

Translated extract from

Harald Welzer / Claus Leggewie
Das Ende der Welt, wie wir sie kannten.
Klima, Zukunft und die Chancen der Demokratie.
S. Fischer Verlag
Frankfurt am Main 2009
ISBN 978-3-10-043311-4

pp. 9-14, 100-110

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The End of the World as we once Knew it:
The Climate, the Future, and the Prospects for Democracy.

Translated by David Brenner

At the End, or: Climate Change as Cultural Change

It's the end of the world as we know it. R. E. M.

The end of the world? No, not the world is falling apart, as you might have read lately, but those structures and institutions supporting it as we knew it: capitalist markets, civilized norms, personal autonomy, global cooperation, and democratic processes. As modern people, we are used to thinking in linear and progressive terms, open to the future. Certainly, there were setbacks along the way to growth and progress but on balance, things always turned out better. Metaphors like *cycle* or *decline* were discredited. The sky was the limit.

That was the world as we knew it. Markets seemed to expand endlessly, despite the occasional crisis. Governments guaranteed social order and world peace. Humankind transformed the dangers of nature into manageable risks by means of technology and organization. The guiding principle of progress seemed to break down only now and then, and only for a short time. Even a rupture in civilization such as the Holocaust or the genocide in Darfur could not shake the fundamental belief that we were on the right path. Global mobility and communication made the world feel smaller and more accessible. And in 1989 democracy completed its triumph. The world became even more familiar as a result. The fact that the world as we knew it is no longer recognizable is not due to nature itself -- which is certainly not predictable -- but the result of human-induced climate change. In a *very* unpredictable dynamic, the world's climate may reach a tipping point if the tendency is not reversed quickly -- strictly speaking if we do not radically change course in the next decade. The short time until 2020 -- just two or three legislative periods, a short business cycle, two Summer Olympiads -- will decisively affect the conditions of life for generations to come.

Linear progress has thus been interrupted by a new perspective of finitude, an alien (if not outrageous) idea in modern times. Risks are being transformed back into dangers. Not only raw materials are finite, but the great achievements of Western modernity might also be on their way out: the market economy, civil society and democracy.¹ Climate change is thus cultural change, gives us an idea how life will be in

the future. However, that does not mean “in the year 2525” (to cite another popular song) but involves a much more limited span of time. Whoever is born in 2010 will still experience the year 2100. But without rapid and decisive countermeasures, the average temperature on earth will rise by four to seven degrees Celsius, and our descendants will be breathing an air as it today is only found in constricted, stuffy submarines.

While we -- the inhabitants of the Western Atlantic nations -- still believe we are at the heart of world society, able to shape our future at will, we have been drifting away from the center for quite some time while other powers move into it. The economic and geopolitical influence of countries such as China, India, Brazil, and Russia will continue to expand despite their current problems, and others will follow in their wake. World society is being refigured and, in the process, our role in it. And problems that initially plagued just the European periphery -- Iceland, Latvia, or Hungary -- give the center an idea of how *its* future will look.

After 250 years of superior power, economy and technology, our habitus and self-image are still tied to circumstances that no longer obtain. The way our self-perception lags behind the speed of change in our “globalized world” can also be found in areas such as the energy, environmental, and climate crises. Although there is not the slightest doubt that fossil fuels are finite or that the increasing competition for (shrinking quantities of) available resources will lead first to conflicts, then probably wars, and finally to a world without oil, we are still practicing a politics and lifestyle developed for a world *with* oil. While the extinction of many species is progressing at an unprecedented pace, and while the seas have been over-fished and the forests radically reduced, our actions still seem guided by the idea we are dealing with reversible processes. The destruction is covered up by the notion that only a few adjustments are needed. And despite the evidence of climate change, the majority of politicians -- as revealed by our current management crisis -- are fixated on short-lived and illusory repairs. Yet, in view of quarterly budgets and electoral periods, those who want to preserve particular jobs in failing industries are practicing the politics of yesteryear.

From history we know of civilizations that were successful for longer than ours in the West. They disappeared because they held on too tightly to strategies that had ensured their advancement before environmental conditions changed. “What might the person

have thought,” asks Jared Diamond, “who cut down the last tree on Easter Island, thereby sealing the unstoppable decline of a culture that had been successful for 700 years already? Probably that trees had always been cut down and that things would still be normal after the last one was gone.”² We are all Easter Islanders. Let’s assume we were to settle on a simple rule of survival and consume in one year only as many resources as the Earth could provide for a year. We would then have to ration supplies over 365 days without exhausting them before December 31st. The day on which people first began to calculate things this way was New Year's Eve in 1986, the first “Earth Overshoot Day.” Just ten years later, 15 percent more had been consumed than was budgeted for the year, the turning point coming in November. In 2008, that “overshoot day” had already been reached by the 23rd of September.³

If the Earth’s resources continue to be consumed at the current rate, the annual ration in 2050 will have been used up within six months. We aren’t clinging to some Romantic idea of nature but such seemingly naive calculations reveal the frivolous level of consumption in our capitalist growth economy. Not only thoughtless bankers were recently involved in making such unrealistic projections. The largest mass movement to take place after the “outbreak” of the financial crisis in September 2008 was the rush on auto showrooms to take part in the “cash for clunkers” program.

Particularly in Germany, this meant favoring an industry that in the future will no longer be *permitted* to play the role it once did. To indulge the auto industry this way (and especially with such silly measures) is to spend money on something antiquated -- money that will no longer be available to build a better future. Such salvage plans confirm how susceptible people have become to think that a world with more than nine billion people might look like Europe does today with its eight-lane highways and sprawling parking lots.

We have to move away from path dependencies and routines of comparison. The current worldwide crisis, for instance, has been compared in its severity with the Great Depression of the 1930s. Yet since it already exceeds those parameters, such comparisons fail to acknowledge the seriousness of the situation. The world is not only in the midst of a historic economic crisis but is also entering the most dramatic warming phase in the last three million years. It may sound bombastic or alarmist, but the Great Transformation to

come resembles (in breadth and depth) historical turning points such as the transitions to agrarian and industrial society.

That's why climate change is a culture shock, because it is increasingly difficult to ignore how intensely our reality has already changed and how much it still needs to change in order to become sustainable. What technicians call *decarbonization* and economists describe as the *Low Carbon Economy* cannot be realized by making a couple of adjustments to the energy industry. Eighty percent of our comfortable way of life is already based on fossil fuels. On the horizon of the Great Transformation we need to find a post-carboniferous society with radically different social, political, and cultural parameters.

A society that wishes to understand and overcome the present crisis can no longer rely on the art of engineers, the spirit of entrepreneurs, or career politicians (all of which have been used). It must instead -- and this is the central thesis of our book -- become a political society, a vigorously civil society whose members see themselves as responsible parts of a polity that cannot survive if they don't play an active role in it. Even if this demand seems unreasonable and unsuited to the times we live in, the meta-crisis we are combating calls for more democracy, individual responsibility and collective commitment.

The climate, the future and the prospects for democracy: Our book combines a diagnosis based on the current evidence with a realistic policy proposal. We are not climate scientists in the conventional sense,⁴ but we see climate change as a way to learn about the future of culture, a guide for the good life. Culture is an answer to three questions: how the world *is* constituted, what it is *supposed to be* like and how it will likely be *in the future*.⁵ In the first chapter, we present the reasons for and extent of the current *meta-crisis*. Merely proclaiming it a crisis does not lead to a change in course but (more likely) to denial and resignation. In the second chapter, we describe the gap between knowledge and action -- why people do not act upon their knowledge but instead turn to "the responsible parties," to the market, technology, and the government. In the third chapter, we provide a critique of the current management of the crisis and how it relies on outmoded methods and persists in old patterns. In the fourth chapter, we address the *competition between authoritarian and democratic approaches* for overcoming the

global crisis, and in the final chapter, we explore *the prospects for a democratization of democracy*.

This is anything but a doomsday scenario. We wish for readers who are glad to leave the old world behind and want to take part in the shaping of a better one. For all the danger of failure, the economic crisis and climate change offer leeway for individual action, democratic participation, and global cooperation. The entire world is being involuntarily -- but consciously -- subjected to what is a large-scale experiment under enormous time pressure.

Business as Usual: On the Critique of Crisis Management

The Bush Administration needed Chinese funds in order to increase the assets of the Saudi royal family somewhat so that oil can be burned in inefficient machines (whose technology is two centuries old) so that overweight Westerners can get to the grocery store in their SUVs (Nils Minkmar).

According to a prominent sociological explanation, the world as we knew it was held together by four functional systems: economic, political, cultural, and communal.⁶ This systematic approach, tough as nails, now appears to be ailing. Systems theorists and entrenched Luhmannians (or *Luhmenschen*) like to issue warnings about the harm caused by excitement because it increases the real harm done. Those such as Dirk Baecker praise “the great moderation through which society learns both internally and externally to count on different environments and therefore assume that churches, schools and businesses, government agencies, theaters and hospitals, political parties, associations and newspapers each have their own and therefore “good” reasons to act the way they do.”⁷ This sounds like the observation of a “non-political man,” which has a long history in Germany from Thomas Mann through Helmut Schelsky all the way to Niklas Luhmann: “On the contrary: that does not mean that we have to agree with the results [of such actions]. But in every instance, it means we can only operate with these institutions

and not against them. Society produces its filth on a level of the first order. It does what it does and does it as long as it is not noticed and as long as observers can be kept at a distance. Society can only produce its solutions on a level of the second order.”⁸

Yet how do we get to the second level? By giving up two illusions: that we are dealing with a problem we have already comprehended in all its dimensions and effects, a problem that might be dealt with by traditional strategies of observation, moderation, and correction. But it’s not that kind of problem. This is precisely what we mean by *meta-crisis*, a condition in which the system itself is endangered -- which is why we have to change our frame of reference for looking at the system. Before it becomes a possible opportunity, every crisis can lead to collapse -- a “prospect” that systems theorists usually haven’t bargained with and even leftist critics no longer expect. Friedrich Engels, however, would not have counted on it: “Capitalist production cannot be stable. It must grow and expand, or it will die out. . . . This is the vulnerable Achilles heel of capitalist production. Its condition of existence is the need for continuous expansion, and this continuous expansion is now becoming impossible. Capitalist production is running into a dead end.”⁹

This theory, buttressed by wishful thinking, has been outlived by capitalism for over a hundred years, which is not to say that it has finally been refuted. Rather, the limits of growth have now been revealed with unprecedented clarity. Not only climate change might go off course, causing societies to fail; the aforementioned tipping points also represent a danger, which until now seems only to have been found in the fantasy world of disaster movies. These risks are more real than the popular meteorite of disaster sociology that is supposed to eventually knock the blue planet off its orbit. Global environmental and climatic changes affect all instruments of social control -- markets, global cooperation, and (not least) democracy. We only have to realize just how de-democratizing the effect was in 2009 as banks and businesses were saved and others were not. Democracy lives on trust and begins to erode when that is lost. Mistrust is now our first civic duty.

Market Failure

Since 2008, the social market economy has received sympathetic obituaries and been vindicated in defiant speeches. And contrary to Engels' prediction, it at least had a glorious past. That same year, former World Bank economist Nicholas Stern called climate change the greatest "market failure in history" without nonetheless losing his faith in market solutions to the crisis. An "economy of climate change" has roughly three aspects:

- the *causes* of climate change in the mode of production based on the burning of fossil energies,
- the calculation of *costs*, and
- the economic *instruments* of climate protection.

Climate change raises a general question: If the destructive forces of capitalism were responsible for it, can it still be managed "system-immanently," by means of the market economy? Having already articulated how industrial production has caused global warming, it only remains to highlight the importance of reflecting on the economic and social history of this process. This type of reflection can hardly be found in the very ahistorical science of economics, meaning that economic expertise is becoming less valuable in policy making. The climate and the economic crisis stem from the same pattern of organized irresponsibility: the massive 2008 "credit crisis" was not only the outcome of the American real estate market but also revealed "the basic method by which the planet's resources come to market": exploitation and profit first, dealing with the damage later.¹⁰ Nature and environment can no longer be perceived as a bank from which we take out food, water, and raw materials as if they were loans that we then pay back in carbon dioxide. The only ones to have calculated the true costs from the beginning are those exceptions in the field of economics, such as the Briton Arthur Cecil Pigou one hundred years back and (in retrospect) authorities such as Nicholas Stern.¹¹

The most respected calculation of the costs of climate change is found in his 2006 report, a 650-page survey created for the British government. Since then, climate change at least has a price tag: If we do not spend one to two percent of the gross world product on it in the next few years, climate change will cost us a quarter (or even more) of it in

the decades to come. Doing this does not involve great sacrifices, because investments in climate are worth it. Investments in renewable energy and alternative technologies pay off, creating jobs and promoting the development of the southern hemisphere. The message is therefore: the market system cannot only afford the course correction; it will even *benefit* from it.

Capitalism has its eyes on the “Low Carbon Economy,” a de-carbonized way of doing business without coal, oil, and gas. In the medium term, this economy should reduce greenhouse gas emissions to nearly zero. It is the dominant paradigm in the United Nations, many national governments, the European Commission, the World Economic Forum, and even in corporations that provide electricity primarily from coal. The consulting firm McKinsey expects an annual investment requirement of around 530 billion Euros until 2020 in order to realize the goal of a two-degree reduction in temperature; by 2030, the annual volume will have to increase to approximately 810 billion Euros.¹² According to an environmental study of the United Nations, industrialized nations ought to spend one percent of their annual GDP to invest in low-carbon and resource-efficient businesses.¹³ Postponing such investments another ten years will make it impossible to limit the increase in global mean temperatures by two degrees (or more) and in the future, we ought to anticipate much higher costs for climate adjustments.

Financing this environmental Marshall Plan takes place partly through rapid capital recovery by means of in market growth and energy savings and partly through revenues earned from emissions trading. The majority of economists and environmental policy makers see the solution to the climate crisis is not in raising taxes, but in using market-based instruments.¹⁴ Emissions trading (or the trading of emission allowances, known as “cap and trade”) is currently the preferred tool of environmental policy for reducing pollution emissions at the lowest possible costs. Here’s how it is done: National lawmakers, usually on the basis of international agreements, set a cap on total emissions for a defined period and provide environmental allowances that can be traded freely. In contrast to other ecological taxes, this one is guided by a volume target that, according to prevailing opinion, makes for greater ecological accuracy than a price target. The intended effect: Whoever is responsible for more emissions than it has allowances must

buy more allowances; whoever causes emissions without having such rights is liable and penalized. As a result, there is an economic incentive to reduce emissions through energy conservation and greater efficiency. Emissions trading is preferred over the legal setting of pollution limits because it can be managed easily and efficiently, and it has the greatest likelihood of bringing about the best technical solutions. Mandatory requirements, however, would be:

- that emissions allowances be auctioned for a price (and not allocated politically),
- that binding maximums be set and respected, so that cap and trade does not apply selectively to particular sectors (such as power plants and industry) but to all emitters (such as transportation and buildings),
- that cap and trade provides incentives to convert to renewable energy and decentralized technologies, and
- that regional trading systems are eventually linked and coordinated globally.¹⁵

If this were to work (which is currently far from the case), the capitalist market economy would get away with a slap on the wrist, precisely because it can deploy its strength -- the regulation of prices.

There were some detailed criticisms of Stern's basis for his calculations but hardly anyone is casting doubt on capitalism's capacity for self-enlightenment.¹⁶ The market will correct its earlier mistakes by calculating the environmental damage done to date and adding it into the cost of products and services. It is sufficiently able to learn to overcome selective inefficiencies in what are (by and large) highly efficient regimes of production. And like Baron von Münchhausen, it can pull itself up by its own bootstraps with the help of a "third industrial revolution." We can see the project of a green marketplace appearing on the horizon, embedded in social norms such as environmental protection and sustainability.

By appealing to people's pocketbooks, Stern is speaking a language that both the public and politicians understand: It's better to pay now so that everything doesn't cost more later. Similar arguments were made by the *Münchener Rück*, which is (after the *Swiss Re*) the largest reinsurer in the world. It attributed a large part of the disasters and crises of 2008 to climate change.¹⁷ Board member Torsten Jeworrek drew three consequences for his corporation:

“In our core business, we only take on risk at risk-appropriate prices. This means that if the level of danger changes, we adjust the price structure accordingly. Second, with our expertise in the context of environmental protection and adaptation measures, we are developing new business opportunities. And third: in international discussions, we as a company are committed to effective and mandatory rules on CO2 emissions so that climate change will be slowed down and coming generations will not have to live with weather scenarios that are difficult to control.”¹⁸

Putting a price on the impact of climate change -- combining the regulations that conform to the system with new business opportunities that stabilize it -- allows global warming to appear more real. This has psychological advantages. The climate projections of scientists have apparently been too abstract. Now it's a matter of dollars and cents and a clear mandate for Jeworrek and other reinsurers to take action. “At the next climate summit in Copenhagen [he is referring to December 2009], the path must be laid for a (minimal) fifty percent reduction of greenhouse gas emissions by 2050, with appropriate milestones along the way. If there is too much delay, it will get very expensive for future generations.”¹⁹

The Political Economy of Climate Protection

Polls show that capitalism has lost much of its luster and credibility. For two short decades, its thought leaders imagined themselves to be the victors over socialism. But despite their astonishment (and delight), this audience is now noticing that socialism may not be the only system that was “historically obsolete.” Margaret Thatcher's famous “TINA verdict” (“There is no alternative”) sounds stale even if there is no alternative at hand after the bankruptcy of “real, existing socialism” which we now know was even more ruthless than its capitalism in insisting on industrial growth over humanity and nature. In the absence of alternatives, some critics are also hoping that capitalism will outlive those who gamble with it, perhaps rising up out of the crisis like a phoenix from the ashes.

Against theories of its collapse, the system always displayed a self-critical capacity to assert “an interest of the capitalist whole” (Marx) against certain excesses, thus uses its phases of crisis for “creative destruction.” After naïve surprise and stubborn obtuseness prevailed in the first months of the financial crisis, the more intelligent defenders of capitalism entered a self-reflective phase intended to achieve this purifying effect.²⁰

Even if there continues to be no alternative to capitalism, we have to recall as clearly as we can the colossal failure of markets and neoliberal economic policies in view of the environmental and climate crisis. An essential prerequisite for rescuing ourselves would be a political economy of sustainability, a re-embedding of markets in social networks and institutions -- which would incidentally mean understanding economic science as cultural science once again.²¹ *Embeddedness*, the term used by social anthropologist Karl Polanyi, is becoming relevant again. In his classic work, *The Great Transformation* (1944), Polanyi outlined two major economic organizing principles in modern history. One advocates the unbridled freedom of the self-regulating marketplace, i.e., its “disembedding” from all non-economic references. The other seeks to limit the self-destructive effects of the market principle. Polanyi reminds us that economics is not just an integrated market-based system of exchange involving rationally calculating individuals but also a system that invariably reveals patterns of reciprocity across social networks, households and cooperatives as well as patterns of redistribution across political organizations such as the state.

By contrast, the dominant economic doctrine is unrealistic, dogmatic and affirmative. *Unrealistic* because it has settled into an econometric fool’s paradise that hardly has anything in common with the real economy. The image of the *homo economicus* either ignores the economy’s cultural embeddedness or it explicitly denies it. The doctrine is also *dogmatic* because competing schools of thought (inside and outside of the discipline) are routinely rejected without even having been tested.²² Those wishing to be economically successful in the future can no longer be sold on the idea that the “rational man” is a “realistic” notion. The financial crisis is more than a caesura in economic history. It marks a deep cultural turning point that displaces current decision theory, submitting human risk behavior to a serious examination. Finally, the prevailing

economic theory is *affirmative* because it has no critical distance from its object of study -- the capitalist economy -- instead choosing to promote it relentlessly.²³

As a result, the diagnostic and predictive weakness of economics become apparent to all, rendering it useless for both policy making and general discussion. Actually, it now appears that it was only good at explaining why the political economy of climate protection had developed differently than predicted. As long as the enterprise was functioning, it did not really attract attention. As a result, all proposals related to it are to be taken with a grain of salt. Consider the advice of a “rational climate policy,” which is accompanied by the mantra that the “freedom of markets” is not to be disturbed by governmental dos and don’ts.²⁴ A climate policy that is economically sound and socioculturally embedded will first have to step away from path dependencies caused by economic theory or policy.

From this perspective, we can once more reflect on the political economy of climate change. In order to limit harmful emissions, there are basically three options: establishing regulatory caps, collecting taxes (which also factor into costs of consumption), and trading with emissions allowances. Emissions trading, as we have seen, is consistent with market conditions, favorable to technological progress, and easy to administer. But the devil is always in the details, and emissions credits still have not proven to be the most efficient way of reducing greenhouse gases. Hans-Werner Sinn has identified the “green paradox” according to which unwanted effects of lowered prices can even lead to an increase in global emissions of hazardous substances: “The fear of green politics -- which is always enlarging the set of instruments available to it -- is leading to an expansion in the supply of fossil fuels, rather than a reduction.”²⁵

Other critics fundamentally question the mechanism of transforming a global public or common good such as the atmosphere into pollution rights to be traded: “Although emissions will be reduced, we are creating a tool that requires us to create those very emissions so that they can be traded in the first place. . . . Consuming fewer fossil fuels and moving toward an economy without them or switching to renewable energy in a rational manner are beyond the comprehension of those involved in emissions trading. Even in principle, therefore, emissions trading is an inadequate instrument of climate policy. Monetary mechanisms are inappropriate because the Earth’s reserves

would have to be sealed and then depreciate in capital terms if we move to a fossil-fuel free economy.”²⁶ The consequences are similar when private savings lead to a reduction in the balance of CO₂ which may then be used by an energy provider for a cap and trade advantage. This means that provider has to buy fewer pollution rights, or can sell more. The energy that one company, in good faith, has *not* consumed will now be consumed by someone else. That’s how the market works.

Notes

¹ The formulation “. . . as we knew it” was used by U.S. President Bill Clinton in 1993 when he proclaimed the "end of the welfare state as we knew it," signaling the transition from *welfare* to *workfare*. The phrase had been used by the band R.E.M., among others, in their 1987 song "It's The End of the World as We Know It" (on the album *Document*). After the September 11th attacks of 2001, that song became one of the 166 that were discouraged from being played on the radio. Elmar Altvater also uses the words in the title to his book, *Das Ende des Kapitalismus, wie wir ihn kennen. Eine radikale Kapitalismuskritik* (Münster 2009).

² Jared Diamond: *Collapse*, German edition (Frankfurt am Main 2005).

³ http://www.footprintnetwork.org/en/index.php/GFN/page/earth_overshoot_day/. This kind of global accounting is being promoted by groups such as the Global Footprint Network, which has also made calculations of the "ecological footprint." Cf. Wuppertal Institut für Klima, Umwelt und Energie (ed.): *Fair Future – Ein Report des Wuppertal Instituts. Begrenzte Ressourcen und globale Gerechtigkeit*. 2nd ed. (Munich 2005), p. 36. We interpret this indicating a high degree of over-development.

⁴ The authors direct the new research program on "Climate and Culture" at the Essen Cultural Institute (KWI); see www.kulturwissenschaften.de/Klimakultur. We wish to thank our colleagues Ludger Heidbrink and the entire "climate team" for critical and collegial encouragement. Of great value as well were the suggestions and materials provided by the Scientific Advisory Committee (*Wissenschaftlicher Beirat*) on Global

Change (*WGBU*) of the German Federal Government and the discussions that one of us were permitted to lead there. Any errors are of course our responsibility.

⁵ This according to Göran Therborn: “Culture as a world system,” *ProtoSociology* 20 (2004), pp. 46–69.

⁶ Talcott Parsons: *Sociological Theory and Modern Society* (New York 1967), pp. 3–34.

⁷ Dirk Baecker: “Die große Moderation des Klimawandels,” *die tageszeitung*, 17. 2. 2007, p. 21.

⁸ Ibid.

⁹ Friedrich Engels: “The Situation of the Working Class in England,” Preface to the German edition of 1892, in: Karl Marx und Friedrich Engels, *Werke* (MEW), vol. 2 (Berlin 1990), p. 647.

¹⁰ Christian Schwägerl: “Faule Kredite,” *Der Spiegel*, 20.10.08, p. 176.

¹¹ The Pigou tax, developed in 1912, is intended to correct market failures by internalizing externalities; see Arthur Cecil Pigou: *Wealth and Welfare*, London 1912.

¹² McKinsey & Company: *Pathways to a Low Carbon Economy, Version 2 of the Global Greenhouse Gas Abatement Cost Curve*, 2009. Numbers on a similar scale were also provided by the International Energy Agency and the World Economic Forum.

¹³ United Nations Environment Programme (UNEP): *A Global Green New Deal. Report prepared for the Economics and Trade Branch, Division of Technology, Industry and Economics* (Geneva 2009).

¹⁴ Environmental taxes in the OECD countries comprised between 3.5 percent (USA) and 9.7 percent (Denmark) and have generally declined since 1996; *The Economist*, 29. 10. 2008; http://www.economist.com/markets/rankings/displayStory.cfm?source=hptextfeature&story_id=12499352 .

¹⁵ For these references, we wish to thank Renate Duckat, Moritz Hartmann, and Franziskus von Boeselager.

¹⁶ On the validity of the scenarios, see Ottmar Edenhofer und Lord Nicolas Stern: *Towards a Global Green Recovery* (April 2009), p. 32; http://www.lse.ac.uk/collections/granthamInstitute/publications/GlobalGreenRecovery_April09.pdf.

¹⁷ Reinsurers cover the risks assumed by insurance companies. Large losses and catastrophes are in this way "spread across many shoulders." The largest claims in 2008 were from Hurricanes Ike and Gustav, storms in North America and Europe in February and May, blizzards in China and flooding in the U.S. in February and April; see *The Economist*, 21.3.2009.

¹⁸ Cf. the press release of *Münchener Rück*, 29. 12. 2009.

¹⁹ Ibid.

²⁰ In contrast to his previous publications, cf. the self-reflective work of Rainer Hank: *Der amerikanische Virus. Wie verhindern wir den nächsten Crash?* (Munich, 2009). See also similar series in *The Financial Times*, in the business section and feature pages of the *Frankfurter Allgemeine Zeitung*, and in international business magazines. These works are critical of the dogmatism of the prevailing science of economics and management education. Particularly on target in this regard is Birger Priddat: "28 Fragen zur Finanzkrise," *Brand eins*, 1/2009, p. 96f.

²¹ Cf. approaches from the most recent sociology of economics, such as Joseph Rogers Hollingsworth und Robert Boyer: *Contemporary Capitalism: The Embeddedness of Institutions* (Cambridge 1997); Mark Granovetter: *The Sociology of Economic Life* (Boulder 2001); Neil Fligstein: *The Architecture of Markets: An Economic Sociology of Twenty-First-Century Capitalist Societies* (Oxford 2001); Harrison White: *Markets from Networks* (Princeton 2002). All of this is summarized well in Andrea Maurer: *Handbuch der Wirtschaftssoziologie* (Wiesbaden 2008).

²² This is the case in the economic history and anthropology from Werner Sombart to Mark Granovetter and particularly in the approach developed especially for law and economics referred to as "behavioral law and economics"; see Cass R. Sunstein (ed.): *Behavioral Law and Economics* (Cambridge 2000). Cf. also the popular books, *The Black Swan* by Nassim Nicholas Taleb (New York 2007), and *Nudge* by Cass R. Sunstein and Richard H. Thaler (New Haven 2008). Additional suggestions for correction came from game theory and neo-institutionalism.

²³ This is also revealed in the small quantity of independent economics research, which led to "business schools" falling behind in the official "Excellence Competition" (*Exzellenzwettbewerb*) undertaken by German universities.

²⁴ Carl Christian von Weizsäcker: "Rationale Klimapolitik," *Frankfurter Allgemeine Zeitung*, 2. 1. 2009.

²⁵ Hans-Werner Sinn: "Das grüne Paradoxon: Warum man das Angebot bei der Klimapolitik nicht vergessen darf," *Ifo Working Paper* No. 54 (January 2008), p. 44.

²⁶ Reinhard Jellen: "Der Emissionshandel ist eine sehr gute Methode, mit der man demokratische Regelungen unterlaufen kann," [Interview mit Elmar Altvater] *Telepolis*, 21. 1. 2008.