Klimaskepsis in Germany

Axel Goodbody

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Climate scepticism in Germany – surely not?

Germans are proud of their country's reputation for environmental awareness and progressive green legislation, and not without justification. Over the last thirty years, Germany has led the way in reducing pollution from industry, transport and domestic heating, promoting recycling and reducing the volume of waste, decoupling economic growth from resource consumption and carbon emissions, and generally meeting the environmental challenges associated with population growth, urbanisation and industrialisation. The OECD called the country a "laboratory for green growth" in 2012, and praised its "proactive role in environmental policy within the EU and internationally". Its energy policy in particular had "a beacon-like character for many other countries around the world" (see Uekötter, Chaper 1). The Green Party has governed at regional level and, in coalition with the Social Democrats, formed the federal government between 1998 and 2006. More importantly, many of its policies have been adopted by other parties since the 1980s and passed into legislation. Environmental problems are bipartisan issues in the Bundestag. Under both Social Democrat and Christian Democrat (Conservative) chancellors, Germany has set itself ambitious goals in climate policy, including reducing greenhouse gases by 40% by 2020, and by 80-95% by 2050. Germany has set the international standard with its accelerated timetable for transitioning from fossil fuels to renewables. The German *Energiewende*, a term variously translated, either (neutrally) as 'energy transition', (literally) as a 'turnaround' in energy policy, or (more grandly) as 'energy system transformation' or 'energy revolution', is more ambitious than the decarbonisation strategies of most other nations, and differs from them in aiming to eliminate nuclear power as well as (ultimately) fossil fuels from the country's energy mix, and seeking to do so in significant measure by promoting the feeding of power generated by small producers from renewable sources into the grid (wind, solar and biomass). (See Hager/ Stefes for an in depth discussion of the *Energiewende* in international comparison.)

It is worth reflecting for a moment on the reasons for the strength of public support for these radical and expensive environmental policies. Cultural tradition and national identity have played a role. The Germans' self-understanding as a people close to nature found expression in the eighteenth century in the writings of Johann Gottlieb Herder, and in the nineteenth in those of Ernst Moritz Arndt and Wilhelm Heinrich Riehl. The Roman historian and ethnographer Tacitus had described the Teutonic tribes in his *De origine et moribus Germanorum* (AD 98) as a forest-dwelling people, defending their freedom and integrity against the corrupting influence of surrounding nations. German self-identification with nature, and with forests in particular, has been referenced in paintings by artists from Caspar David Friedrich (*The Chasseur in the Forest*, 1814) to Anselm Kiefer (*Varus*, 1976), and a long line of German nature poets starting with Klopstock and Goethe, Schiller and Eichendorff have contributed to a sense of special affinity with the natural environment. Few participants in the environmental movement in the 1970s and 1980s were conscious of the historical links between their concerns and either Romanticism or the Life Reform Movement at the turn of the twentieth century, when interest in personal wellbeing went hand in hand with belief that it could be achieved through closeness to nature. However, the resonances with cultural tradition which environmentalism possessed undoubtedly helped to make it such a strong force in Germany, in comparison with its neighbours.

A second, more recent reason for the importance of nature and environment for Germans is the quest for a new, positive national identity since the Second World War. United in shame for the crimes against humanity committed in the Third Reich, Germans embraced green thinking, alongside liberal democracy and the social market economy, as an opportunity to recuperate collective self-esteem. Pride in the new self-image as a green nation also served to a degree as a substitute for the loss of geopolitical power and linguistic and cultural prestige. US Americans may see themselves as "nature's nation" (Perry Miller), but the democratic environmental patriotism which has provided a safe and acceptable form of collective identity in today's Germany is in essence anti-nationalistic and has pacifist leanings. The environmental movement gained significantly in strength from its overlap with the peace movement in the early 1980s, at a time when the arms race between the superpowers constituted a particular threat to the lives of the East and West Germans caught between them.

The Germans' tradition of regional allegiance and local belonging, which is reflected in the country's federal structure, also favoured the establishment of initiatives around local environmental causes. Conservation and environmental concern had roots in the Bund Heimatschutz (Association for the Protection of the Heimat, founded 1906), which sought to preserve regional architecture, customs and dress against the homogenising influence of mass culture, as well as protecting natural monuments and endangered landscapes from industrial transformation, pollution and the loss of habitats. The Bund Naturschutz in Bayern (Bavarian League for Nature Protection), out of which BUND, the German branch of Friends of the Earth, grew in 1973, was founded in 1913, and the Weimar constitution of 1919 was the first that took protection of the natural environment into consideration. A final factor in Germany's leading position in matters environmental is the nation's consensual political culture and tradition of corporatist cooperation between politicians, industry and the unions, in which cooperative expert-driven regulation serves as a way around confrontational clashes. These structural characteristics have facilitated cross-party agreement on major environmental issues and a buy-in of industry.

Cultural values, self-identity and political opportunities thus converged in the 1970s to the advantage of environmentalism in Germany, and whether because of the nation's strong Romantic tradition, its wish to reinvent itself after the Second World War, or its inherited institutions and legal frameworks, the country acquired a reputation as a model of 'greenness'. However, a more nuanced assessment reveals tensions beneath the surface, and significant shortcomings. In the final chapter of his "new history of German environmentalism", entitled *The Greenest Nation?*, Frank Uekötter has examined Germany's standing with respect to environmental politics, legislation, consciousness and behaviour. While he acknowledges that "throughout the twentieth century Germany has been at the forefront of the global green movement" (p. viii), and environmentalism has effectively become a "national code of conduct" (Umweltkultur), making it difficult for individuals to *not* be green, Uekötter notes contradictions between the Germans' self-perception as green and their actions, and a failure to meet some fundamental challenges. Germans build cars with large engines and drive fast (they still have no blanket speed limit on their motorways), but conceal the environmental impact by stressing how clean and efficient their motors are. In

terms of lifestyle, they love foreign travel, and despite advances in vegetarianism, meat plays a central role in their diet. All but one of the country's major rivers are disfigured by engineering works to reduce flood risk and facilitate shipping. And most significantly, over 40% of the electricity consumed in Germany is still generated from coal, and more than half of this from lignite (low grade, highly polluting coal). As a result the country does not come off as well as might be expected in sustainability rankings and international comparisons of carbon footprint or environmental impact (see Burck/ Marten/ Bals).

The same mixed picture is found in terms of environmental consciousness. Germany may generate 23% of its energy from renewables, thanks to generous fixed feed-in tariffs, but the price of energy is in consequence among the highest in Europe, which has led to discontent among consumers and in industry. There is also growing popular resistance to onshore wind farms and the pylons required to bring power generated in the north of the country down to the south, where much of it is consumed. A degree of public scepticism exists regarding ambitious environmental policies, which have not always been well conceived or implemented consistently, and this includes climate scepticism. While there is a broad consensus of public opinion on the reality of global warming, and general acceptance of the precautionary principle and the need to decarbonise the economy, sceptical views have been expressed historically by a minority, and increasingly since 2007-8, when the financial crash coincided with a loss of public confidence in climate science following what has become popularly known as the 'Climategate affair' and the revelation of errors in the IPCC's 2007 report.

On the one hand, public opinion surveys such as the Eurobarometer indicate that Germans consider climate change very important: in 2015, after poverty (28%), respondents in Germany considered climate change was the most serious problem facing the world (26%, well above the EU average of 15%). The vast majority (91%) believed that it was important that their government should set targets to increase the amount of renewable energy used and improve energy efficiency (European Commission). Other surveys confirm the high level of German awareness: a Pew Research Center survey of global attitudes and trends in November 2015 found that 55% of Germans were "very concerned about climate change", in comparison with 41% of citizens in the UK (Stokes/ Wike/ Carle). The political and ideological

polarisation which characterises the USA, where one can make a good guess at a person's opinion on global warming by ascertaining their views on abortion, same-sex marriage and gun-control, is almost absent in Germany, where there is a widely shared sense of the intrinsic value of nature and inter-generational responsibilities, and religious fundamentalism (creationism) is insignificant (see Fröhlich 74f.). Debates on climate change are in consequence less concerned with cultural values, and press reporting is less polarised and polemical.[i] The material interests of actors such as the energy industry, energy workers' unions, and associated political groupings also exercise less influence in political debate. Germany does not have the extensive network of sceptics funded by lobbyists, foundations and think tanks close to the oil, gas and coal industries which are found in the United States, stirring up fears of economic damage, and presenting climate change as harmless, and measures to counter it as unnecessary. Whereas US managers are expected to adopt an adversarial stance, and it does not cost them credibility, German concerns typically seek cooperation with government. As a result, few of the Germans who have voiced sceptical views appear to possess direct links with industry (see Fröhlich 53).

On the other hand, a comparative survey of climate and energy beliefs amongst the public in Britain, Germany, France and Norway carried out in June 2016 found, somewhat surprisingly, that the percentage of Germans who did not believe that the climate was changing (16%) was higher than in Great Britain (12%), France (6%), and Norway (4%). Germany and the UK also had the highest proportion of people sceptical about human activity as a cause for climate change (16% and 14% respectively). And only one in four (24%) in Germany thought that a large majority of scientists (≥ 80%) agreed on anthropogenic climate change. Belief in a strong scientific agreement was higher in Norway, France and the UK, where 30-35% of respondents thought that the consensus lay above 80% (Steentjes et al., 18-21).

A television programme in the 'Philosophical Quartett' series broadcast on the national network ZDF on the evening of 27 November 2011 says much about the nature of German scepticism. The talkshow host Rüdiger Safranski had invited the philosopher Peter Sloterdijk to discuss climate change with Gerd Ganteför, nanoscientist and Professor of Experimental Physics at the University of Konstanz, and Frank Schätzing, author of the bestselling novel, *Der Schwarm* (The Swarm, 2004). Ganteför, whose book, *Klima. Der Weltuntergang findet*

nicht statt (Climate. It's Not the End of the World) was about to be released, positioned himself as the voice of reason. He urged the public not to heed alarmist environmentalists, and to remember the uncertainty attaching to predictions of global warming and assertions about its causes and consequences. Claiming that global warming would actually bring significant benefits for Germany, he assured viewers that, whatever dangers it held in store, human ingenuity would negotiate them safely. There was in any case no point in the German public radically altering their way of life before agreement was reached for other countries to do likewise.

The choice of the novelist Schätzing as opponent, rather than a competent scientist or politician, is instructive. In inviting the author of a fantasy-sci fi thriller (which has sold four million copies and been translated into twenty-seven languages), which is incidentally principally concerned with the potentially disastrous consequences of large-scale exploitation of undersea resources, and only indirectly with climate change, Safranski chose a prominent representative of environmental alarmism, whose (fictional) prophecies of doom appealed to consumers' guilty consciences while entertaining them with sensational images of natural destruction. The premise of the programme, which was billed under the title 'Klimawandel – ein Glaubenskrieg? Wahrheitsfindung zwischen Wissenschaft und Ideologie' (Climate Change – a War Between Rival Beliefs? Finding the Truth between Science and Ideology), was that supposed scientific facts about climate change had come to be treated as articles of faith, and needed to be challenged by enlightened citizens in a spirit of healthy scepticism and democratic action. Climate activism in general, and the dramatic scenarios of novelists and film makers in particular, were "Volksverdummung" (dumbing down the nation), and manifestations of a "deutsche Lust am Untergang" (German predilection for doom), against which individual 'climate dissidents' were courageously taking up arms.[ii]

As Stefan Rahmstorf, spokesperson for Germany's leading climate research institution, the Potsdam Institute for Climate Impact Research, and probably the country's best-known public scientist, subsequently wrote in a blog about the programme (Rahmstorf 2012), it gave the impression that the physical phenomenon of climate change was no more than a quirk of the national psyche. Far from being characterised by a propensity to gloomy fatalism, German politicians and scientists were, he argued, at the forefront of constructive international

efforts to address the problem of climate change. A guest contributor to the same blog had already pointed out (25 December 2011) that although Ganteför was referred to in the programme as a "climate theorist", his professional expertise did not extend to climatology. The talkshow guest's assertions that climate change would not lead to an increase in hurricanes or droughts, or a significant rise in sea level, should therefore not be taken for the truth. Neither Safranski nor Sloterdijk intervened to correct Ganteför's claim that there was no need for action to mitigate climate change: Rahmstorf understandably concluded that the programme was less an attempt to establish the truth about climate change than an exercise in mocking the exaggerations of (literary) catastrophism.

This configuration of the climate change debate as one between misguided alarmists and rational sceptics reflects how 'warmist' overstatement had precipitated a backlash which threatened to affect public perception of the government's climate policy. Some at least of the arguments presented also suggest there is more to German scepticism than one might expect. In this chapter, I will outline the presence, extent and nature of climate scepticism in German politics, the media and online, examine examples of the discursive construction of German climate sceptics' arguments in popular science, and consider their treatment in literary fiction. I conclude by summarising the key arguments of German sceptics, indicating features which distinguish scepticism in Germany from that in the United States and elsewhere, and suggesting that some climate sceptics at least have played a constructive role in German debates on climate change and that their arguments deserve a hearing as correctives to excesses of popular green feeling. But first, to place the phenomenon of German climate scepticism in a wider historical context, I will rehearse some of the critiques of earlier excesses of the environmental movement, tracing the outlines of three modes of anti- or post-environmentalist thinking in Germany.

Anti-environmentalism in Germany: an overlooked tradition

Exploration of anti-environmentalist thinking in Germany started in the early 2000s with research into environmental communication in science, politics and the media (Hornschuh 2002). Since 2010 German environmental historians, social scientists and ethnologists (Frank Uekötter, Andreas Möller, Birgit Metzler, Werner Krauß) have begun to ask critical questions about the factors which contributed to the striking success of the German environmental

movement in the 1970s and 1980s, and to consider the distorting impact of this success on subsequent debates.[iii] This work coincided with the rise of Science and Technology Studies, and has been influenced by Bruno Latour's diagnosis of the absence of a clear separation between science and popular world views in modern society.

Climate scepticism is the most recent manifestation of a tradition of critical interventions in environmental debates going back to the 1970s, in which *Waldsterben* (forest dieback) played a central role. Birgit Metzler has demonstrated the interplay of scientific knowledge, politics and public opinion in environmental debates in her study of the acid rain scare which swept over West Germany in the first half of the 1980s, '*Erst stirbt der Wald, dann Du!'. Das Waldsterben als westdeutsches Politikum (1978-1986)* (First the Forests Die, Then You! Forest Dieback as a Political Issue in West Germany, 2015). Waldsterben was less a physical reality awaiting scientific discovery and public recognition than a gradual incremental change, suddenly and arguably arbitrarily perceived as a crisis, a product of selective perception by the public, amplification by the media, and self-interested instrumentalisation by political actors. The damage is now thought to have resulted as much from frost and drought in the 1970s as from acid rain. But there remains to this day a degree of uncertainty about the causes of forest dieback, whether disaster was averted by timely counter-measures, or never actually constituted such a serious threat. The lower level of public concern in the countries bordering Germany, although their foresters witnessed similar phenomena, is explained at least in part by the special resonance of dying forests with German cultural values and tropes.

The conclusions which Metzler draws about how forest dieback became such an important matter of concern in the German speaking world, why it remained so for so long, and with what consequences, are directly relevant to later debates on climate change. One of the most heated environmental debates in German history and five years of spectacular protest action were triggered by alarming reports by the forestry scientists in 1979-80 that the nation's forests would suffer total decimation within a generation. A Hamburg senator caught the public mood with his assertion that Germany was facing "an ecological Hiroshima" (*Spiegel* 1983, 73), and the amplification and periodic repetition of the message by the press resulted in a decade of exaggerated public concern. The ailing health of the German forests

was interpreted as a symptom of a broader environmental crisis, which was in turn seen as signalling the inherently (self-) destructive trajectory of modern civilisation. By the mid 1990s, Waldsterben was being referred to by critics of its alarmist presentation in public discourse as a cardinal 'eco-error'.

The Brent Spar campaign is a second example of emotionally driven behaviour exceeding the rationally justifiable response to an issue: the extent and seriousness of potential marine pollution from deep sea disposal of Shell's decommissioned oil storage buoy in 1995 was exaggerated in press reporting, on the basis of a greatly inflated estimate by the campaign organisers (Greenpeace Germany) of the amount of oil involved. Glossing over scientific uncertainty, loading environmental change with moral value, and the apocalyptic rhetoric employed in a succession of debates since that over nuclear energy in the 1970s laid the foundations for disenchantment with environmentalism, recalcitrance and polemic confrontation on later issues – thereby leaving the nation in what looks to much of the rest of the world as time warp over nuclear power, and possibly also hindering progress towards a reasoned response to the challenge of climate change.

It is beyond the scope of this chapter to give a comprehensive account of critiques of the environmental movement in Germany. However, an outline of some of the main currents of thought from which it emerged is sufficient for our purpose. The first vocal critics of environmentalism were situated on the political left. There was some justification for their suspicion that environmental protest was, consciously or unconsciously, a distraction from socio-political exploitation and the class struggle. Concern for nature and the environment in Germany has, as already noted, roots in late nineteenth and early twentieth-century conservationist organisations which were politically conservative and anti-modernist. Worse, it is linked with the far right in the Third Reich, when forest romanticism and the idealisation of rurality played a central role in Blood and Soil ideology. Nazis such as Walther Darré, Rudolf Hess, Fritz Todt and Alwin Seifert promoted organic farming, animal rights and alternative medicine, and sought to ban invasive species. Right-wing elements were largely excluded when the Green Party was founded in 1980. Environmental issues were combined with traditional left-wing policies, and the new green thinking drew principally on the utopian visions of a reconciliation of humanity with nature in Marx's early writings, and those of Ernst

Bloch, Theodor W. Adorno, and Herbert Marcuse. German environmentalism continued, however, to draw support from conservative critiques of consumer society alongside Marxist critiques of capitalism. Claims that it was a repackaging of totalitarian orientations and irrational dispositions ignored the grass-roots structure, radical democratic thrust and pro-science orientation of the Green Party. But it is no surprise that thinkers on the political left tended to see love of nature as bourgeois sentimentality, and nostalgia for a premodern social order, and to be suspicious that paternalism and prolonging social inequality were being cloaked in green ideas. A recurring argument of climate sceptics has been that decarbonisation is being pursued by elites at the expense of the poor and of the developing countries.

The poet and essayist Hans Magnus Enzensberger, one of the most influential figures on the German cultural scene since the Second World War, formulated an in-depth leftist critique of the environmental movement in 1973. In his essay 'Zur Kritik der politischen Ökologie' (A Critique of Political Ecology, cited in the following from the English translation [Enzensberger 1988]), Enzensberger accused the environmental movement of ideological blindness and naivety. The thinking of the different groupings of which it was made up was "at once obscure and confused" (p. 259): green "technocrats" (industrialists and state officials) were pursuing their own economic and political interests; the bulk of "concerned citizens" were members of the middle class, whose main interest lay in protecting green open spaces and whose lack of political insight made them easy targets for demagogues. The hard core of the environmental movement, the "eco-freaks", were for their part escapists who inclined ideologically towards obscurantism and sectarianism (p. 261). The result was a confused alliance of political motivations and interests, and groups with differing socio-psychological needs, some of them driven to action by feelings of guilt and a quest for redemption, others delighting in the anticipation of a collapse of bourgeois order. Environmental thinking served the interests of company managers and investors in an eco-industrial complex; it prolonged colonial exploitation in a new guise; it facilitated the imposition of authoritarian political structures.

Ten years later, Enzensberger's journal returned to the subject. Issue no. 74 of *Kursbuch* (December 1983), entitled 'Zumutungen an die Grünen' (Provocative Questions for the

Greens), presented a fundamental critique of environmentalism's normative turn by the ecologist Ludwig Trepl ('Ökologie – eine grüne Leitwissenschaft?' [Ecology – A Green Discipline Dominating Science?]), and an essay by Stefan Welzk calling ironically for people to learn to live without forests ('Fetisch Wald. Scherzo funèbre' [Fetish Forest: Scherzo funèbre]), alongside articles mocking alarmism, pointing to problems with land communes, critically analysing aspects of the green world view, and measuring the structures and achievements of the Green Party against its aspirations. In a piece entitled 'Keine Lust aufs grüne Paradies' (Green paradise not wanted) the novelist and political commentator Peter Schneider summed up his aim as being "den politischen Ansatz der Grünen und der Friedensbewegung gegen seine Ontologisierung verteidigen" (to defend the political project of the greens and the peace movement against its ontologisation – p. 188).

A second group of critics of German environmentalism was primarily concerned with what they saw as its irrational pessimism, its debt to a problematic philosophical tradition, and its participation in a worrying cultural trend. In the early 1980s popular and high culture in Germany were characterised by a fascination with natural and man-made disasters. Works of environmental non-fiction such as Hoimar von Ditfurth's popular science book *So lasst uns denn ein Apfelbäumchen pflanzen. Es ist soweit* (Then Let Us Plant an Apple Tree. It is Time, 1985) and literature including Hans Magnus Enzensberger's epic poem *Der Untergang der Titanic* (The Sinking of the *Titanic*, 1978), Christa Wolf's narrative and accompanying lectures *Kassandra* (Cassandra, 1983), and Günter Grass's novel *Die Rättin* (The Rat, 1986) painted the course of human civilisation in overwhelmingly gloomy colours, culminating more often than not in a catastrophe wiping out the entire human race. A spring tide of popular apocalyptic writing was triggered by the threat of nuclear war when the arms race between the United States and the Soviet Union peaked in 1983, raising the possibility of the deaths of millions of Germans, who stood at front line of East and West (see Lilienthal). The feeling that the end of the world was nigh was omnipresent in the press and on television and pervaded environmental discourse.

These fears might have been short-lived had they not resonated with what Klaus Vondung has called (pp.10f.) a "fundamental leaning towards the apocalyptic world view", which has shaped German political movements and ideologies over the last two centuries, on the left as

well as the right, and the strong German strain of cultural pessimism. Towards the end of the nineteenth century, Nietzsche looked forward to the complete destruction of an effete and corrupt civilisation which had reduced human existence to a slow form of suicide. In the early twentieth century, Oswald Spengler's *Untergang des Abendlands* (The Decline of the West, 1918-22) interpreted the age as rotten to the core, developed a cyclical theory of history and argued Western civilisation was nearing the end of its own cycle. Sigmund Freud's view of history in *Das Unbehagen an der Kultur* (Civilisation and its Discontents, 1929) was equally pessimistic, arguing that civilisation was inevitably rendered neurotic by the repressions required to ensure its survival. Cultural frustration accumulated and threatened to explode into aggression and self-destruction. Since 1945 German cultural pessimism has divided into different strands, in critiques of technology (Martin Heidegger, Günter Anders), the media and the culture industry (Theodor W. Adorno, Max Horkheimer, Hans Magnus Enzensberger) and environmental degradation (Klaus Meyer-Abich, Günther Nenning). (See Bennett.) The environmental catastrophism of the 1970s and 1980s, when scenarios of the disappearance of the human race and restoration of the Earth to its lost equilibrium became commonplace, was both literal and metaphorical, reflecting political circumstances and conforming to a familiar German pattern of thought. Variants of the narrative of the end of humanity as an act of avenging nature are present in the works of both major and minor novelists and essayists, before their first explicit connection with climate change in Anton-Andreas Guha's *Der Planet schlägt zurück* (The Planet Strikes Back, 1996).

Lawrence Buell has described 'apocalypse' as "the single most powerful master metaphor that the contemporary environmental imagination has at its disposal" (1995, p. 285), and narratives of nature's revenge in German fiction have served as a medium for a counter-discourse to the hegemonic understanding of nature as a resource to be freely exploited, challenging anthropocentrism and using the shock of exaggeration to warn against the self-destructive forces in modernity. However, the apocalyptic perspective is, as Garrard has pointed out (2004, p. 86), associated with a social psychology of paranoia and violence, and extreme moral dualism, dividing the world into friend and enemy. It leaves little space for compromise or reform, and devalues common-sense, pragmatic solutions. The apocalyptic narrative therefore came in for criticism in the 1980s by commentators from Jacques Derrida to Susan Sontag. In Germany, apocalyptic thinking unhelpfully accentuated the divide

between pragmatic rationalism and technological optimism on the one hand, and concern over dangerous technologies and human impact on the environment on the other.

The essayist Michael Schneider was one of the first German critics of catastrophism, taking issue with the seemingly fatalist, sometimes even nihilistic frame of mind of his fellow writers in essays such as 'Apokalypse, Politik als Psychose und die Lebemänner des Untergangs' (Apocalypse, Politics as Psychosis and the Playboys of Doom) and 'Die Intellektuellen und der Katastrophismus: Krise oder Wende der deutschen Aufklärer?' (The Intellectuals and Catastrophism: Crisis or Turning-point among German Enlightenment Writers?' (pp. 34-133). Another early critic of eco-pessimism was the sociological commentator and futurologist Matthias Horx, who was to go on to become an outspoken climate sceptic.

Ulrich Horstmann's essay *Das Untier. Konturen einer Philosophie der Menschenflucht* (The Monster. Outline of a Philosophy of Flight from Humanity, 1983) presented the most closely argued philosophical critique of contemporary apocalypticism. In the first instance, it was a satirical intervention in the debates on the dangers of nuclear war. Horstmann's provocative premise was that the goal of human civilisation was self-destruction. Writing from a cool, 'anthropofugal' perspective he took a detached look at human history and human nature, free of what he called humanistic illusions and sentimental attachment to our species. The environmental movement was not his main concern, but he wrote that it functioned, like humanism, as a sedative in what he saw as the final phase in the invention of weapons with the power to wipe out all life on earth.

Blending Schopenhauerian pessimism with Swiftian satire in a *reductio ad absurdum* of the apocalyptic thinking of the early 1980s, Horstmann argued that nuclear winter would return the planet to the stark beauty and pristine state it enjoyed for billions of years "bevor die Folgen der Urzeugung und Selbstbefleckung sein Antlitz so nachhaltig zerfraßen" (before the consequences of the primordial begetting of life and self-abuse corroded its face so lastingly, p. 79). Readers were initially baffled by his satirical fantasy of a world purged of human destruction. However, it was reprinted in 1985 and again in 2005, at a time when the apocalyptic tone (Derrida) re-emerged in literature, cinema, popular science, computer

games, and sociological analyses, in the context of global warming. (See Eva Horn's study, *Zukunft als Katastrophe/ The Future as Catastrophe*.)

A third group of critics of the environmental movement consists of disillusioned greens. In part this phenomenon reflected a predictable decline in interest from the high point of German environmental concern: the political and economic challenges of reunification in 1990 and the growing impact of globalisation meant that ecological regulation was increasingly perceived as an obstacle to economic growth. The new groundswell of public opinion was picked up by comedians, for whom green activists became a target as grumpy spoilsports, and a market for eco-sceptical books emerged, although critics did not attain the prominence of their counterparts in the US. At the same time, however, formerly committed environmental activists began to voice criticism of lazy green thinking, and what they saw as a tendency for people to jump to conclusions on individual issues which spoke to a popular environmental worldview. Edgar Gärtner, for example, was an environmental journalist with special knowledge of hydrobiology, who worked as chief editor for the German branch of World Wide Fund for Nature (WWF) from 1993 to 1996, but left the organisation when (in his own words) "climate policy began to replace traditional conservation requests" (http://gaertner-online.de/profile-in-english/).[iv]

The investigative journalists, columnists and popular science writers Dirk Maxeiner and Michael Miersch describe this trajectory from green activist to environmental renegade and climate sceptic in their book *Alles grün und gut?* (All Green and Dandy?, 2014). Having demonstrated against nuclear power, been involved in the Alternative scene, and campaigned for organic farming and nature conservation in the 1980s, they worked from 1989 to 1993 as editors for *Natur*, the most important European nature magazine of the time. As they write (p. 294), they kept discovering that the doom and gloom stories expected of them were not borne out by the facts:

> Die meisten Skeptiker, denen wir begegnen, sind ehemalige Umweltbewegte wie wir, die sich an irgendeinem Punkt ihres Werdegangs in ein Thema vertieft haben. Bei einem war es der Walfang, beim Nächsten die Gentechnik, beim Dritten die Müllentsorgung – ganz egal. Zu diesem Zeitpunkt ahnten sie noch nicht, dass sie an

> der Tapete einer Weltanschauung kratzten. Und als sie weiter kratzten, kam ihnen die ganze Wand entgegen." (p. 297)
> (Most sceptics who we meet are former members of the green movement like us, who have at some point in their development gone more deeply into a particular issue. In one instance it was whaling, in another genetic engineering, in a third waste management. It's the same in each case. At first they had no idea they were scraping at wallpaper which covered over a worldview. When they continued to scrape, the whole wall came down around them.)

Combining familiarity with mainstream research in disciplines ranging from history to biology, and economics to politics, as well as books by sceptical thinkers such as Bjørn Lomborg and Matt Ridley, with acute observation of the popular environmental movement in Germany, Maxeiner and Miersch's book on 'eco-optimism' (1996) and their lexicon of 'eco-errors' (2002) became bestsellers. They adopted a stance of critical enquiry, as dissenters from green dogma, exposing the falsehood of popular myths. They argued for instance that 'sustainability', once a progressive concept in management and environmental protection, has become "ein nebulöses Weltbeglückungsmodell" (a nebulous panacea for putting the world to rights, *Lexikon der Öko-Irrtümer*, p. 230). The green movement no longer required that propositions be grounded in rational argument: it viewed humans as a danger for the planet, and sought to berate and regiment the public. Being green was a badge of moral probity, and no longer a matter of critical thinking or solving environmental problems. NGOs lacked a political mandate, but were becoming lobbyists for the eco-industrial complex, and powerful international actors, thereby endangering democracy. Instead of pragmatically exploring options and seeking solutions to problems which brought more benefit than harm, improved people's lives and cemented social cohesion, Western eco-elites were imposing ideologically grounded choices on a suffering Third World, and blocking advances in food production and disease prevention. The German public's conscientious waste separation was a cathartic everyday ritual whose effectiveness was undermined by the subsequent mixing with non-recyclable waste. Rinsing yoghurt pots corresponded to biblical foot-washing (p. 28).

Maxeiner and Miersch pointed out that nature is always changing, and our very survival depends on changing it; that conservation is sometimes at odds with ecology; that humans should be viewed as creative problem-solvers and not just as consumers and destroyers; and that the German rejection of GM crops and stem cell research, while ostensibly grounded in science, results in part from a syncretistic green religiosity not free of strange aberrations. Writing with stylistic verve and at times mischievous exaggeration, they called for a new form of environmental policy, one based less on entrenched and gridlocked worldviews than rational and constructive action. Once imaginative protesters, the Greens were now driven by pathos and missionary zeal. Environmentalists were a priestly caste with a sense of moral superiority over their more materialistic fellow-citizens. Climate catastrophe was the last refuge of the homeless left (p. 18).

Taken together, these three groups of critics have drawn public attention to genuine weaknesses of the environmental movement, in a spirit of concern over its failure to achieve fundamental aims. If at times they have reduced it to a caricature, they have at others made valid points, for instance about sentimental romanticism, the mindset of catastrophilia, and moves to impose a rigid puritanical code of behaviour. The climate scepticism which has emerged in Germany in the twenty-first century grew in some measure out of this critical sympathy with environmental goals. It was a logical step for Maxeiner and Miersch to challenge popular assumptions about climate change, and dispute the need for a radical programme of economic reform and social re-education.

German scholars, too, have challenged environmentalism: historians such as Wolfgang Behringer and Frank Uekötter have distanced themselves from environmentalist alarmism, pointing out the mixed motivations of the greens, their ambivalences and blind spots, and how climate protection has developed into a moral crusade, trumping other legitimate environmental and social concerns. A comparable impetus underlies the work of the natural scientist Hans von Storch, the economist Hans-Werner Sinn and the political sociologist Ingolfur Blühdorn. The difference between their arguments and those of self-professing climate sceptics such as the historian Andreas Möller, the biologist Josef H. Reichholf, the physicist Gert Ganteför, and the chemist Fritz Vahrenholt is sometimes a matter of degree rather than of kind. Independent voices such as Hans von Storch have been treated as

sceptics by the advocates of climate protection, and as advocates by the sceptics (see Grundmann/ Scott 2012, 234).

The emergence of climate scepticism in Germany

Two accounts of climate scepticism in Germany have been published to date: a fifty-page Working Paper *Klimaskeptiker in Deutschland und ihr Kampf gegen die Energiewende* (Climate Sceptics in Germany and Their Fight Against the Energiewende, 2013), authored by Achim Brunnengräber at the Environmental Policy Research Centre at the Free University of Berlin, and Tanja Fröhlich's book *Klimaskepsis in Deutschland. Handlungsempfehlungen für Politik und Wissenschaft* (Climate Scepticism in Germany: Recommendations for Action for Politics and Science, 2014). Both studies understand scepticism not in the narrow sense of denial of anthropogenic global warming, but as a range of positions querying the necessity for, or the nature of, climate protection measures. While they provide useful information on German sceptical actors and institutions, and their motives and arguments, their aim is less to understand the hopes and fears of sceptics than to assess their political influence and suggest strategies for limiting it.[v]

As in the USA, climate change had been debated in scientific circles since the late 1970s. In 1986 the Deutsche Physikalische Gesellschaft (German Physics Society) published a report warning of the threat it posed, and in 1987 the government set up a Parliamentary Commission of Enquiry to examine 'preventive measures to protect the Earth's atmosphere'. In the early 1990s, three institutions were founded to advise German policy makers, the Scientific Advisory Council on Global Change (WGBU), the Wuppertal Institute for Climate, Environment and Energy, and the Potsdam Institute for Climate Impact Research. Building on the reputation as a powerhouse of environmental initiatives which it had gained in the previous decade, Germany played a leading role in EU and international climate agreements at Rio (1992), Kyoto (1997), and in the EU emissions trading directive, and launched the Erneuerbare Energien Gesetz (Renewable Energies Act) in 2000.

Climate scepticism was relatively rare in Germany before the international furore over the hacking of emails from the University of East Anglia's Climate Research Unit in the run up to the Copenhagen summit in December 2009, which was widely (although erroneously)

understood as having exposed the doorkeeper mentality of cliques of researchers and the withholding of data which failed to support the consensus on global warming and its causes. At the same time, the hockey stick curve, presented by Al Gore and others as an icon of imminent catastrophe, seemed to demonstrate the political corruption of climate science: it had perhaps been unwise of the IPCC to make so much of this symbolic curve, which ignored the medieval warm period and the little ice age, thereby accentuating the impact of industrialisation since the Second World War. Since 2007-8, a form of scepticism challenging the oversimplified interpretation of complex scientific findings in public debates on climate change and questioning the efficacy and cost-effectiveness of government policy has gathered momentum in Germany. Despite the broad cross-party agreement on climate change, a handful of politicians have adopted sceptical positions, and sceptical articles have appeared at intervals in the press.

Climate scepticism is not official policy of any of the major political parties in Germany. The few openly sceptical politicians are to be found in the Freie Demokratische Partei (the Liberal Party) and the Christlich-Demokratische Union (Conservative Party). Their main concerns have been the economic impact of the proposed mitigation measures, energy security, the loss of individual freedom, and the neglect of other social problems. The FDP in Saxony has been particularly pro-sceptical, with Holger Krahmer (Liberal MEP for Saxony 2004-2014) authoring two pamphlets about the "inconvenient truths" about climate policies (2010 and 2011), and organising an "alternative climate conference" in Dresden to combat what he called "media hysteria and green actionism" in 2012. Opposing environmental regulation as a brake on free enterprise, predicting the loss of jobs, and emphasising scientific uncertainty, Krahmer has dismissed forecasts of temperature rise as mere "Kaffeesatzleserei" (reading tea leaves). Similar views have been expressed by the Christian Democrat parliamentarian Marie-Luise Dött.

While there is no organised populist anti-environmentalist movement in Germany, climate sceptics have found a home since 2013 in the Alternative für Deutschland party. The AfD claims that the impact of CO_2 on the climate is not proven, denies that the global temperature has risen in the last two decades, accuses climate scientists and the government of suppressing information on the benefits of warming, and demands a stop to subsidies for

renewable energy.[vi] The possible influence of sceptics over political decision-making has led the Greens to question the government about it in the Bundestag. Meanwhile in Austria, government concern over the disputation of climate science and rejection of climate policy was sufficient for a suite of 'CONTRA' projects to be commissioned from the Austrian Climate Research Programme, to examine the roles of interest groups (network analysis) and the media, the different kinds of scepticism, and the impact of apocalyptic rhetoric.

The European Institute for Climate and Energy (EIKE), founded in Jena in 2007, is the only German organisation of any significance to deny the existence of anthropogenic climate change. EIKE, which has links with the Heartland Institute and the Global Warming Policy Foundation in the USA, and related organisations in the UK, convenes climate and energy conferences, and campaigns against energy system change. The EIKE *Handbuch für Klimaskeptiker* (Handbook for Climate Sceptics) states:"Es gibt einen weithin sichtbaren Berg von Beweisen für die Erderwärmung der 1990er Jahre, aber die These, dass CO_2 daran Schuld ist, ist dünn wie ein Fliegenbein und sie bröckelt schon bedenklich – wenn Klimaskeptiker nur einheitlich Druck machen. […] Nicht das Klima ist bedroht, sondern unsere Freiheit! Umweltschutz: Ja! Klimaschutz: Nein!" (There is a mass of evidence for global warming in the 1990s, but the assertion that CO_2 is to blame for it is as thin as a fly's leg and crumbling alarmingly – or would be, if climate sceptics got together to apply pressure. […] It's not the climate which is in danger, but our liberty! Environmental protection: Yes! Climate protection: No!)

Such literal scepticism (denial of global warming) is rare in Germany: the thinkers discussed here tend, like those examined in the chapter on French scepticism, either to attribute it to natural causes, or to claim its impact will be benign. Most common is the argument that the urgency of Klimaschutz – literally 'protecting the climate': the term was coined in analogy with the compounds 'Naturschutz' (nature protection, or conservation) and 'Umweltschutz' (environmental protection), and embraces efforts to prevent climate change as well as mitigate its effects – has been exaggerated and attempts to do so are either doomed to failure or disproportionately costly. There has been significant distrust of the motives behind the government's *Energiewende* programme, which was introduced on the advice of the Scientific Advisory Council, and in particular of the ambitious socio-ecological transformation

of German society outlined in its 2011 report, *Welt im Wandel: Gesellschaftsvertrag für eine Große Transformation* (A Changing World: A social contract for a Grand Transformation).

Turning to the media, climate change was first brought to the attention of a wider German public by the *Spiegel* (a weekly magazine founded in 1947, modelled on *Time*, renowned for its aggressive exposés of government malpractice and scandals, which was for decades required reading for Germany's left-liberal intelligentsia), in a sensational lead article, "Das Weltklima gerät aus den Fugen" (World climate out of control), published in August 1986. The message was underlined by a dramatic cover image of Cologne cathedral, symbol of the German nation as well as Catholicism, half submerged in floods, bearing the caption: "Ozonloch, Polschmelze, Treibhauseffekt: Forscher warnen. Die Klimakatastrophe" (Ozone Hole, Melting Poles, Greenhouse Effect: Researchers warn of Climate Catastrophe). The term 'climate catastrophe' had been coined by the Arbeitskreis Energie (Energy Working Group) of the Deutsche Physikalische Gesellschaft – a body with a long-term interest in nuclear power – in a report written only months after public confidence in the nuclear industry had been shattered by the Chernobyl accident. The hypothesis of climate change was swiftly treated as fact, and the story drowned out the scientific findings it was based on in dramatisations and premature claims to certainty. Climate scientists began to be cited in the press saying the Germans would not see another white Christmas, prophesying climate wars, and warning of an unstoppable flow of climate migrants into Europe. A grand narrative of doom was circulated over the next decade, which climatologists, physicists and biologists were dragged into supporting, willing or not. When the river Elbe burst its banks in the once-in-a-century flood of August 2002, it was acknowledged that there was no scientific proof of a link between the floods and climate change. But the probable principal cause of the extensive damage (building on flood plains) was ignored: the high energy way of life in Germany was blamed, nature was striking back.

Climate scepticism was in no small part a response to such exaggeration. The *Spiegel* again laid the foundations for the new trend, switching from environmental alarmism to scepticism in 1995 with a cover announcing what it saw as the country's drift from environmental protection into "eco-madness" ('Feldzug der Moralisten: Vom Umweltschutz zum Öko-Wahn' (Moralists on the Rampage: From environmental protection to eco-madness, 25 September

1995), and articles which asserted the Germans had united in a choir of "Gutmenschen" (do-gooders) conscientiously separating their recyclable waste, boycotting environmental delinquents and lamenting the "ecological collapse" as a way of salvaging their consciences, and which commented acerbically on the number of people incapacitated by their sufferings from imaginary forms of chemical pollution, carcinogenic electromagnetic smog, and diffuse anxieties about the future. It was to be a decade, however, before this disenchantment with environmentalism became visible in *Spiegel* reporting on climate change. The move towards climate scepticism is visible in an article entitled 'Klima inszenierter Angst' (A Climate of Stage-Managed Fear) in January 2005. The authors, Hans von Storch and Nico Stehr, challenged the view that climate change was the greatest problem facing the planet. They wrote that the fear-mongering prophets of doom would do well to remember that there had been many extreme weather events and changes in the climate in the past. The media's sensationalist presentation of the recent floods amounted to a dangerous distortion of knowledge, in which some scientists were complicit: science was losing its ability to advise the public objectively. By 2010, the *Spiegel* was adopting a position of outright, polemic scepticism (see Evers/ Stampf/ Traufetter).

While the *Tageszeitung* (which often supports the Greens) and the broadsheets *Die Zeit*, *Financial Times Deutschland* and the *Süddeutsche Zeitung* have maintained a generally critical stance towards climate sceptics, some of the more conservative papers, popular dailies and weekly magazines have been less consistent. The weekly *Die Welt* published an article entitled 'Der heilige Krieg der Klimaskeptiker' (The Holy War of the Climate Sceptics) on 5 September 2007, which disqualified climate sceptics as delusional agents of neoliberalism, but balanced it against a second, neutral article by Matthias Armborst, 'Die Bewegung der Klima-Skeptiker formiert sich' (The Climate Sceptic Movement is Forming), and prepublication of an extract from Dirk Maxeiner's sceptical book *Hurra wir retten die Welt!* (Hurray, We're Saving the World) under the header 'Wider die Ökodiktatur' (Against Eco-Dictatorship). The magazine *Focus* featured a cover story 'Es wird wärmer – gut so!' (It's getting warmer – and that's great!) in November 2010, listing likely gains from global warming and playing down the losses (Pantle). By 2012 the tabloid *Bild*, which had published a series of sensationally alarmist articles in Spring 2007, was writing of "die CO2-Lüge" (the

CO2 lie), and describing climate catastrophe as “Panik-Mache der Politik” (a political scare tactic).

While affirming the scientific consensus on climate change, the *Frankfurter Allgemeine Zeitung*, which reflects the views of the business community, has sought to strike a balance between warnings and scepticism. In April 2007 it published an article by Christian Bartsch suggesting concern over the climate had turned into irrational hysteria (‘Wider die Klimahysterie. Mehr Licht im Dunkel des Klimawandels’ [Against Climate Hysteria. Shedding more light on the darkness of climate change]). In August of the same year, the paper gave a full page over to a riposte by the combative spokesperson for the Potsdam Institute for Climate Impact Research, Stefan Rahmstorf (‘Klimawandel: Deutsche Medien betreiben Desinformation‘ [Climate Change: The German Media Are Misinforming the Public]). Rahmstorf argued that so-called climate sceptics were taking the public for a ride, and the media were guilty of failing to check the facts. A few weeks later, the *Frankfurter Allgemeine* permitted seven of the sceptics who Rahmstorf had singled out for criticism to respond in a co-authored article. ‘Wir müssen Urängste relativieren’ (We Must Relativise Deeprooted Fears) formulated a cogent defence of the right to express doubts and challenge the scientific and political establishment’s narrative of climate change. The goal of the government’s climate policy was far-reaching reform of German society and the economy. Anyone daring to question the wisdom of this was being dismissed as immoral. Rahmstorf, a media star on whose every word the captains of industry, the NGOs, the chancellor and the general public were all hanging, might well consider his mission accomplished, were it not for the miserable handful of whingers and killjoys who stood in the way of his “Endsieg”, i.e. final victory in the climate debate. (The term recalls the Third Reich.) Rahmstorf had admitted to suppressing unwelcome reporting, the sceptics claimed, and blacklisting journalists who insisted on researching matters for themselves. He was effectively conducting a Jihad, wilfully misquoting opponents. The authors of the article were not “climate deniers”, but ordinary citizens, as keen as anyone else to bring about the transition from fossil fuels to renewable energy. But they had experienced eschatological hysteria before, and knew it when they saw it. Climate catastrophe had become a secular religion, subsuming quite different issues in a grand narrative of guilt and atonement, contributing to the catastrophilia which plagued the nation, and leading to a ban on new ideas. Weather and climate were among the oldest

objects of fear: whoever exercised control over their interpretation could do anything. Religions and dictatorships had lived from them. So today's fears must be democratised, moderated, and relativized. The authors asserted their right to doubt. They were only a small marginalised minority, but someone must hold open the doors to a sceptical understanding of the world against the "gleichgeschaltete öffentliche Meinung" (ideological alignment of public opinion [another term from the Third Reich]). The article exemplifies the ambivalence of German scepticism as a whole: the polemical implication that Rahmstorf was acting like Goebbels's propaganda machine or Al Qaeda in his policing of public statements on climate change was outrageously inflammatory, and distracted from the many valid points touched on.

A year later, the *Frankfurter Allgemeine* attacked the climate protection measures of the green regional government in Baden-Württemberg in an article 'Grüne Revolution. Die herzliche Ökodiktatur' (Green Revolution. The Cheerful Eco-dictatorship), which was also outspoken in associating environmentalism with totalitarianism, but did not directly reference the Nazi past. Winand von Petersdorff wrote of 'eco-tyranny': regulations on biofuel, the eco-modernisation of residential buildings and costly subsidies for renewable energy were robbing consumers of their freedom of choice. The drivers of Porsches, people going on foreign holidays and meat eaters were being pilloried. The fossil-fuelled German economy was being presented as ethically unacceptable: "Die Transformation zur Klimaverträglichkeit ist moralisch ebenso geboten wie die Abschaffung der Sklaverei und die Ächtung der Kinderarbeit." (The transformation to climate compatibility is being treated as a moral imperative comparable to the abolition of slavery and the proscription of child labour.)

Apart from political pamphlets, the press, and to a lesser extent TV, the internet and popular science books and have served as the most important platforms for German sceptics. Internet discourse, which is characterised by an absence of provisionality, doubt and self-questioning, exacerbates polarisation by acting as an echo chamber. "Geht die Welt unter?" (Is the world coming to an end?), for instance, the Forum gegen die Irrlehren von Treibhauseffekt und Klimaschutz (Forum Against the False Teachings of Greenhouse Effect and Climate Protection) asks:

Der Treibhauseffekt wird stärker.

Es wird immer wärmer.

Die Pole und Gletscher schmelzen.

Der Meeresspiegel steigt.

Der Golfstrom wird versiegen.

Dürren und Überschwemmungen nehmen zu.

Die Klimakatastrophe ist da.

Und Sie sind schuld, weil Sie CO_2 produzieren!

Glauben Sie all das auch? *Dann liegen Sie falsch.* Diese Seite unternimmt den Versuch, Sie über einen der am weitesten verbreiteten Irrtümer aufzuklären — nämlich über das Märchen von der Klimakatastrophe und ihre angebliche Ursache, die vom Menschen erzeugten 'Treibhausgase'.

(http://www.klimaskeptiker.info/)

(The greenhouse effect is growing. It is getting warmer and warmer. The poles and glaciers are melting. The sea level is rising. The Gulf Stream will soon stop circulating. Droughts and floods are on the increase. We are witnessing a climate catastrophe. *And it's your fault, because you are producing CO_2!* Do you believe all this? *Then you've had the wool pulled over your eyes.* The purpose of this webpage is to enlighten you on one of the commonest mistakes today: the fairy tale of climate catastrophe and its supposed cause, man-made 'greenhouse gases'.)

Blogs emerged in the early 2000s as a counter-sphere of public communication which could no longer be ignored. As the climate change ethnologist, Werner Krauss has pointed out in an article presenting eight widely-read German blogs ranging from advocacy through 'honest brokerage' to scepticism, they have the potential to play an important role in climate debates as a forum for dialogue between scientists and an interested lay public (Krauss 2012). Sceptical bloggers write of the "climate lie", and of the *Energiewende* as the product of a global green conspiracy. Facts are often manipulated. Nonetheless, if one disregards such polemics, blogs cite many of the somewhat justified criticisms of environmentalism and climate policy which have already been noted. German Internet sceptics, by contrast with their American counterparts, often support what they see as genuinely sensible and necessary environmental protection measures, while opposing 'climate protection', i.e.

measures seeking to reduce CO_2 in the atmosphere. The money would be better spent, they claim, feeding the world, promoting health, and providing affordable energy. Their principal criticisms are directed against what they see as the influential German "climate change industry", messianic politicians, a bloated bureaucracy bent on further growth, conservationist groups spreading panic in order to gain social influence – and deluded idealists.

At a time when it appeared that the information released to the public was being controlled and the disclosure of data was selective, blogs written by retired men with technical and scientific training, committed postdocs, and concerned citizens constituted an alternative sphere to what the bloggers saw as the cartel of scientific journals and the one-sided media. Hans von Storch's 'Klimazwiebel' (see http://klimazwiebel.blogspot.co.uk/) in particular sought to serve as an archive of dissident views, a workshop for ideas, and a cross-disciplinary forum for argument. Von Storch argues that German sceptic bloggers made the scientific and political establishment recognise that climate science is 'post-normal', in the sense of being characterised by uncertainty of knowledge, concerning social values, involving high risks, and potentially necessitating urgent solutions. They brought home to policy makers the failings of procedures in climate science for managing uncertainty, and the reluctance to acknowledge social motivations for supposedly objective findings. Blogs ensure all voices are heard. By challenging assumptions about the causes and extent of warming trends and hasty forecasts about their social impact, they contributed to embedding contemporary debates on climate change in a larger story of the history of climate, its impact on human culture, and human interventions in climate. (See the special number of the journal *Nature & Culture* on *Postnormal Science: The Case of Climate Research*, edited by Krauss/ Schäfer/ von Storch.) Popular science performs a similar social function, bridging the gap between scientific writing as a professional medium of scientific research and the realms of popular political and cultural discourse.

Scepticism in popular science

Since the 1970s popular science books introducing recent research in physics, biology and other complex subjects to a general readership have topped the bestseller lists. The popularisation of science is not merely a mediation of established authoritative knowledge to

a passive, ignorant public, to be judged in terms of how accurately it conveys ideas and concepts: it is also a form of knowledge production, inasmuch as it tells stories of scientific discovery, explores the consequences of scientific facts for people's lives, and makes them meaningful for readers (see Leane). Using narratives and metaphors to condense and communicate complex issues and simultaneously engage with readers, the authors of non-fiction books on the environment have sparked debates over the place of humans on Earth and the ethics of our actions. The book which arguably exercised the greatest influence over the international environmental movement was a work of popular science, Rachel Carson's *Silent Spring*.

In the last fifteen years, dozens of accounts of climate change written for a non-specialist readership have been published in Germany – in some cases American and English works in translation, but in others, German originals. These have contributed to shaping public views on the reality of global warming, the extent of its anthropogenic dimension, ways of mitigating and adapting to it, and our responsibility towards future generations and other species. While only a minority of the German popular science books on climate change express sceptical views, the genre has provided climate sceptics with a medium in which they could develop their arguments at greater length and with greater sophistication than in the press and in blogs. Beginning in 2007 with Kurt Blüchel's *Der Klimaschwindel* (The Climate Hoax), Hartmut Bachmann's *Die Lüge der Klimakatastrophe* (The Lie of Climate Catastrophe) and Joseph Reichholf's *Kurze Naturgeschichte des letzten Jahrtausends* (Short Natural History of the Last Thousand Years), sceptical popular science books have challenged and provided alternatives to the generally accepted 'social facts' pertaining to climate change (the sociologist Emile Durkheim's term for the collectively recognised metaphors, images and symbols which acquire normative force, determining the public's interpretation of and response to social issues). The more polemic titles are the product of small specialist publishers such as the TvR Medien Verlag in Jena and the Kopp Verlag in Baden-Württemberg (a publisher of right-wing esotericism, populism, extremism, pseudoscience, conspiracy theories, wellness, survival skills and self-defence), but others have been brought out by well-known publishing houses.

The most serious exposition of scientific facts, measurements and predictive models, theories and solutions is found in *Die kalte Sonne. Warum die Klimakatastrophe nicht stattfindet* (2012, published in London in English translation in 2013, and by the Heartland Institute in America in 2015, under the title *The Neglected Sun: Why the Sun Precludes Climate Catastrophe*). Its authors are Fritz Vahrenholt and the geologist and palaeontologist Sebastian Lüning. Vahrenholt can be described, like Maxeiner and Miersch, as an environmental renegade. After studying Chemistry, he worked at the Environmental Protection Agency in Berlin and co-authored a highly regarded book on the chemical accident in Seveso in 1978. *Seveso ist überall. Die tödlichen Risiken der Chemie* (Seveso is Everywhere: The deadly risks of chemicals) is still in print. Vahrenholt joined the Social Democratic Party, became a prominent environmental spokesman, and served 1991-1998 as Senator for Environmental Affairs in the city of Hamburg. However, after commissioning controversial waste incineration plants, he fell out with the Party and went into industry, spending stints on the Board of Deutsche Shell and the wind turbine manufacturer Repower. By the time of writing in 2012, he was CEO of the green electricity company Innogy, a renewable energy subsidiary of the giant RWE concern, one of Europe's five leading electricity and gas companies, with interests in oil, gas and lignite production, and electricity generation from gas, coal and nuclear power.

Despite these links with the energy industry (which he openly acknowledges in *Die kalte Sonne*, pp. 10 and 12), it would be wrong to dismiss Vahrenholt, Honorary Professor at the University of Hamburg since 1999, as a mouthpiece of either the fossil fuel or the renewable energy lobby. *Die kalte Sonne* is no mere promotional pamphlet. Nor is it, with its over 350 pages of text, 70 further pages of references, and its many graphs presenting data, a bedside book for the average climate denier. The authors accept the existence of global warming, but argue (citing, amongst hundreds of other studies, Vincent Courtillot's work on solar cycles as the cause of climate change) that most of it derives from the variation in the Earth's distance from the sun on its elliptical orbit (the Milankovic cycle), the fluctuation of solar irradiation in cycles which have caused the Earth's temperature to rise and fall in the past, and other natural factors such as volcanic eruptions. While not disputing the greenhouse properties of CO_2, they hold its importance has been grossly exaggerated. In addition, they argue that since 1988 we have entered a cooling phase which will last for several decades. This gives us time

to wean ourselves off fossil fuels and restructure the economy on a sustainable basis, without the necessity for hastily adopted, poorly thought-out measures such as carbon trading. They call instead for a reorientation of energy policy to promoting efficiency, and for allocation of the vast sums earmarked for carbon trading to more urgent social and ecological needs of the burgeoning world population. In sum, the negative effects of global warming have been exaggerated, there is no need for significant climate action in the next thirty years, and the "climate chancellor" Angela Merkel's policies are naively idealistic.

Die kalte Sonne attracted considerable press attention and social media approval. Stefan Rahmstorf and other defenders of mainstream climate science therefore went to some lengths to refute its authors' scientific arguments. Vahrenholt and Lüning selectively cite sceptic scientists and interpret the results of recognised authorities in such a way as to support their own views. (Some of the latter subsequently defended themselves vigorously against this use of their work.) Their description of themselves as 'climate realists' and guardians of the real truth about global warming must be taken with a pinch of salt. However, the book is largely free of polemics: comparisons of the Energiewende with the Soviet Union's planned economy in the 1920s and 1930s and Mao's Great Leap Forward (p. 328) is an anomaly. And the alternative energy agenda of gradual transition to renewables which Vahrenholt and Lüning outline, one combining climate protection in the longer term with economic prudence and fairness towards the developing countries, no longer seems so far from mainstream political opinion.

Gerd Ganteför's *Klima. Der Weltuntergang findet nicht statt* (Climate: The End of the World is Not Happening) is a second non-trivial account of climate change by an independently-minded scientist. Ganteför's position has already been outlined above: he accepts global warming but queries its attribution to human activities, and above all challenges alarmist assessments of its impact. His book, which is based on a lecture series he gave at the University of Konstanz, but written for lay readers, was published by Wiley-VCH, a specialist in the provision of scientific, technical and specialist information for researchers and professionals, but in a popular series, 'Erlebnis Wissenschaft' (Science as Adventure). It is more personal, provocative and humorous than Vahrenholt and Lüning's book. The hint in the text on the back cover that the author will expose climate change as a myth is

compounded by the satirical adaptation on the front cover of the familiar environmentalist icon of the polar bear, perched on a block of melting ice, hapless victim of global warming. Here, three polar bears are paddling happily in a warm sea under a rainbow, off the shore of a tropical island.

Critiquing both activist hysteria and the conspiracy theories of more extreme sceptics, Ganteför promises reliable orientation, based on scientific fact, and the exposure of urban myths. He takes issue with the miserabilist doomsaying and suicidal mix of guilt, fear and despair which he sees as rife in Germany, arguing that climate change will bring as many advantages as disadvantages. His principal message is: control population growth, produce enough energy to keep it cheap and permit a decent standard of living for all, and adapt to the inevitable global warming. Indeed, we should enjoy its benefits while they last: in the longer term it will get colder. The earth's temperature has always fluctuated, and we are nearing the end of an interglacial warm phase: glaciers may one day extend as far south as Cologne again. Without the greenhouse effect, he reminds us, the average surface temperature today would already be minus 18 degrees celsius.

Klima uses short semi-autobiographical, semi-fictional narratives in boxes interspersed throughout the book to enliven the factual exposition. The adherents of popular environmentalism are chided here for their intolerance of anyone questioning the logic of their actions. In the context of discussion of the opposition to wind farms, the disillusionment of a young environmentally-minded engineer called Florian is described, when he discovers that politicians are more concerned to win the next election than to solve the problem of providing clean energy. Florian, whose name suggests natural innocence, reappears in other stories, gradually learning the ways of the world. As a climate scientist, for instance, he learns that he has to package his results and doctor his graphs in order to obtain funding. The book ends with a brief excursion into a distant fictional future. In a letter written at the end of the current Climate Optimum, when global warming has ceased to balance out the gradual cooling from natural causes, a future Florian considers the prospect of returning to the temperatures we have today. He depicts the horror scenario of a world in which Greenland, Siberia and the Antarctic will become uninhabitable again, and the Sahara will revert to

desert. The environmentalists, he writes, are clamouring for new coal power stations in order to prevent the level of carbon dioxide in the atmosphere from falling.

Irony and satire play a central role in Dirk Maxeiner and Michael Miersch's *Lexikon der Öko-Irrtümer. Fakten statt Mythen* (Lexicon of Eco-Errors: Facts instead of myths, 1998) and *Alles grün und gut?* (2014). We have already seen how these self-styled 'eco-optimists' became critics of the environmental movement, and came to deconstruct popular views on climate change as part of a wider exposé of the contradictory statistics, questionable suppositions and improper generalisations lying behind alarmist headlines. The chapter on climate change in the *Lexikon der Öko-Irrtümer*, the longest of fifteen entries, opens with telling examples of exaggeration and oversimplification by Greenpeace, WWF, Al Gore and the German press, and goes on to show how ancient patterns of cultural interpretation of natural disasters and changes in the climate are being perpetuated in contemporary climate discourse. Maxeiner and Miersch dispute the melting of the polar ice caps, the rising sea level, the increase in extreme weather events, and the contribution of anthropogenic CO_2 to global warming. In short: there is no evidence, they claim, that human activity is impacting on the global climate, and we are heading, if anything, for a new ice age rather than global warming.

Their position changed by the time they came to write the parts of *Alles grün und gut* which are concerned with climate change sixteen years later (Chapters 2 and 3). In the meantime Maxeiner had published a short book on the subject, *Hurra. Wir retten die Welt! Wie Politik und Medien mit der Klimaforschung umspringen* (Hurray, We're Saving the World: How politics and the media are taking liberties with climate science, 2007). This carefully researched and well written book makes for an interesting read, illustrating its arguments with historical examples and allusions to people and places. Although he holds that there remains a significant degree of uncertainty as to the causes of climate change, Maxeiner now accepts the greenhouse effect, and that CO_2 contributes to global warming: his target has become "climate indoctrination". Exploring psychological, social and political reasons for climate alarmism, he argues that a seamless transition from climate discourse to religious discourse has resulted in climate change being framed, like earlier natural catastrophes, as punishment for a sinful way of life. Doubters are being stigmatised as "deniers", consciously referencing the holocaust. The sceptics are champions of reason, and of freedom in the face

of a looming eco-dictatorship. Maxeiner devotes short thought-provoking chapters to climate change as a scapegoat distracting from more pressing but intractable social and economic problems; the decimation of tropical rainforest and overfishing as the real culprits of species loss; the failings of carbon trading (which he sees as no more than a sale of indulgences, a granting of ecological absolution); the use of climate protection as an excuse for pursuing dubious geo-engineering fantasies; and ecologism as a form of religiosity, reflecting a persistent longing for salvation at a time when the established faiths have lost their hold. Wind turbines are replacing church spires. The book ends with a Who's Who of the top 25 scientists in climate debates, which includes a few outright climate sceptics (Richard Lindzen and Fred Singer), but also a larger number of American, German, French and Israeli scientists who disagree significantly with aspects of the IPCC reports.

Alles grün und gut revisits these arguments, asserting on the one hand that we have little real knowledge of the consequences of global warming, and on the other that it has other causes than carbon emissions (deforestation, intensive agriculture, overgrazing, urban conglomerations, and methane from stock raising). Maxeiner and Miersch warn of the limitations of climate modelling, and the tendency to ignore regional differences. Climate has become the index of all anthropogenic influence on nature, leading us to ignore the detrimental effects of other human activities. The threat of climate catastrophe has become a system of belief, endowing pointless actions with social meaning. The Freiburg Eco-Institute, the Wuppertal Institute for Climate, Environment and Energy and the Potsdam Institute for Climate Impact Research are all guilty of alarmism, by propagating the notion of 2 degrees centigrade as the maximum tolerable rise in global temperature. Maxeiner and Miersch argue that German energy policy (the *Energiewende*) is driven by irrational desires. After Fukushima, 513 of the 600 members of the Bundestag voted in May 2011 to reinstate the phase-out of nuclear power which had originally been introduced by a Social Democrat/ Greens coalition in 2000, and reversed by Angela Merkel (in coalition with the business-friendly Liberals) in late 2010. The result? The landscape was being destroyed by farmers growing maize as biofuel and erecting wind turbines. By 2014 there were 500 German Citizens' Initiatives opposing the construction of wind farms. Subsidies for renewable energy were nothing less than a transfer of money from ordinary people to landowners,

businessmen and investors. Germany should acknowledge its mistake and pursue cheaper, more socially equitable and environmentally friendly options.

The standard German sceptic argument that environmentalism has become a secular religion, playing on public feelings of guilt and desire for redemption, is developed into a little story in the introduction of Hartmut Bachmann's *Die Lüge der Klimakatastrophe*. It is the early sixteenth century, and a poor peasant is struggling to pay his annual dues to the local convent. The man has been injured in an accident and his family is on the brink of starvation. Having sold a goose at the fair, he is on his way home with the money for the convent, when he is accosted by mendicant monks. They persuade him to part with his hard-earned pence in return for a certificate promising that his time in Purgatory will be shortened, and his soul will go straight to heaven when he dies. Climate protection measures are presented as a swindle comparable to the peddling of indulgences, over which Luther broke with the Church of Rome. Innocent German citizens are being 'fleeced', and climate sceptics combating the environmentalists' capitalisation on public fears, deception and manipulation of information are courageous Lutheran reformers.

Scepticism in literature

The press and broadcasting, social media and popular science are probably the principal sources of information to which ordinary Germans turn to understand climate change and climate politics. But storytelling is, as we have seen, present here alongside the facts and discursive arguments, in fictional narratives as well as accounts of historical events. Novelists, dramatists and poets are experts in storytelling, and in Germany as elsewhere, they have engaged with climate debates. On the one hand, public views and choices are reflected in the situations and outcomes they depict and the images they provide. Sketching scenarios and experimenting with the consequences of perceived patterns of behaviour, authors have explored the political, social and ethical implications of the whole range of social responses to climate change. On the other hand, stories also have the ability to open readers' eyes to different ways of seeing the world. Novels invest events with meaning and value by associating them with pre-existing desires, fears and patterns of perception. This can of course serve to reinforce dominant narratives. However, working with personalization,

dramatization and emotional focalization, some writers have always sought to distribute readers' empathy in new ways, leading them to break down existing habits of thought and identify with new perspectives. As Bernard Harrison has commented: "The peculiar value of literature in a culture such as ours, the thing which really does make it essential to a civilised society, is its power to act as a standing rebuke and irritant to the dominant paradigm of knowledge." (Harrison 1991, p. 4)

Only a very small number of the 150 or so English language climate change novels identified by Adam Trexler and others are classifiable as sceptical, Michael Crichton's *State of Fear* (2004) being the best known. Writing at a time of what he saw as alarmist exaggeration, when climate scientists were still widely viewed as saintly truth-seekers, Crichton attacked the perceived fuelling of public fears of devastating climate change and the turning of science into an article of blind faith. German authors of climate fiction have, like their American and British counterparts, on the whole responded to climate change with alarm and regret, and sought to encourage their readers to take action on the climate. They have also tended to reinforce the widely felt sense of guilt and anticipation of punishment (sometimes, but not always, followed by redemption).[vii] German literary production is typified by the alarmism of Frank Schätzing's blockbusting eco-thriller, *Der Schwarm* (2004, translated as *The Swarm,* 2006), the jeremiad of Ilija Trojanow's poetic *EisTau* (2011, translated as *The Lamentations of Zeno*, 2016), and the educational thrust of Claus-Peter Hutter and Eva Goris's book for young adults, *Die Erde schlägt zurück: Wie der Klimawandel unser Leben verändert* (The Earth Strikes Back: How climate change is altering our lives, 2009). While reluctance to face the challenge of climate change features in these books, German novels have yet to be written which explore climate scepticism as a socio-political phenomenon or as a psychological disposition as directly and perceptively as Barbara Kingsolver's *Flight Behavior* (2012).

The German public's disillusionment with climate politics after the so-called 'Climategate affair' and the collapse of international negotiations at the Copenhagen conference in December 2009 is, however, reflected in three popular novels: Sonja Margolina's thriller *Kaltzeit* (Glacial Period, 2013), Nele Neuhaus's regional crime novel *Wer Wind sät* (Those Who Sow Wind, 2011), and Sven Böttcher's science thriller, *Prophezeiung* (Prophecy, 2011). I shall look at these briefly in the following, before examining in greater detail Christian

Kracht's and Ingo Niermann's more imaginative approach to fictionalising climate scepticism in *Metan* (Methane, 2007).

The author of the self-published novel *Kaltzeit* is a journalist and writer of Russian Jewish origin, who studied biology and ecology and has combined this field of interest with writing on post-Soviet Russian politics. In 1995 she published a provocative nonfiction book denying climate change, *Die gemütliche Apokalypse: Unbotmässiges zu Klimahysterie und Einwanderungsdebatte in Deutschland* (The Comfortable Apocalypse: Disrespectful remarks on climate hysteria and the immigration debate in Germany, 1995), and as recently as September 2017 she defended Donald Trump's position on climate change in a piece in the *Neue Zürcher Zeitung*. The characters relating to climate change in *Kaltzeit* are Tanja, a Russian-born biologist living in Germany (a partially autobiographical figure), Professor Siegfried von Castorp, a physicist who played a leading role in stoking public fears of climate change in the 1980s and has become the Director of the Institute for Climate Change, and Robert, an idealistic young physicist working for Castorp.

Castorp, who is concerned for the future of climate change research (that of his institute as well as his own career) because of growing public distrust of climate science, disapproval of the high price of energy necessitated by the government's subsidies for renewable energy, and rejection of the disfiguration of the landscape with wind farms, sends Robert to find out what is going on at a conference organised by German climate sceptics. Robert meets Tanja there, who turns out to be a leading leading climate sceptic and a thorn in the side of the climate research establishment. He learns that the data on which the Institute's influential climate models are based, and beyond that the government's famous *Energiewende* [Energy Turnaround], are unreliable. Margolina names the foreign climate scientists Michael Mann and Phil Jones, and quotes from genuine emails hacked from the Climatic Research Unit in 2009. She summarises the content of scientific papers challenging the evidence for global warming over the last fifty years, disputing the role of carbon dioxide, and arguing that natural causes such as solar flare activity are being ignored. The novel ends counterfactually, with the vindication of the sceptics. A leading sceptic researcher is awarded the Nobel Prize, and Castorp commits suicide on a research trip to the Antarctic. We learn that Castorp had originally taken up the cause of climate change in order to deflect public anxieties about

nuclear power, and never entirely believed in it. A highly intelligent man whose ambition and arrogance led to his lonely and pathetic end, he stands in contrast to Robert, whose journey from blind faith in scientific and political practice to scepticism is traced sympathetically.

Margolina's novel is thus overtly didactic, inserting scientific information directly into a narrative with obvious positive and negative role models. It conveys key sceptical arguments, but it blends the real and the fictional in ways likely to mislead uninformed readers. The plot maintains suspense throughout, but the characters are two-dimensional and the love story is clichéd. An unusual feature is Margolina's leftist framing of climate politics. Climate scepticism is presented, through a series of allusions to socialism and class warfare, as a struggle for social justice and Enlightenment reason against an ideology imposed by powerful exploitative elites. In an epigraph, Bertolt Brecht's exhortation of workers to check the bill before paying it from the poem 'Lob des Lernens' (In Praise of Learning) is cited, and Tanja sings lines from Brecht's 'Lied vom Klassenfeind' (Song of the Class Enemy) which imply that in time climate sceptics will unite and triumph over the forces of obscurantist climate science and politics. Tanja asks Robert has he not noticed that many German climate sceptics are former citizens of the German Democratic Republic. This fact, which might, if true, be explained as a consequence of residual anti-Western feeling in a generation which was marginalised after Reunification, is interpreted by Margolina as a result of experience which has made them more sensitive to flaws in dominant ideologies than the average West German. Climate policies are commonly associated with Communism in the public mind, not only in the USA but also in West German publications (see Mann), but here they are approached from an anti-capitalist standpoint.

Wer Wind sät is a relatively complex work by a professional writer of crime novels. It is more informative and entertaining, and less polemic. Addressing a popular readership whose trust in climate science is shaken after Climategate, and who question the need for the German taxpayer to fund the government's costly subsidies for renewables, it depicts a world in which entrepreneurs in renewable energy are bribing individuals in state and local authorities to provide the positive evaluation reports required to obtain permission to construct wind farms, and resorting to illegal means to undermine the citizens' action groups opposing them. At the same time, however, the Citizens' Initiative opposing the proposed wind farm in the

Taunus near Frankfurt around which the action is centred is anything but a happy community of environmentally committed idealists: its leaders turn out to be pursuing material interests and personal vendettas. Corrupt practices in eco-business and the instrumentalisation of public fears of climate change by scientists and politicians are balanced against ruthless egotism and manipulation of the media by eco-activists. All the main actors are flawed characters, guilty of dishonesty, lack of regard for friends and colleagues, and neglect of partner or family responsibilities.

The author appears to accept the need for measures to combat climate change, while directing her readers to look beyond surface appearances in both climate action and opposition to renewables. However, this changes towards the end of the book, when the existence of an international conspiracy to conceal the absence of scientific evidence of global warming is alluded to as a 'bigger story' behind the crimes committed. In an Epilogue, news of the Climategate affair is interpreted as confirmation of the views of climate sceptics. In a note at the end of the volume, Neuhaus states that Climategate is the only historical fact alluded to in her otherwise fictional story. The persons, events and institutions described are freely invented, and it was not her intention to discredit or defame real persons or institutions (p. 560). This 'climate pope' Dirk Eisenhut, Director of the 'German Climate Institute' is, however, like Margolina's Siegfried von Castorp, in some respects a fictionalised portrait of Hans-Joachim Schellnhuber, Director of the Potsdam Institute for Climate Impact Research, or perhaps rather of its principal spokesman, Stefan Rahmstorf. Neuhaus writes of "lies" in the latest IPCC report (p. 381), and asserts that the climate sceptics have gathered "cast iron" proof that climate data had been manipulated for the last ten years (p. 382), in a deliberate deception to uphold the hypothesis of climate change, stirring up public fears out of greed and desire for influence. We are told that the head of the IPCC has been involved in deals worth billions which depended on IPCC recommendations: Eisenhut is implicated and will probably have to resign (p. 557).

Research suggests that the readers of climate fiction generally assume the reliability of facts presented as the truth about climate change, and that this is an important part of their reception of the novels (Hahnemann). Neuhaus's casual introduction of departures from factual truth in her account of Climategate and her wish-fulfilling punishment of prominent

German members of the “internationale Global-Warming-Fraktion” (international Global Warming Faction, p. 557) is therefore problematic. But her book exemplifies the ability of fiction to challenge and destabilise the consensus of the political elite, and is a salutary reminder of the unwisdom of epistemic over-confidence.

Sven Böttcher’s *Prophezeiung* presents a similar but more extended and sophisticated scenario of concealment of the uncertainty of climate science and the corrupt pursuit of self-enrichment by elites, framed in a narrative of their gradual revelation by an initially naïve and idealistic young female climate scientist. By now familiar features include passages summarising dissident arguments about climate change, and critical portraits of a ‘climate pope’ and a band of misguided eco-warriors. A key difference from *Kaltzeit* and *Wer Wind sät* is that climate change is not denied here, its causes are merely disputed. The action is set some decades into the future. The Earth is warming in unpleasant ways (incessant rain and a plague of insects in northern Europe, and drought in the south). The heroine of the novel, the climate scientist Mavie Heller, makes two discoveries: the change in the climate is mainly due to a sudden increase in solar irradiation (although the problem is aggravated by an increase in the level of carbon dioxide in the atmosphere), and there is a sinister conspiracy by individuals seeking to derive financial and political advantage from its consequences. Professor Fritz Eisele, a superstar of climate science who travels around the world finding ever new, more elegant and politically persuasive turns of phrase to communicate the findings of climate science to politicians and the public, is revealed as deviously manipulating industrial bosses and political leaders so as to maximise the profits of his own clandestine investment company. He withholds information gained from a powerful new integrated meteorological program which would enable the lives of hundreds of millions of unsuspecting people to be saved. However, it turns out in the end that there are flaws in the software algorithms, which have skewed its predictions. The rain stops and the floods recede in a final scene echoing the Biblical Flood. A quiet hero emerges in the figure of Thilo Beck, a seemingly dull and pusillanimous scientist who had refused to allow himself to be swept away by financial temptations, the quest for power or fear of the future.

As well as challenging the claims of climate scientists to be able to predict the future reliably, Böttcher draws attention, in a sub-plot involving a vain celebrity scientist who threatens to

seek a solution to the problem by triggering a volcanic eruption with nuclear detonations, to the dangers of machismo proponents of geo-engineering taking advantage of the situation to realise their sci-fi dreams. A group of internet-savvy eco-activists thirsting to inform the global public about the impending climate catastrophe also only makes the situation worse, by precipitating chaotic mass emigration from the regions worst hit by the change. Other figures include a Rawlesian prepper and a rich playboy who is only temporarily weaned from his position of implicatory climate scepticism by his sister's murder. The book combines a critique of public blindness to the need for climate action (selfish consumerist citizens' hedonistic disregard for climate change) with distrust of climate scientists advocating political action, and exposure of the dangers of fantasies of technological control.

The breadth and seriousness of the author's research into climate debates is evident in the acknowledgements at the end of the book. Alongside Wally Broecker and Robert Kunzig's *Fixing Climate*, which explores the possibility of abrupt climate change and puts forward a geoengineering solution, James Lovelock's bleak forecast and advocacy of technological solutions, *The Vanishing Face of Gaia*, Fred Pearce's alarmist *The Last Generation*, and David MacKay's measured *Sustainable Energy Without the Hot Air*, the list includes Nigel Lawson's sceptic *Appeal to Reason* and Christopher Brooker's *The Real Global Warming Disaster*. Böttcher also cites Webster Griffin Tapley's conspiracist account of the 09/11 attacks, James Wesley Rawles's practical guide, *How to Survive the End of the World as We Know It*, Shaun Chamberlin's *Transition Timeline*, and critiques of politics and the media by John Pilger and others. *Prophezeiung* is in many ways a balanced and successful dramatization of climate change debates.

The final novel to be examined here, *Metan*, merits fuller presentation and discussion because of the unconventional satirical strategy it adopts in fictionalising climate change. Billed on the back cover as "die unglaubliche Wahrheit über den Klimawandel" (the unbelievable truth about climate change), this short prose work (88 pages of text, followed by 41 pages of captionless black and white photographs loosely associated with the narrative) is less an expression of climate change denial than one of ironic detachment from the earnestness and heat of climate debates at the time of writing. In this it reflects the profession of cynical disregard for social inequality and political injustice for which Christian

Kracht is known. Kracht and Niermann take global warming as a given, and acknowledge its transformative consequences. However, pointing out that methane is a more active greenhouse gas than carbon dioxide, and focusing on the methane produced by the digestive systems of an ever larger population of humans and cattle as a prime cause of global warming, they provocatively advocate its active promotion through 'methanisation' of the Earth's atmosphere.

In addition to displacing carbon by methane emissions, the authors integrate familiar sceptical arguments in the text. We are told that the "Kritiker des Klimawandels" (critics of climate change), who warn of rising sea levels, coastal flooding and desertification, overlook the fact that vast new areas at the poles will become accessible to agriculture (p. 29). Climate change cannot be halted. Rather than heeding the population of the Maldives, Kracht and Niermann argue, we should therefore follow the example of the Netherlands, a world leader in both the production of methane and the building of dykes. But they go further, arguing that adaptation is no more than a stopgap measure. We should therefore do what we can to accelerate global warming. We should burn up the world's reserves of oil, thereby bringing modern civilisation (and the human race) to an end – and in doing so enabling a new, more intelligent species to emerge, whose physiology is compatible with an atmosphere in which water and oxygen have been replaced by methane.

Kracht and Niermann playfully develop a fanciful variant of Lovelock's Gaia hypothesis, which enlists myth in a conception of the Earth as an organism capable of regulating its own environment. Methane is described as the breath of god, an all-pervasive divine spirit: the worship of the sun god throughout the ages and cultures was "indirectly a cult of methane" (p. 28). It is personified as a "Methangetüm", or methane monster.[viii] Parts of the book read as a parody of popular scientific accounts of climate change (there are no notes or references, but the book includes a wholly superfluous index of places, names and associations); in other places Kracht and Niermann satirise the genre of sensationalist political exposé. As if this were not enough, *Metan* is also a spoof on occult conspiracy thrillers such as Dan Brown's *Da Vinci Code*. The omission in the title of the 'h' which is present in the normal spelling of the German word for methane is explained in a passage suggesting it is an anagram of 'atmen', German for 'breathing' (p. 16). 'Metan' is printed on

the dust cover in a modern Gothic typeface of the kind associated with neo-Nazi groups, hinting at a link with their efforts to revive Germanic paganism, and the occultist preoccupations of certain right-wing paramilitary groups. A note on the back cover announces:

> Spannend geschrieben, zwingend recherchiert und mit eindrucksvollen Fotos versehen, enthüllt Christian Krachts und Ingo Niermanns *Metan* eine Verstrickung kosmischen Ausmaßes. Das Buch hat eine Tragweite, welche Wilsons und Sheas *Illuminatus*-Trilogie, Stephen Hawkings *Eine kurze Geschichte der Zeit* und Edward Bulwer-Lyttons *Das kommende Geschlecht* bei weitem übertrifft.
> (Thrillingly plotted, compellingly researched and illustrated with impressive photos, Christian Kracht and Ingo Niermann's *Metan* exposes an embroilment of cosmic dimensions. The implications of *Metan* far exceed those of Wilson and Shea's *Illuminatus* trilogy, Stephen Hawking's *Brief History of Time*, and Edward Bulwer-Lytton's *Coming Race*.

A series of political conspiracy theories are interwoven in the framework narrative of the authors' ascent of Mount Kilimanjaro in a party of tourists (whose increased flatulence at high altitude furthers the methanisation of the atmosphere). These conspiracist fantasies are taken to wildly implausible extremes, through Quixotic invention and exuberant construction of alleged connections, in order to fit the history of the last fifty years into a narrative of progressive methanisation. We are told, for instance, that Japan, Australia (which harbours ambitions to conquer India, build an empire and dominate the Pacific), South Africa and Switzerland (which has a secret atom bomb) are, as proponents of nuclear energy, enemies of methane. Saddam Hussein, secretly an agent of the 'methane monster', worked hand in glove with the Israelis, and invaded Kuwait in order to be able to burn its oil wells and refineries, and boost the methane content of the atmosphere. The maverick American political activist and conspiracy theorist Lyndon LaRouche is repeatedly referenced. Embroidering on reality in the spirit of LaRouche, whose movement disputes the existence of anthropogenic climate change and advocates technological solutions to (naturally caused) global warming, Kracht and Niermann have LaRouche ally with Eugene Terre Blanche, the white supremacist founder of the Afrikaner Resistance Movement, to launch an atom bomb

on Kilimanjaro, so as to reactivate the dormant volcano and reduce solar radiation by emitting clouds of soot and sulphur dioxide into the atmosphere. Their aim is to draw a line under the culturally degenerate and genetically moribund human race, and enable a new, better humanity to emerge, at the very place where *homo sapiens* originated. However, they are overheard by the omnipresent methane monster and outwitted: in the explosion vast quantities of subterranean methane are also released.

More a scurrilous pamphlet framed as an autobiographical travel narrative than a novel, *Metan* combines the disregard for the distinction between historical reality and imagination and the playful treatment of secret codes which characterise postmodern conspiracy fiction with parodic passages of natural science (e.g. explaining the origin of life on Earth through a "self-sacrifice" of methane). It simultaneously echoes the idea of a master race in possession of a mysterious energy force for which the Theosophists valued Bulwer-Lytton's Victorian tale. An initially bewildering piece of writing, *Metan* gains meaning if we see it as simultaneously a dismissal of the conspiracy theories prevalent in some climate scepticism, and a critique of climate alarmism. This does not mean that Kracht and Niermann deny global warming or the dangers it brings. The production and worship of methane can be read as a metaphor for global capitalism, touristic consumption, military-industrial destruction of the environment, the dissolution of democratic structures and moral degeneration. Farting our way into extinction, we humans are too dumb to realise we are destroying the atmospheric basis of our existence. *Metan* exemplifies the camp take on public issues which characterises its authors' work, in which unambiguous expression of moral values is subordinated to an aesthetic of dandyism. It shares with Kracht's other novels a concern with style which has won him critical acclaim, an ambivalent fascination with popular culture and Western consumerism, and an interest in alternative and reimagined history, existential ennui, and courting political controversy. Kracht's pastiche of alarmist environmental nonfiction is a taboo-breaking work of eco-blasphemy making light of eschatological thinking comparable to Horstmann's satirical attack on nuclear apocalypticism in the 1980s. Both works provocatively envision a return to the inorganic, playfully critiquing the latent will to catastrophe which Peter Sloterdijk sees as pervading modernity. Published in February 2007, at the height of emotional public feeling about climate change, *Metan* made a unique contribution to the

literature of climate scepticism, adding postmodern pastiche to a field dominated by action novels and science thrillers.

Key characteristics of German climate scepticism

Climate scepticism in Germany has taken a wide range of forms and adopted different standpoints. It would be wrong to claim that all German sceptics share the same motivations or behave in the same way in their interventions: on the web there is evidence enough of the vociferous, polarised argument, paranoid mindset and conspiracist theories which are found in other countries. However, this is not the whole story: it has been my aim to show that there is also a significant body of climate sceptic writing which makes a valuable contribution to debates in Germany, and deserves to be engaged with. The key arguments of these sceptics have been:

- the continuing uncertainty of scientific knowledge as to the extent of climate change and its causes
- the tendency of the prevailing discourse to distort and exaggerate the risks associated with climate change
- the hypocrisy of policies serving to cement first world domination and benefit the rich and business at the expense of the poor, while calling for individuals to forego simple pleasures of consumption
- unthinking public acceptance of green ideology where critical analysis is needed, and the naivety of well-meant eco-warrior activism
- the dangerous propensity of over-ambitious projects, be they technological or social engineering, to bypass democratic control
- the willingness of natural scientists to allow themselves to be drawn into pronouncing on matters of political choice, thereby undermining the objectivity and authority of science
- the need for rational optimism and hope rather than despair.

By contrast with most Anglophone sceptics, German climate sceptics see themselves not as enemies of the environmental cause, but as its critical friends. Not as climate change deniers, but as sceptics in the sense of challenging unfounded assumptions and demanding evidence-

based policy. They regard themselves as unjustly stigmatised and treated as dangerous, although they are in reality a small and beleaguered minority (German scepticism is not, as in America – see McCright & Dunlap – a significant counter movement to reflexive modernisation) and lack the prominent supporters enjoyed by sceptics in other countries. The Umweltbundesamt (Federal German Environmental Agency) described Maxeiner and Miersch, alongside Vahrenholt/ Lüning and Günter Ederer, as "climate change sceptics" in a booklet published in 2013, stating that they regularly published "Beiträge […], die nicht mit dem Kenntnisstand der Klimawissenschaft übereinstimmen" (contributions which […] do not conform to the current state of knowledge, Lehmann 2013, pp. 112-113). The journalists applied for an injunction to stop distribution of the publication, arguing that they had denied neither the existence of climate change nor its anthropogenic causes, and merely pointed out scientific uncertainties and criticised aspects of the IPCC's reports. However, the Administrative Court in Halle and the Higher Regional Court in Magdeburg have rejected the claim, commenting that the publication served to counter "postfactual discourse" (see Miersch's detailed announcement of the court finding on the EIKE website in March 2017). In a sense, however, the sceptics have won the day: by 2013 much of Germany's vaunted energy transition was effectively stalled by concerns about the cost and the impact on the economy. The focus of government policy on greenhouse emissions as if they were all that mattered was, in Frank Uekötter's words (p. 168), an "intellectual monomania at odds with the best traditions of environmental thinking". Maxeiner and Miersch are not the only sceptics who regard themselves as proponents of a measured, rational and pragmatic response to climate change and other environmental problems, and as such a necessary corrective to eco-hysteria and the emotional intensity of green fundamentalist positions on issues from nuclear power and forest dieback to GM crops, fracking and climate change.

German climate scepticism is in part a reaction against the ambivalent fascination with catastrophe which has been particularly strong in the German-speaking world (see Gerstenberger/ Nusser). German climate sceptics present themselves as realists in the face of an irrational green apocalypticism, and as defenders of freedom of thought against ideology. Some are former environmental activists who became disillusioned with the hailing of scientists as oracles for a society unsettled by climate change, as prophets and political cue-givers, rather than as providers of specialist factual knowledge. However carefully popular

interviewees such as Mojib Latif, Hans Joachim Schellnhuber and Stefan Rahmstorf hedged their statements (for instance on whether storms and floods were manifestations of climate change), the media, politicians and the public saw them as confirming a deep-rooted suspicion that humans were enemies of the planet. In rejecting this 'horizon of expectation' (Hans Robert Jauss), climate sceptics have served as agents of critical self-appraisal of the environmental movement.

The German climate scepticism examined here has rarely been a matter of wilful ignorance, deliberate deception, or even contrarian intransigence. If it is 'denial' (a term which I have avoided because in the German context it suggests an analogy with Holocaust denial, implying that climate scepticism is a deliberate misrepresentation and distortion of facts for ideological reasons, immoral and punishable by law), then only in the sense outlined by the ethnographer Kari Norgaard in her study of climate-related attitudes and behaviour in Norway. Norgaard understands denial as a product of cognitive dissonance: it is an unconscious suppression of the truth in order to defend a collective identity as a people close to nature against the destabilising reality of living a high-energy, consumer capitalist way of life.

Achim Brunnengräber ends his report on climate scepticism by noting that in Germany as elsewhere, sceptics have developed a narrative of the threat to freedom, and the self-interest and corruption of climate scientists, which builds their sense of identity. Opposing the general consensus on climate change has undoubtedly functioned as a tool for the identity construction of certain individuals and groups. Tanja Fröhlich, who participated in meetings and events organised by climate sceptics as part of her research, comments (p. 53) that the people she met were rarely in the pay of energy companies. They were often retired, and comfortably off. They did not seem to be acting out of fear that their living standard would suffer if climate regulation measures were introduced, or to be motivated by the allergic reaction which many Americans have to what they see as efforts to restrict their liberty. Nor were they primarily driven by affiliation with a political party or ideology. Many had a scientific training, and some appeared to be seeking compensation for lack of professional recognition. Climate scepticism tended to be part of a more general anti-establishment feeling, and associated with an 'outsider' mindset. In terms of regional

distribution, there seems to be a concentration of climate sceptics in Thuringia and Saxony, areas of the country formerly in communist East Germany, which have become a focus for disaffection with Western liberal political values and structures, despite the equal presence of marginalised social groups in other parts of the country.

The central narratives of German sceptics have nevertheless been those of rational enlightenment and social justice: defence of reason against deception and manipulation by the ideologues and 'high priests' of environmentalism, and resistance against economic exploitation and political domination by a self-serving elite. As the meteorologist Hans von Storch and the cultural anthropologist Werner Krauß have written in *Die Klimafalle. Die gefährliche Nähe von Politik und Klimaforschung* (The Climate Trap. The Dangerous Proximity of Politics and Climate Research, 2013), sceptics are performing an important social function, as mouthpieces for an alternative understanding of climate rooted in a long history of popular perception, which must be taken into consideration if climate protection measures are to gain public acceptance. Von Storch and Krauß do not subscribe to doom and gloom forecasts of the collapse of international trade and steep increases in carbon emissions. Nor, however, do they believe that binding international agreements will bring about a significant reduction in global emissions. They rather put their faith in the pragmatic activities of individual nations and cities, increases in efficiency and regional adaptation measures to climate risks. If these are to succeed, it will be necessary to admit all to the table, and make space for their different perspectives, approaches, and alternative knowledge claims.

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[i] In the only detailed comparative study of media coverage of climate change and the formation of policy in Germany and France, Stefan Aykut (2011) notes that articles in the German press have tended to adopt a uniformly alarmist tone, contrasting with debate in France, where the debate has been more open to scepticism, but less emotionally loaded.

[ii] See Sloterdijk. The entire 90 minute programme can be viewed on Youtube at https://www.youtube.com/watch?v=GBG6YCLtGvM.

[iii] Götz Warnke had already presented a psychoanalytic study in 1998 diagnosing a depressive-hysterical basis of green ideology in Germany.

[iv] Gärtner went on to publish *Öko-Nihilismus. Eine Kritik der politischen Ökologie* (Eco-Nihilism: A Critique of Political Ecology, 2007; and *Öko-Nihilismus 2012: Selbstmord in Grün* (Eco-Nihilism 2012: Suicide in Green, 2012.

[v] The books which Hans von Storch has published with Nico Stehr (*Climate and Society: Climate as Resource, Climate as Risk*, 2009) and Werner Krauß (*Die Klimafalle. Die gefährliche Nähe von Klimapolitik und Klimaforschung* [The Climate Trap: The dangerous proximity of climate politics with climate research], 2013) are further helpful sources of information. See also Bilandzic/ Soentgen on a critical study of the German discourse of climate scepticism which is being conducted at the University of Augsburg's Wissenschaftszentrum Umwelt (Centre for Environmental Science).

[vi] See http://www.sueddeutsche.de/wissen/alternative-fuer-deutschland-die-anti-wissenschafts-partei-1.2930329.

[vii] The same applies to German film, if *The Day After Tomorrow* (2004) can be counted as German – while it was made in Hollywood, the director (Roland Emmerich) was German, and the story has been described as typically German in critiquing consumer society, and especially energy profligacy.

[viii] The radical '-gethüm' only exists in ordinary German in the negative form, as 'Ungethüm', meaning 'monster', 'beast' or 'behemoth'. However, 'Gethüm' is occasionally found, used humorously as a term for an attractive or benevolent monster. Here it implies positive enormity.