WHILE CLIMATE TREATY NEGOTIATORS DANCE ON WITH THEIR SLOW GIVE-AND-TAKE, THE CLIMATE ITSELF IS RUNNING AMOK.

LAST TANGO IN BUENOS AIRES

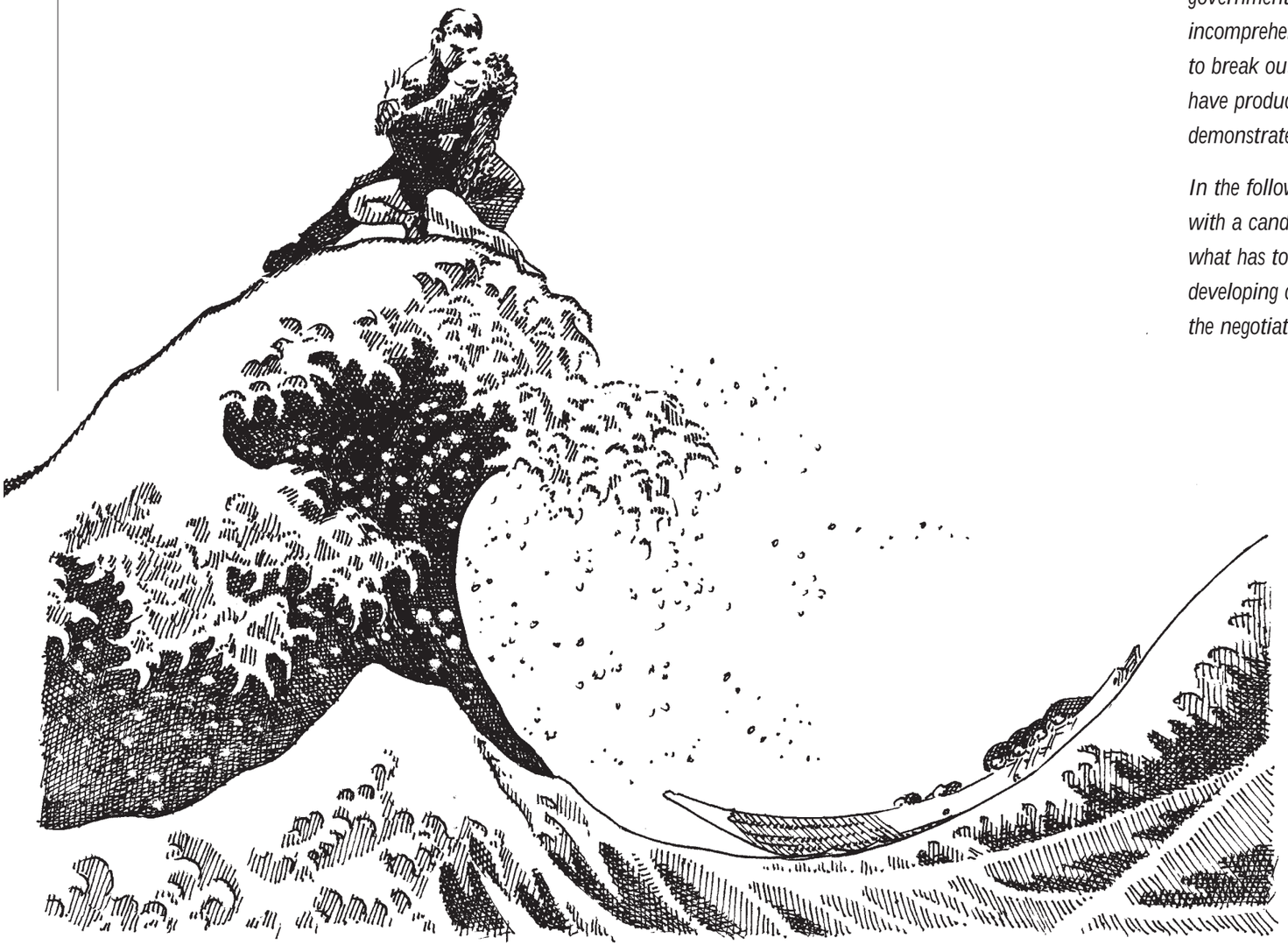


ILLUSTRATION BY LUCINDA LEVINE, BASED ON "THE GREAT WAVE" BY HOKUSAI

When the Kyoto Protocol was signed a year ago, hopes ran high that the world was finally on the way to reducing carbon dioxide emissions and getting the global climate back under control. But since then, complicated new provisions (critics call them loopholes) have sharply divided key governments. The making of the treaty has become a black box—a process largely invisible and incomprehensible to the public. Meanwhile, the apparent effects of global warming are beginning to break out in ways that call for far more decisive action than the past ten years of negotiation have produced. Unless the November meeting of climate treaty negotiators in Buenos Aires demonstrates real progress, it may be time to take a whole new approach to the problem.

In the following pages, three authors define the challenge. Christopher Flavin leads off below, with a candid assessment of the prospects for the Kyoto Protocol—what's wrong with it and what has to be remedied soon. Seth Dunn analyzes the welling tensions between industrial and developing countries, and the prospects of finding common ground. Ashley Mattoon looks at how the negotiators have bogged down over the issue of carbon "sinks."

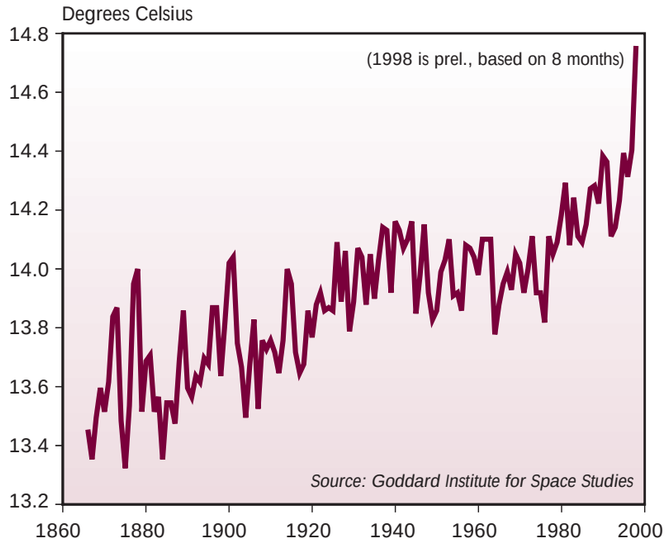
by Christopher Flavin

THE WORLD'S CLIMATE RARELY SENDS CLEAR SIGNALS. THE INTERACTIONS of hundreds of variables—of sunlight, ocean currents, precipitation, fire, volcanic eruptions, topography, and the respiration of living things—produce a complex system that scientists are just beginning to understand, and that defies precise forecasts. In any given year, some regions are warmer than normal while others are cooler. Almost any short-term climatic phenomenon, even an extreme one, can be explained as something that falls within the enormous range of natural climatic variability. Until this year.

Even before 1998 comes to a close, it is clear that this year is one for the meteorological record books. Although annual temperature records have become routine recently—all 14 of the warmest years since 1860 have occurred in the past two decades—the record is usually broken by a couple of hundredths of a degree. But the average temperature for January–August 1998 was a full four tenths of a degree warmer than the average for 1997, the previous record-setting year (see figure, page 12). In fact, six of the first eight months of 1998 set an all-

time temperature record for the month—exceeding the monthly figures recorded in the 139 years that global average temperatures have been tracked.

At first, scientists were inclined to attribute these surprising readings to El Niño, a periodic warming of the eastern Pacific that began in 1997 and extended through the first half of 1998. But as they looked back at the historical trend, it became clear that previous El Niño-related warmings had been far more modest. As month after month of record-breaking data spewed from their computers, the atmospheric scientists expressed growing awe. James Baker, administrator of the U.S. National Oceanic and Atmospheric Administration said, "There is no time in recorded data history that we have seen this sequence of record-setting months."



AVERAGE TEMPERATURE AT THE EARTH'S SURFACE, 1866–1998

In earlier years, some scientists' concerns about global warming were assuaged by the fact that satellite-based microwave measurements of temperatures high in the atmosphere since 1979 did not appear to reflect the warming trend from ground-based readings. But this slender straw was swept away in August by a report by scientists Frank Wentz and Matthias Schabel that appeared in the British journal *Nature*. It demonstrated that the widely reported satellite data were skewed by the failure to account for the predictable gravity-induced decay in the orbits of the satellites. Once corrected for, the satellite data demonstrate the same broad warming trend as the ground-level thermometers—including the dramatic spike in 1998.

Scientists have known for some time that the climate is a "non-linear system" that may respond marginally or not at all to initial changes—but then leap suddenly to a new equilibrium, if pushed a little further. Although it is too early to know for sure, the global climate may have just crossed such a threshold. Since the beginning of the twentieth century, human activities have added 925 billion tons of carbon dioxide (CO_2) to the atmosphere, taking concentrations of this heat-trapping gas to the highest levels in 160,000 years. The climate record shows that when CO_2 concentrations reached even close to such levels in the past—during the Eemian interglacial period, for example, beginning 135,000 years ago—they were accompanied by a rapid rise in temperatures.

Though it is impossible to connect any single weather event to global climate change, the past year has been marked by a worldwide pattern of unusually severe weather. China was swept by its worst floods in three decades last summer, with 56 million people reported to be at least temporarily displaced from their homes in the Yangtze basin alone. The $36 billion in estimated damages matches or exceeds the total weather-related losses for the world in every year prior to 1995. Meanwhile, two-thirds of Bangladesh was underwater for most of the summer, as torrential monsoon rains cascaded down from the Himalaya and storm surges came up from the sea, covering much of the capital, Dhaka, and destroying the country's rice crop.

At least 54 other countries were hit by severe floods in 1998, and at least 45 were stricken by droughts, many of which led to runaway wildfires. Tropical forests normally do not burn, but unusually harsh droughts contributed to a series of unprecedented fires in southeast Asia starting in late 1997 and in the Amazon through most of 1998. Last spring, much of southern and central Mexico was aflame, leading to air quality alerts in Texas and noticeably smoky air as far north as Chicago. By early summer, scores of fires were sweeping the sub-tropical forests of Florida, leading to the evacuation of an entire county.

RARELY HAVE THE RHYTHMS OF THE NATURAL world been so out of synch with those of the political world. Even as the climate sent ever-stronger signals of disruption in 1998, efforts to deal with the problem bogged down in glacial and contentious negotiations over the terms of the Kyoto Protocol on climate change.

The effort to build a global climate agreement is in fact already a decade-long saga that began with a major scientific conference on the issue in Toronto in 1988. The scientists there called for a 20 percent cut in carbon dioxide emissions by 2005, which then led to extended efforts on the part of scientists, industrial interest groups, non-governmental organizations, and politicians to forge an international agreement to move in that direction. By the time of the 1992 Earth Summit in Rio de Janeiro, the "Framework" Convention on Climate Change had been forged, but due to the strong objections of the Bush Administration in the United States, still did not include legally binding limits.

After Rio, governments worked for several years to strengthen the climate treaty by adding specific limits on the amounts of greenhouse gases that could be emitted by each industrial country. This process was expected to culminate in the signing of a protocol to the convention that included legally binding emissions limits, in Kyoto, Japan last December. But agreement proved elusive. As the Kyoto conference began, governments were still widely divided on key elements of the agreement, including the overall level to which emissions would be limited. The United States, for example, only wanted to cut emissions back to the 1990 level, while the European Union wanted to cut them to 15 percent below that level.

By the beginning of its final week, the Kyoto conference had become "an emotional roller-coaster for delegates who watched the treaty's fortunes rise, fall, and rise again," according to a *Washington Post* correspondent. Core elements of the treaty remained unresolved, ranging from the level of emission cuts to be mandated to whether planting or protecting trees could be counted against those emission commitments.

With the negotiations bogged down, U.S. Vice President Al Gore, who had devoted much of his 1992 book *Earth in the Balance* to the problem of climate change, was dispatched to Kyoto. Soon after his arrival, the U.S. delegation shifted its position on emission limits and agreed to reduce its emissions 7 percent from 1990 levels—roughly half way between the U.S. and European positions. But on the evening of December 10, as the deadline for concluding the historic conference came and went, other unresolved issues remained—some of which would determine the significance of the numbers that had been agreed to. Raul Estrada Oyuela, the Argentine Chair of the conference, who had been working behind the scenes for months to forge essential compromises, refused to give up. He ordered the "committee of the whole," composed of all 159 national delegations, to re-convene at 1 am, and meet until a conclusion was reached.

Through the wee hours of December 11, Estrada methodically moved the assembled delegates through the remaining passages of disputed text: whether trading of emissions commitments would be permitted among industrial countries, and whether developing countries would be encouraged to adopt voluntary commitments.

As discussions seesawed back and forth, oil producers like Kuwait did their best to derail the agreement, while European and small island countries worked to strengthen it. But the main axis of the battle soon formed around China and the United States, the two largest emitters, who were deeply divided both on trading and on the question of developing country commitments. As positions hardened, hope of an agreement began to fade.

The U.S. delegation, which had brought Undersecretary of State Stuart Eizenstat in from Washington to be its "closer," became so panicky at one point that delegates were standing on their table, waving for Estrada's attention in the huge hall. Given the vice president's close identification with the issue, the Clinton-Gore Administration could not afford to be found holding the noose if the Kyoto agreement was strangled.

As dawn approached, the Kyoto conference hall was beginning to resemble a week-old battlefield. Bleary-eyed reporters and NGO observers wandered the facility searching for remnants of food or coffee, while inside the plenary hall government delegates held their ground on various items, waiting for the other side to back down in the face of mounting sleep deprivation. Many delegates had passed out, one with his head resting in an ashtray. Chinese and Russian speaking interpreters pulled off their headphones and left, and the Japanese conference center staff threatened to cut off the electricity if the conference was not shut down.

But Estrada, an old hand in chairing contentious negotiations, took advantage of the exhaustion. Seizing on a few half-compromises, he began gaveling closed key portions of the agreement. With the spotlight of the world's media upon them, delegates decided they had more to fear from a failed agreement than one with which they only partially agreed, and stood aside as Estrada pushed relentlessly through the text.

At 10:15 am, Estrada called for adoption of the protocol by consensus, and despite remaining reservations, no government was prepared to stand in the way. The deed was done. Hundreds of delegates rushed out to press conferences, declared victory, and headed for the Osaka International Airport.

During the next 24 hours, headlines around the world proclaimed a great success at Kyoto. Chairman Estrada stated that he was "deeply satisfied" with the outcome, and the World Resources Institute called it

"an historic step in the history of humanity." Clouds remained on the horizon—particularly the threats of U.S. Senators not to ratify the agreement—but most observers, including this author, were hopeful that the remaining holes could be patched by the Fourth Conference of the Parties in Buenos Aires this November.

Sadly, the past 12 months have turned the Kyoto conference into a kind of high-water mark, from which the climate negotiations have steadily retreated in the past year. Divisions among national governments have only widened since Kyoto, and the holes in the agreement are beginning to seem more substantial than the protocol itself. Indeed, by creatively papering over wide differences between various nations, the Kyoto negotiators may have crafted an agreement that is barely workable in the best of circumstances, and in the current political climate could lead to paralysis.

At its core, the Kyoto Protocol has four major weaknesses that will need to be remedied if it is to be effective in slowing climate change before irreversible damage is done.

❶ WEAK COMMITMENTS: Since the 1988 Toronto Conference, the cornerstone of climate negotiations has been the setting of binding limits on the emissions of greenhouse gases by industrial countries—the countries that have accounted for the bulk of the emissions so far. The 1992 Framework Convention includes a voluntary goal of holding those emissions to the 1990 level in 2000. Some European countries are already meeting this goal, thanks mainly to cuts in coal subsidies. But Australia, Canada, the United States, and other industrial nations are not, due in part to their low fuel prices, and to their failure to enact aggressive energy conservation measures. The main goal for the Kyoto agreement was to establish a new legally binding target for the year 2010.

The negotiators in Kyoto settled on nation-by-nation limits that add up to a reduction in greenhouse gas emissions of 5.2 percent below the 1990 level for all industrial nations. Little noticed outside climate policy circles, however, was the curious fact that total CO_2 emissions by industrial countries was—and is—already below 1990 levels, due to steep declines in the former Soviet Union. As a result, the protocol's target, were it to cover just CO_2, translates to a mere 2.5 percent cut from the 1997 level.

Within that goal, industrial countries agreed to a range of specific targets—cuts of 8 percent in the European Union, 7 percent in the United States, and 6 percent in Japan—along with an 8 percent increase in Australia. These numbers represent backroom political deals more than they do analyses of the economic potential to reduce emissions in a given country. Australia, for example, has a government dominated by mining interests that wish to boost their export of energy-intensive products to Asian nations—a development that will of course worsen the greenhouse problem.

The anemia of the Kyoto figures can be seen when they are contrasted with what is eventually needed to stabilize CO_2 concentrations. According to the International Panel on Climate Change, the official scientific body that advises the Conference of the Parties, the amount of reduction that eventually will be required is not 5.2 percent, but 60 to 80 percent below the 1990 levels. Yet, when emissions of developing countries are added to those of the industrial countries covered by the protocol, the global total is projected to increase to some 30 percent *above* the 1990 level by 2010.

The most hopeful thing that can be said of the Kyoto Protocol is that it echoes Lao Tse's comment that a journey of a thousand miles begins with a single step. The protocol could, perhaps, set the stage for more ambitious agreements later, as has occurred with earlier environmental treaties. But if—as now seems likely—it takes years to ratify the protocol, and years more to enact the national policies needed to achieve its weakened goals, the encounter in Buenos Aires could turn out to be little more than an elaborate tango—a few impressive steps that end up going nowhere.

❷ SEARCHING FOR "FLEXIBILITY": As climate negotiations grew tense late last year, the Clinton Administration was increasingly desperate to find a way of bridging the huge gulf in emissions goals that separated the United States from the European Union. The key, U.S. officials felt, was to come up with a series of provisions—critics called them loopholes—that would make it less expensive to meet the protocol's goals, and that would avoid the need to take a big bite out of domestic CO_2 emissions. The levels the Europeans were asking for, they believed, would require politically impossible measures that were already being aggressively fought by a multimillion dollar TV and newspaper ad campaign sponsored by the coal, oil, and automobile industries.

Australia, Canada, and New Zealand had similar concerns, and strongly supported the search for "flexibility." European governments were not nearly so worried about tough targets since, unlike the United States, they had not substantially increased their emissions during the 1990s. But even many of their leaders privately welcomed the notion of flexibility that would allow them to delay enacting any new energy taxes or other constraints on politically powerful industries.

During the Kyoto negotiations, the focus turned to a target that would cover a "basket" of six greenhouse gases rather than focusing on each one individually. This "comprehensive" approach seemed logical enough, since it covered all the important greenhouse gases, including methane and HFCs, not just CO_2. But it also happened to be a great convenience to U.S. delegates who were looking for ways to avoid sharp CO_2 reductions that would arouse a hornet's nest of industry outrage. Experts had identified a potential for easy reductions in some of the more minor greenhouse gases, which might offset some of the projected increase in the nation's carbon dioxide emissions.

But this approach seems likely to lead to an accounting nightmare, in part because there is no reliable emissions inventory for some of these gases, and each has a distinct (and in some cases uncertain) lifetime in the atmosphere. As a result, this "comprehensive" approach is likely to reduce the clarity of the protocol, and could well encourage cheating. (One of the keys to the pioneering 1987 Montreal Protocol on Substances That Deplete the Ozone Layer is that it dealt with each of the offending gases individually and specifically, so that countries knew exactly what was needed—and would be exposed if they did not.)

At the insistence of the United States, as well as Canada and New Zealand, the Kyoto Protocol also allows countries to count carbon absorption by forests (and perhaps later by peat bogs and other carbon "sinks") as offsets against emissions. Under the agreement, carbon flow resulting from both additions to and subtractions from sinks is to be included in national inventories. A coal-burning power company in Ohio, for example, could receive offset credits for financing a tree-planting project in Oregon (see "Bogging Down in the Sinks," page 28).

In principle, this idea makes sense—tree planting should be encouraged. But the proposed scheme for doing this is exceedingly complex, combining an accounting maze with uncertain science. Biologists point out that there is not yet enough data on natural carbon cycling to establish full accounting and verification procedures for carbon sinks. And like the provision on the "other" gases, this one complicates monitoring and enforcement, and encourages governments to fiddle with the figures. In response to these concerns, the provision on sinks has been sent back for scientific review, which is to be completed by 2000.

❸ HOT AIR TRADING: Another form of "flexibility" in the Kyoto Protocol is the concept of emission-allowance trading, an idea pioneered and highly touted by U.S. government regulators, private companies, and even some environmental groups. It is modeled on provisions in the U.S. Clean Air Act that allow power companies to "trade" their sulfur dioxide reduction obligations, in the theory that this will encourage cuts to be made wherever it is least expensive to do so. In the context of global climate change, nations would have the option of buying greenhouse gas emission allowances from other countries that have more than met their own requirements.

The concept has met with considerable skepticism in Europe, as well as in developing countries, which worry that it will dilute the commitments and encourage some governments to avoid difficult domestic policy decisions. Still, a growing number of governments have warmed to the idea in recent months, recognizing that it could improve the economic efficiency of the agreement by channeling capital to economies where it can make the most difference. After a tense standoff, the U.S.-sponsored article on emission allowance trading was accepted, though with obvious reluctance. In a gesture that carried symbolic, if not legal, weight, Estrada cut the trading provision to a few lines and pushed it to the back of the protocol.

It was not until after the weary delegates had arrived home from Kyoto that many of them realized that the United States had pulled a fast one. Under the protocol, Russia and Ukraine must only hold their emissions to the 1990 level, which would allow them to increase emissions 50 and 120 percent respectively from their current depressed levels. Experts do not expect either nation to come close to such increases, even if their economies rebound robustly, so these emission allowances would be available for purchase by countries like the United States, that expect to fall well short of the targets in the protocol. In short, the United States and Russia could make a trade that allowed the United States to take credit for emission reductions that stemmed from the Russian economic collapse of the early 1990s—without reducing future greenhouse gas output by even a molecule.

Although the U.S. government has been vague about its emissions trading intentions, the official plan produced by the White House in July would achieve up to 75 percent of the U.S. reduction requirement by purchasing allowances from the Russians and Ukrainians. While such a deal might result in the United States adding $10–20 billion a year to Russia's empty treasury, it is hard to see how the climate would benefit. The idea has been widely denounced by everyone from Greenpeace to the U.S. National Coal Association, so it is not clear that it has much of a constituency. Indeed, this kind of trading threatens to undermine more legitimate trading proposals that are tied to specific projects, such as the article on "joint implementation" which is intended to encourage rich industrial countries to invest in climate projects in the former Eastern Bloc. European governments have suggested putting a percentage limit on trading—to encourage adoption of domestic policies—but even this might not be enough to correct a provision that undermines both the effectiveness and legitimacy of the protocol.

❹ THE RATIFICATION TRAP: While all of these problems are thorny ones, they should in theory be surmountable. But many of the all-important details—including how emissions trading will work—were not included in the Kyoto Protocol, and will have to be added to it if the protocol is to be effective. At negotiating sessions in Bonn, Germany in June—the last before Buenos Aires—vituperation outweighed progress. In the European and developing country views, the United States has riddled the protocol with sneaky loopholes, while U.S. officials believe that the Europeans are trying to wriggle out of an agreement that was made in good faith in Kyoto.

Complicating the process further is the issue of ratification. The Kyoto Protocol will only go into force if ratified by enough industrial countries to represent at least 55 percent of industrial country emissions. In theory, the protocol could go into force without U.S. assent, as may occur with the land mines treaty negotiated last year. But due to concerns over competitiveness as well as fairness, neither the Europeans nor the Japanese wish to move forward with an agreement that excludes the world's largest greenhouse gas emitter.

Leading U.S. Senators, meanwhile, say they will not move forward with ratification without "new specific scheduled commitments to limit or reduce greenhouse gas emissions" by developing countries—a position with which the Clinton Administration has felt compelled to go along. U.S. officials have been vague as to what such a commitment might consist of, and developing countries are rightly wary of being asked to reduce their emissions, which already average less than one-tenth the U.S. per capita level. A year and a half of arm-twisting has yielded little progress, and the impasse gives the United States an effective veto over the protocol.

As 1998 drags to a close amidst financial crisis and political scandal, the climate negotiations are bogged down by a dangerous combination of impotence and ineptitude. And with the coal, oil, and automobile lobbies again stepping up their climate ad campaigns, it is unclear that the key countries have the political will needed to forge the compromises that are needed. The negotiating process itself seems to have become a kind of diplomatic black hole—sucking in endless quantities of legal, economic, and scientific capital. The thousands of government officials, NGO lobbyists, and observers who follow the process closely continue to circle the globe, attending dozens of meetings on sinks, emissions trading, and other climate issues *du jour*. The climate cognoscenti now speak their own acronym-filled language—interlaced with references to AGBM, QUELRO, SBSTA, and LUCF—and are prone to describing labyrinthine sideways movements as "progress." But the negotiations are increasingly disembodied from the real world threats—from massive floods to rampant disease—that a changing climate represents.

Meanwhile, the process of implementing national policies that will actually reduce emissions—which had gained substantial momentum prior to Kyoto—has stalled since then. President Clinton, for example, who talked extensively about climate change when he was in China this summer, has been unable to persuade the U.S. Congress to adopt even a modest package of new climate policies. Europe has seen a similar lack of progress, as it has bickered over "burden-sharing" its goals and debating emissions trading with the United States. And the new Japanese plan, released in August, is based largely on building 20 nuclear plants—a step that government officials privately acknowledge will never be permitted by the Japanese public.

ONE OF THE IRONIES OF THE YEAR SINCE KYOTO is that while the national and international political processes have stagnated, opportunities for economically cutting emissions have blossomed. Motivated in part by the prospect of legally binding emission limits, companies, cities, and individuals have pursued a host of new approaches. From those emerging possibilities, a less legalistic, more productive approach to the climate problem may emerge.

◆ British Petroleum President John Browne surprised the oil industry when he announced last year that after extended internal deliberations, his company had concluded that climate change is a serious threat that will inevitably reshape the energy industry. Browne later announced BP's intention to reduce its emissions 10 percent and to step up investment in solar energy. The American Petroleum Institute denounced BP for "leaving the church," but Enron Corp, North America's largest gas company, and Royal Dutch Shell, the world's biggest petroleum firm, have joined BP in acknowledging the severity of the climate problem and beginning to shift their own investment strategies.

◆ During the very month of the Kyoto Conference, Toyota stunned the auto world with the delivery to its showrooms of the world's first hybrid electric car, the Prius—with twice the fuel economy and half the CO_2 emissions of conventional cars. Marketed as a "green" sedan, the Prius sold so quickly in Japan this year that Toyota had to open a second assembly plant. The shock waves were evident at the massive Detroit Motor Show in January, where each of the U.S. Big Three companies announced plans for new generations of hybrid and fuel cell cars. In a 1998 speech that might be compared to Mao expressing second thoughts about communism, General Motors president John Smith said, "No car company will be able to survive in the 21st century by relying on the internal-combustion engine alone."

◆ As national governments dither over the Kyoto Protocol, a surprising number of city governments are moving forward with active efforts to reduce their emissions. Over 100 cities, representing 10 percent of global emissions, have joined the Cities for Climate Protection program to reduce those emissions by investing in public transportation, tightening up public buildings, planting trees, and installing solar collectors. Toronto, which was the first city to announce a climate plan—in honor of its role in hosting the first major climate meeting a decade ago—is working to reduce its emissions by 20 percent. And Saarbrucken, a medium-sized city in a coal-mining region of southern Germany, has already cut its emissions by 15 percent, in part via effective energy management and public education campaigns.

◆ A few national governments are also showing the way. After a decade of effort, Denmark now generates 8 percent of its electricity from wind power, and another fraction from the combustion of agricultural wastes. Already, the Danish wind industry employs 20,000 people, and wind turbines are the country's second largest export. And thanks to Denmark's efforts, wind power, at 25 percent per year, has been the world's fastest growing energy source since 1990.

Taken together, these efforts suggest that it will be easier and less expensive to reduce carbon dioxide emissions than it appeared a few years ago. As has been the case with almost every other environmental problem in the past three decades, once we get serious about slowing climate change, we will likely find a host of innovative and inexpensive ways to do so. Thanks in part to the signal sent by the climate convention, as well as to those coming from the climate itself, that process is underway. The question now is how to speed it up.

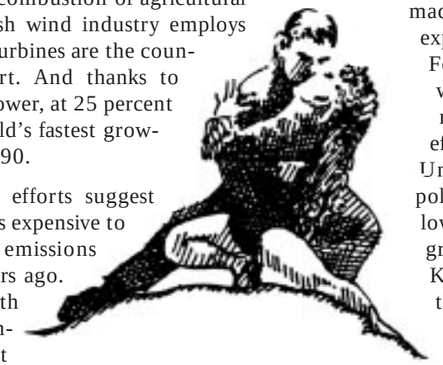
◆ ◆ ◆

tango\tan-go\ *n: a ballroom dance of Latin-American origin in 2/4 time with a basic pattern of step-step-step-step-close and characterized by long pauses and stylized body positions; also: the music for this dance*

After a decade of stylized steps—and long pauses—doubts are growing as to whether this climate dance will ever be successfully completed. The brief glow of optimism that surged from Kyoto last fall has faded. Well-meaning diplomats have become handcuffed by an increasingly complex and unruly process. While it is essential to take the long view with a problem such as climate change, even that perspective provides little comfort today: The commitments agreed to in Kyoto are less clear, and arguably less stringent—once all of the "flexibility mechanisms" are included—than the voluntary emission goals established in Rio in 1992.

The glacial pace of climate negotiations in the past decade can be attributed in part to a powerful combination of forces: the intergenerational scale of the problem; only modest public alarm; broad and well-organized industry opposition; and the complex, multi-faceted nature of the problem being addressed. Together, these four factors make the climate-policy process an order of magnitude more challenging than any others so far. Solving this problem will truly put human institutions and ingenuity to the test.

If they are to get the protocol back on track, the negotiators who meet in Buenos Aires this November would do well to remember a distinction made by environmental negotiations expert David Victor of the Council on Foreign Relations in a 1998 book: when it comes to international environmental treaties, compliance and effectiveness are two different things. Unless it leads to major governmental policy changes that in turn lead to lower emissions of the most important greenhouse gas, carbon dioxide, the Kyoto Protocol will have fallen into the trap of debilitating compromise and complication that has plagued several other environmental agreements.



The climate negotiations have been guided in part by the lessons of one of the most successful of those agreements, the 1987 Montreal Protocol to protect the ozone layer. That agreement, in which many of the Buenos Aires negotiators were involved, led to an 80 percent reduction, within a decade of its adoption, in production of the gases that most damage the ozone layer. It did so by relying on three simple principles: Politics must follow science; environmental goals should be clear and simple; and industry consensus is essential to drive the process forward.

But the challenge of Kyoto is far greater, in large measure because where the ozone problem could be solved with the effective participation of just a few dozen companies, the climate problem is driven by millions of actors, indeed by society as a whole. Although the new business created by the move away from fossil fuels is likely to roughly equal the business lost, the potential losers are far better organized.

As with the Montreal Protocol, the central focus of the Framework Convention on Climate Change is national emissions limits, leaving individual nations

to decide how to achieve them. While the principle seems like a solid one, since it allows for national differences and permits flexibility, it has not worked in the climate arena, where carbon dioxide, unlike chlorofluorocarbons, is a virtual currency of modern energy economies that can be reduced only by addressing structural economic issues.

Even among industrial countries, the differences in emissions levels, economic structures, and political philosophies are so wide that no single goal has universal logic. One of the problems in Kyoto was the fact that countries such as the United States, which had substantially increased their emissions since 1990, were panicked by the challenge of meeting goals that seemed reasonable to other countries that had already reduced theirs. But once governments began differentiating the goals in Kyoto, the negotiations became a political free-for-all that undermined the credibility of the entire process. In addition, by bundling together six gases, and adding the highly complicated issues of sinks and trading to the protocol, the negotiators have created an agreement that will be nearly impossible to review or enforce, and that at best sends an ambiguous signal to governments and industries.

When other environmental treaties have run into similar problems, a leadership group of more committed governments has sometimes formed.

The challenge now is to renovate the baroque structure that the Kyoto plan has become—or else scrap it and get ready to start over. The negotiators who have labored so hard over the past decade to get the foundation of the protocol in place deserve one more try in Buenos Aires. But if—as now seems likely—that try produces no serious prospect of ratifying the protocol and implementing it, new approaches may be needed.

David Victor points out that when other environmental treaties have run into similar problems, a leadership group of more committed governments has sometimes formed—adopting a more stringent set of voluntary goals, which they then move immediately to implement. In the 1980s, European negotiations to reduce North Sea pollution and nitrogen oxide emissions each ran aground due to vehement opposition of major governments. But other countries moved ahead with voluntary commitments—complementing more modest, legally binding agreements that were also agreed to. Similarly, the international landmines treaty of 1997 was spearheaded by NGOs and by a small group of like-minded governments. They formulated an agreement that quickly won the support of most—though not all—governments. Holdouts like the United States are expected to join eventually.

This approach might well work for climate policy, building on the leadership roles of several European countries, and building support outward from there. Taking the idea a step further, it might even be feasible to bring regional and city governments and companies into such an agreement. They would pledge to each other not just to meet certain levels of emissions reductions, but to identify and adopt specific policy changes and investments—such as incentives for purchasing more efficient cars or rejuvenating public transportation—that will expeditiously achieve these reductions. They might also agree to experiment with emissions trading and CO_2 taxes.

The guiding principle of this new initiative would be to make climate stabilization an economic opportunity as well as an environmental necessity. As John Topping of the Climate Institute puts it, "A strategy that works is going to have to be one that has its own very positive economic feedbacks, one that extends opportunity rather than slowing it down." Like the Kyoto Protocol itself, this approach would still require political support—but on a local, regional, or national level.

Such an initiative would start with a relatively small group of committed institutions, drawing in a larger circle of participants over time, and gradually marginalizing those who are so mired in the status quo that they refuse to go along. The psychology of marginalization—and of shame—could turn out to be a powerful spur to action. If history is a guide, it might eventually lead to a second generation protocol—one that really works.

The key to any approach, of course, is strong public support for action on climate—support that is substantial enough to overcome the unavoidable tendency of many industries to fight change. Environmental groups need to do a better job than they have so far in mobilizing public action—but in the end, it may come down to the weather. Catastrophes have been the driving forces behind many previous environmental agreements. Tragically, the probability of such crises is rising with the temperature.

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