has taken nearly thirty years for the National Academy of Science to complete its study of the consequences of oil drilling on Alaska's North Slope; in that time a great deal of environmental damage has been done, and political pressure for further oil exploration in the Arctic National Wildlife Refuge has gained momentum. At this stage the Academy's scientific report stands to become little more than a political football. Medical research is another example. Political demands for prompt action on high-profile diseases do not jibe well with the painstaking process of research and trial. Political pressures push resources toward popular or expedient solutions, not necessarily those with the greatest chance of long-term success.

Nor are these the only symptoms. A host of other elements widen the gap between the two worlds: unresolved collisions with religious beliefs, difficulty in assessing the relative importance of threats, the growing number and complexity of issues. The overall result is a dangerous exclusion of the scientific viewpoint from political and economic decision making at the very time when that viewpoint is most urgently needed.

Yankelovich, who now makes his home in La Jolla and advises the UCSD Division of Social Sciences, is a distinguished student of public opinion. He is also co-founder with the late Cyrus Vance of Public Agenda, an organization that aims to improve democracy's ability to deal with difficult issues. This essay is excerpted from a new book he has edited with Will Friedman entitled Toward Wiser Public Judgment (Vanderbilt University Press, 2010). It is reprinted here by kind permission of the publisher.



Emeriti Association Executive Committee 2011-2012: Slate of Nominations

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Phyllis Mirsky, Secretary-Treasurer (2nd year of 3 years)
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Members at Large:

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Wolf Berger, SIO (3rd year of 3, succeeding Percy Russell)
Charles Kennel, SIO (2nd year of 3)
Carmel Myers, UCSD & UCR campus Administration (2nd year of 3)
Mel Green, Biological Science (1st year of 3)
Fred Randel (1st year of 3)

Emeriti Mentoring Program Update

For the 2010-2011 academic year, forty-two undergraduates have been mentored by Emeriti volunteers. Mentors meet with their mentees once or twice a month for an hour of conversation, to provide guidance, and answer questions. In addition, most of the students participate in monthly meetings held at the UCSD Retirement Resource Center and facilitated by Dr. **Sara Henry**, Director of the UCSD Center for Communication and Leadership. Dr. Henry arranges for speakers representing a wide variety of campus resources, to help students learn about opportunities and services that can help them to succeed in their university studies. After each presentation, the students engage in exercises that help build public speaking skills.

The UCSD program will be looking for new and additional mentors for the next academic year. Additional mentors in the fields of Computer Science & Engineering, Biology, Mathematics, and Pre-Med, are in especially high demand.

Emeriti Mentors are truly having an impact on Chancellor's Scholars. As one of them wrote, "My mentor and I are trying to find a way for me to rediscover my direction in life; what I want to do, whether or not I really want to continue my pursuit in the medical field, etc. Also, we are planning to begin my itinerary for the summer, searching for research opportunities or laboratory work, in hopes of stimulating my motivation and eliminating my hesitations. This program has really given me a chance to get a better understanding of myself."

For more information about the program, to become a mentor, or to be assigned a student if you are already onboard, please e-mail Diane Holland, the program coordinator, EmeritiMentor@ucsd.edu.

— *Suzan Cioffi, Diane Holland, and John Wheeler, Chair, 2009-2011, Emeriti Mentoring Program*

The Department of Theatre and Dance has been so fortunate and privileged over the years to have Manuel Rotenberg to expertly photograph our multiple productions. With a keen eye for the intimate dramatic moment, or fleeting dance movement, Manny has generously served as the chronicler of the highlights treasured by hundreds of students, faculty, and staff. His outstanding photographs grace our hallways, animate our website, and serve as a vivid testament to the work of our top ranked department. We are so grateful that he has been there to witness and record our bright memories in theatre and dance.

♦ **Allyson Green**, Chair



“The Garden Trilogy” (2006)

Yolande Snaith, Choreographer, UCSD Dance Faculty
Dancers: Sadie Weinberg, Robby Johnson, and Erica Nordin



“Walking Words” (2004)

Choreographers Nadine George-Graves, Allyson Green and Terry Wilson, UCSD Theatre and Dance Faculty
Dancers: Jade Power with an unidentified partner



Winterworks (2010)

Rebecca Salzer, Choreographer, MFA II choreographer
Dancers: Sally Chou, Hannah Byers-Strauss,
Terra Anderson, Arthur Huang



Stories of the Cottage (2009) “Tea Shelter”

Jessica Pusateri, Choreographer, in an Undergraduate Dance Cabaret
Dancers: Trixi Anne Agiao, Elizabeth Diaz, Ami Teresa DuCre,
Adrian Houle, Morgan McGreevey



“Space Between” (2011)

Alicia Peterson Basket, Choreographer, MFA Thesis production
Dancers: Gina Bolles Sorensen and Jennifer Oliver

Anecdote

By **Sandy Lakoff**

Putting on the Brits

For all those in whom the fire of intellectual curiosity has not been banked by the cold damper of retirement, we are proud to relay vital details, cribbed from *The Times* of London, concerning the impending Great Event — the royal wedding of **William, Prince of Wales**, and his consort-to-be, **Kate Middleton**.

First off, those aware of the ambiguities lurking in Britain's unwritten constitution will want to be assured that Kate could become Queen. There is more doubt about **Prince Charles'** wife, **Camilla**. Charles thinks she is eligible but palace courtiers say she is disqualified by divorce and because she was the other woman in the breakup of his marriage to **Diana**. Kate is a filly of another color. She has been declared fit for a crown, and not just a coronet, by the very same arbiters of dynastic casuistry.

Next, it should be noted that the British public feels pretty strongly that if she does ascend to the throne, she would do better being known as Queen Kate than as Queen Catherine. Never mind that to **Shakespeare** Kate was a shrew. Britons remember all too well that queens named Catherine have not fared well. A letter to the editor noted that "of **Henry VIII's** three Catherines, one was divorced, one beheaded, and one died in childbirth a couple of years after his death." Two other Catherines, wives to **Henry V** and **Charles II**, were also unlucky in love and marriage. In short, let them have Kate, to paraphrase another unfortunate queen.

Then, too, of course, Britain being Britain, there is the question of class. And this time it's not just a matter of upstairs/downstairs. Although Kate's

parents make a good living, *The Times* notes that they come from "a world that had little to do with the Prince's regular social circle." Far worse, the family's forebears were from the underworld — which is to say they were coal miners! How can the British aristocracy have descended to such depths? It's the pits, all right.

To be sure, attitudes have changed since the poet **Cowper** declared that "differences of rank and subordination are...of God's appointment, and consequently essential to the well being of society..." By contrast, today's commentators are ecstatic at the triumphant catch of this middle-class lass and the readiness of her most regal future mother-in-law to accept her: "There she was, Prince William in one hand and a Tesco [supermarket] bag in the other, swinging her newly washed hair, going home to make them spaghetti Bolognese.... **The Queen** has always admired middle-class values so I imagine she will embrace Kate in the same way that she understands the value of Tupperware — it's long-lasting and isn't chippy." (Perhaps in lieu of a fancy wedding reception they will just put on a Tupperware Party and guests will be invited to choose gifts from the couple's registry at Asda, the UK branch of Walmart.)

The couple's path to the altar was not an easy one. It took seven years before Wills proposed and she gave him the nod. Their dalliance began two years after they met as art history students at Saint Andrews University in Scotland. Wills claimed that his military career forced him to put things off — a bit of a stretch considering that most terms of service are a lot shorter than seven years. What had attracted them to each other? Neither of them would say the obvious, which is that he's a hunk and she's a babe. Instead they stressed their affinities of personality: "we both have a fun time together [and] we take the mickey out of each other a lot" (which seems to mean they enjoy mutual teasing).

Whatever the attraction, His Nibs finally got the courage to pop the question while they were visiting Kenya together. (Why Kenya, one wonders; was it nostalgia for great gran's lost empire?) *The Times* took pains to disclose the exact location (did the editors have a Google Earth search on at the time?): "The Prince was reluctant to disclose where in Kenya it had happened, although *The Times* has established that it was on a lakeside in the shadow of Mount Kenya." (Now that's the kind of investigative journalism to be expected from a quality newspaper, as distinct from some raffish tabloid rag.)

As to the engagement ring, *The Times* noted that it was customary for it to cost twice the groom's monthly salary, which for the Prince's pay as a search-and-rescue helicopter pilot would have to be one priced at no more than £6,000. Of course, these days everyone has to economize by using hand-me-downs, so why not use a finger-me-down? Wills gave Kate the very sapphire and diamond engagement ring worn by his ill-fated mother Diana, which ran his dad £28,000 years back. Sentimental, you say? Maybe, but bear in mind that the royal budget is under strain these days and everybody has to make do.

The first order of business in the marriage? In a word, reproduction. Royal couples are supposed to have "an heir and a spare" at the very least.

Cheers, then, to the happy couple!

How important is all this, you ask, in the ultimate scheme of things? It's Spring, so let's recall the wise counsel of **Lewis Carroll**:

*"The time has come," the Walrus said,
"To talk of many things:
Of shoes — and ships — and sealing-wax —
Of cabbages — and kings —
And why the sea is boiling hot —
And whether pigs have wings."*



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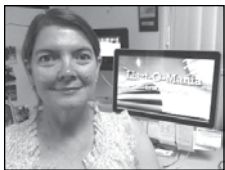
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Chronicles
April 2011

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Lynn Burnstan
Director, UCSD-TV

**Then, Now, Tomorrow
at UCSD-TV**

*NOTE: at the UCSD-TV Station Facilities
Wednesday, April 13, 2011, 4:00-5:30 pm*

Arend Lijphart

*Professor Emeritus of Political Science
And Winner, 2010 UC Panunzio Award*

**Does Democratic Institutional Design
Determine Performance Outcomes?**

Wednesday, May 11, 4:00-5:30 Green Faculty Club



~ Annual Business Luncheon ~
Naomi Oreskes
Professor of History and Science Studies

**Merchants of Doubt: How a Handful
of Scientists Obscured the Truth on
Issues from Tobacco Smoke
to Global Warming**

Wednesday, June 8, 11:30 a.m. Green Faculty Club
(Members \$35; guests \$40; RSVP at UCSDEmeriti.com)

Chronicles

Newsletter of the UCSD Emeriti Association



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