Turning up the heat

An analysis of the historic, scientific and socio-political complexities influencing climate change reporting in the modern newsroom

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Declaration

I, the undersigned, hereby declare that the work contained in this assignment is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

Signature…….. Date…….

Abstract

Global climate change is the result of the natural greenhouse effect being enhanced or augmented by human activities such as industrial burning of fossil fuels and large-scale agricultural practices which have increased the concentration of greenhouse gases in the atmosphere. The result – the first truly globalised consequence of pollution – is arguably one of the most pressing matters facing the future of the human species.

Journalists reporting on the subject have considerable responsibility to unravel the science and present it accurately and responsibly to the public, so that the latter can make informed decisions about individual energy consumption, informed decisions at the voting poll and go further to put the necessary pressure on policy makers.

However climate change is without doubt the most complex story environmental and science reporters have ever encountered, not only because it encompasses so many different fields of natural sciences (oceanography, climatology, biological sciences including flora and fauna, hydrology, horticulture etc.), but because it all too often spills over into the political, economic and social arenas.

"Climate change is a difficult story to recreate… (it) is one of the most complicated stories of our time. It involves abstract and probabilistic science, labyrinthine laws, grandstanding politicians, speculative economics and the complex interplay of individuals and societies" (Wilson, 2000: 206).

Specialist environmental and science news reporters only have three and a half decades of experience and history, since this is one of the more recent journalistic beats to be assigned to modern newsrooms. Such writers face a particularly challenging job of reporting the complex and growing science of global climate change. Furthermore they must do so in an environment where politicians and environmental activists feed journalists sometimes conflicting information, each with its own agenda. Increasing consumer demand for entertainment in place of information may also complicate the telling of these stories, given the financial imperative to sell newspapers.

Furthermore, the "global warming story is also affected by a number of journalistic constraints, such as deadlines, space, one-source stories, complexity and reporter education" (Wilson, 2000: 206). The complexities of news values also shape the stories which finally are released to the news consuming public.

Opsomming

Globale klimaatveranderinge is die uitvloeisel van die natuurlike kweekhuis-verskynsel wat deur roekelose menslike optrede soos die industriële verbranding van fossielbrandstof en grootskaalse landboupraktyke, wat 'n toename van gekonsentreerde kweekhuis-gasse in die atmosfeer tot gevolg het. Die uitkoms hiervan - die eerste globale uitwerking van besoedeling - is onbetwisbaar een van die grootste vraagstukke waarmee die mens in die nabye toekoms gaan worstel.

Joernaliste wat oor die onderwerp berig, het 'n groot verantwoordelikheid om die wetenskap te ontrafel en dit akkuraat en verantwoordelik aan die publiek oor te dra, sodat ingeligte besluite oor individuele energie-verbruiking gemaak kan word; ingeligte en deurdagte besluite by die stembus geneem kan word en die nodige druk op beleidsmakers uitgeoefen kan word.

Maar klimaatveranderinge is ongetwyfeld die mees gekompliseerde onderwerp waaroor omgewings- en wetenskapjoernaliste moet berig, nie alleen omdat dit soveel verskillende aspekte van die natuurwetenskappe (oseanografie, klimatologie, biologiese wetenskappe wat fauna en flora insluit, hidrologie en ander) insluit nie, maar ook omdat hierdie aangeleenthede dikwels die grense na die politieke, ekonomiese- en sosiale arenas oorskry.

"Climate change is a difficult story to recreate... (it) is one of the most complicated stories of our time. It involves abstract and probabilistic science, labyrinthine laws, grandstanding politicians, speculative economics and the complex interplay of individuals and societies" (Wilson, 2000: 206).

Gespesialiseerde omgewings- en wetenskapjoernaliste het net drie en 'n halwe dekades van ondervinding en geskiedenis, want dit is een van die jongste joernalistieke spesialisgebiede om in die moderne redaksiekantoor aan joernaliste toegesê te word. Hierdie tipe skrywers het die moeilike taak om te berig oor die gekompliseerde onderwerp van snelgroeiende klimaatveranderinge regoor die wêreld. Dit moet boonop bereik word in 'n omgewing waar politici en omgewingsaktiviste joernaliste heel dikwels van teenstrydige inligting voorsien. 'n Groeiende behoefte van die eindverbruiker in vermaak, eerder as aan inligting, kan ook 'n invloed hê op die styl waarop hierdie berigte oorgedra word, veral as die druk om koerante te verkoop, in ag geneem word.

Verder, die "global warming story is also affected by a number of journalistic constraints, such as deadlines, space, one-source stories, complexity and reporter education" (Wilson, 2000: 206). Die kompleksiteit van nuuswaardes speel ook in op die finale produk wat aan die publiek vrygestel word.

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Chapter 1 Climate, change and environmentalism in the age of oil

1.1 Introduction

Global warming and climate change are not simple subjects even for an established scientific community to grasp, let alone for media practitioners whose job it is to report and deliver commentary on the subject. This science has to do with cyclical systems in the atmosphere and oceans – and changes in those systems – which play out on a global scale and over a geological timeframe which is entirely incompatible with the daily, weekly or monthly deadlines of most newsrooms.

Reporting on these topics is further shaped by the time and space within which the reporter or newspaper occurs, *as well as* those in which the news event itself occurs.

A brief introduction is given here of how global warming and climate change function, how an environmental awareness emerged in the 1970s and when the scientific community first picked up on the problem of global warming. This is given in order to place in context the socio-political and scientific complexities in which science and environmental writers must report.

1.2 Climate Change: the ultimate cost of a hydrocarbon economy

1.2.1 The carbon cycle interrupted – fossil fuels

Earth is draped in a thin shroud of gas which protects the planet from the cold vacuum of space and the shower of heavenly particles and bodies such as meteorites which hammer down constantly like “the random noise of rain on the roof at night” (Watson, 1984: 17).

This atmosphere, mostly nitrogen (78 percent) and oxygen (21 percent), also contains a fraction of gases without which the planet would be a frozen wasteland. Carbon dioxide (0.037 percent of the total atmosphere) and even smaller quantities of methane, nitrous oxide (known as laughing gas to the dental fraternity) and a few others trap heat around the planet in the following way: the Sun’s radiation penetrates the atmosphere in short ultraviolet waves, some of which is reflected back out to space by clouds but most makes it through the atmosphere where it is absorbed by the Earth. This is then re-emitted in longer infrared waves which are then absorbed by these gases which hold onto it long enough to keep the planet warm. These so-called greenhouse gases “catch and hold energy, banking it against lean times” (Watson, 1984: 17), so while temperatures in the more extreme regions of Earth may reach minus 70°C to a sweltering 55°C, there are some eminently liveable moderates in between. Without this natural,

physical mechanism which has since been dubbed the greenhouse effect, Earth would be 30°C to 40°C colder than it is now (Luhr, 2004: 443).

The greenhouse effect is a well established scientific theory originating in 1824 at the suggestion of the idea by a French mathematician and physicist Baron Jean-Baptiste Joseph Fourier (Weart, 2003). This so-called greenhouse effect should not be confused with "greenhouse warming" or "global warming". The latter refers to the process whereby human activities on the planet, mostly through the burning of fossil fuels and agricultural practices, have increased the concentration of greenhouse gases in the atmosphere so as to augment the natural greenhouse process, causing the planet to warm up and hence alter climatic patterns around the globe.

Essentially "global warming" is not the correct term either as it only refers to one aspect of a changing climate resulting from the anthropogenic enhancement of the greenhouse effect. Climate change is, essentially, a more accurate term to use (Wilson, 2000: 211).

Carbon is recycled constantly in the natural environment: from the atmosphere, where it exists as carbon dioxide, it is absorbed by plants which convert most of it to carbohydrates, fats and proteins; herbivores eat the plants and then store most of these elements in their tissues. Both release carbon back into the atmosphere as they breathe, and when they die and decompose. This is how the bulk of carbon circulates. Occasionally it is banked away in ancient forms such as coal, gas, crude oil or limestone. Forests and plankton-rich oceans are regarded as "carbon sinks" or places for the short-term storage of carbon.

Methane is produced mostly through the rotting of soggy vegetation, such as the kind found in wetlands, marshes and bogs. Herbivores also produce their share of the gas through digestion and the release of flatulence. Nitrous oxide is emitted by bacteria present in the soil and by the oceans.

Humanity has interfered with these cycles through digging out ancient fossil fuels and burning them; cutting down forests and burning those too; inundating millions of hectares with rice paddies thereby creating artificial wetlands; and through mass livestock farming.

1.2.2 Agriculture

A new theory has emerged which suggests humans started interfering with global climate when people first switched from a hunter-gatherer lifestyle to an agrarian one where they began tilling the soil, cutting down forests to make way for agricultural land and farming rice on a large scale.

Over hundreds of thousands of years methane and carbon dioxide levels have risen and fallen according with complex but natural cycles often related to the manner in which the Earth moves through the solar system and around the Sun. Atmospheric methane is naturally higher during warm interglacial periods because a warmer climate produces greater plant growth in wetlands, translating into more material to decompose. The reverse is true for cooler periods near the onset or exit of glacial periods where wetlands produce less plant material and hence less methane.

Carbon dioxide concentrations in the atmosphere also climb and fall in response to still more complicated orbital triggers. By 10 500 years ago, methane and carbon dioxide levels were at a natural peak, typical of previous interglacial periods (bubbles trapped in ancient ice caps keep a record of atmospheric composition through millennia; by drilling out ice cores, scientists can compare modern day atmospheric composition with that of the planet's geological past).

As the planet exited the previous glacial period, both methane and carbon dioxide gas concentrations began to decrease in the atmosphere in keeping with the normal cycle, and should have continued to do so until the present day.

Around 8 000 years ago, ice cores show that atmospheric carbon dioxide reversed its trend and began to increase slowly.

Marine geologist William Ruddiman, professor emeritus of environmental sciences at the University of Virginia, argues that "by the start of the industrial era, the concentration had risen to 285 parts per million (ppm) – roughly 40 ppm higher than expected from the earlier behaviour" (Ruddiman, 2005: 50). Similarly methane reversed its own trend at 5 000 years ago, the ice core records and by pre-industrial times were 250 parts per billion (ppb) higher than they should have been under normal circumstances.

Ruddiman attributes the anomalies to spin offs from agricultural practices by the newly settling *Homo sapiens*. About 8 000 years ago the farming of cereal crops had spread from the Middle East and into Europe. Evidence of silt washed into rivers testifies to land being denuded of trees to make way for crops. The loss of this important carbon sink, and the burning of those trees, could be a likely explanation for the altered course of atmospheric carbon dioxide.

The advent of rice irrigation in southeast Asia could explain the sudden corresponding increase in methane levels. "Farmers began flooding lowlands near rivers to grow wet-adapted strains of rice around 5 000 years ago in the south of China… Historical records also indicate a steady expansion in rice irrigation throughout the interval when methane values were rising" (Ruddiman, 2005: 50).

1.2.3 Consequences of global climate change

Since the mass burning of fossil fuels began with the industrial revolution in 1750, the amount of atmospheric carbon dioxide has increased by 31 percent, which is as high as it has been in the past 42 000 years and possibly even the past 20 million years. The rate at which atmospheric carbon dioxide has increased is also significantly faster than anything seen in the past 20 000 years. Methane, the more potent greenhouse gas, has increased in the atmosphere by 151 percent during this time and nitrous oxide is up by 17 percent (Houghton, Ding, Griggs, Noguer, Van der Linden, Dai, Maskell & Johnson, 2001: 2-5).

While the planet's climate has vacillated through the millennia due to natural processes (such as the way in which the planet's orbit around the sun stretches and shrinks rhythmically, or changes in sunspot activity) all but a few dissidents believe now that anthropogenic greenhouse gas emissions are behind the current warming trend.

The average temperature has increased since 1861, when reliable weather records begin. The Twentieth Century saw an increase of about 0.6°C, probably the largest increase in the Northern Hemisphere of any century during the past 1 000 years (Houghton *et al*, 2001: 2-5). The 1990s was the warmest decade and 1998 the warmest year on record (although recent articles suggest that 2005 has now achieved the record as warmest year and September the warmest month on record (*Planet endures hottest*, 2005)). Daily average minimum temperatures in the north have increased by 0.2°C between 1950 and 1993, about twice the increase of daily average maximum temperatures.

Scientists are linking the widespread melting of glaciers worldwide to this trend of temperature increase. Similarly, permafrost in the Arctic tundra is melting, causing roads to buckle and trees to lean drunkenly (Glick, 2004: 25). Massive heat waves in Europe have impacted on agriculture, rail transport and human health. Atolls such as Tuvalu in the Pacific Ocean, most of which is less than 50 cm above sea level, are witnessing increasing incidences of tidal inundation. Increased hurricane activity, lingering droughts, severe storms, plants flowering earlier, longer growing seasons and massive coral bleaching are all being documented.

Alone, these events mean nothing but pieced together they support the image which is emerging from computer generated climate modelling.

South African scientists at the South African National Biodiversity Institute (SANBI) and the University of Cape Town's climatology department, with computer modelling used by the United Nations Intergovernmental Panel on Climate Change (IPCC) – predict that large parts of the Southern Hemisphere will become 3°C warmer and conditions much drier. South Africa can expect higher temperatures everywhere, but with greater increases in the interior. The Northern

Cape may see a 2.5°C to 4.5°C increase in January temperatures while the coast, which is moderated by the influence of the ocean, will see about 0.5°C to 1°C increase.

Summer rainfall is expected to decrease “by between 5 percent in the northern regions and 25 percent in the Eastern and Southern Cape. The Western Cape may lose as much as 25 percent of its current winter rainfall”. There may also be a seasonal shift of the latter to fall in spring rather than winter meaning the Mediterranean climate which has driven the evolution of this distinct and unique ecosystem could be severely disrupted, to the detriment of species, ecosystem function, agriculture and hydrological systems.

Africa is the continent most vulnerable to climate change because so much of it is arid. The continent’s people will find difficulty coping because of “low financial, technical and institutional capacity” (Simmons, Barnard, Dean, Midgley, Thuiller & Hughes, 2004: 296).

Furthermore:

“(A)IDS, population growth, urbanisation, disease, low literacy, poverty and political instability in some regions… (c)ollectively drive a number of cumulative and related pressures on biodiversity, such as land cover change, desertification, alien species invasion, unstable resource use, soil erosion and pollution” (Simmons *et al*, 2004: 296).

At a global level, the human species has, through its technological advancements and resulting pollution, now achieved the “dubious distinction” of becoming a geophysical force on the planet (Wilson, 2003: 23). Where change at a planetary level was usually the preserve of large-scale events such as massive volcanic eruptions, asteroid strikes or earthquakes, Wilson writes that the species is now bringing about similar levels of change at a global level through climate change.

Jane Lubchenco agrees:

“(D)uring the last few decades, humans have emerged as a new force of nature. We are modifying physical, chemical, and biological systems in new ways, at faster rates, and over larger spatial scales than ever recorded on Earth. Humans have unwittingly embarked upon a grand experiment with our planet. The outcome of this experiment is unknown, but has profound implications for all of life on Earth” (Lubchenco, 1998: 491-497).

1.3 The Communal Back Yard: the rise of environmentalism and the environmental reporter

1.3.1 Growing environmental awareness

The year 1969 was pivotal in the advent of an increasingly global view of the environment, pollution and climate change.

Those early sorties into space, culminating with Neil Armstrong's first steps on the Moon, brought back images of a solitary blue-and-white swirled globe like a small island in a sea of vacant space. These were a potent suggestion of how isolated the inhabitants of the planet are in the wider Universe. Suddenly "not in my back yard" referred to a great deal more than the bit of lawn mowed once a week.

Allan, Adam and Carter (2000) say this essentially changed the public discourse around the subject of "the environment" in the United States and Europe. The impact of such images, they say, "fundamentally recast the environmental perceptions of what was for a fleeting instant a near-global citizenry" (Allan, Adam & Carter, 2000: 2). With regard to media representation of issues, this resulted in an "epistemological break" from traditional representations and values.

Mass communication – the process by which information is provided to mass audiences – is itself a phenomenon of the Twentieth Century and provides the vehicle for delivery of such images to what was increasingly becoming a "global village" (De Beer, 1998: 5).

It remains a matter of debate whether or not these images of Earth from space were singularly responsible for the shift to a consciousness around global environmental issues or whether they merely fed into a wider growing awareness. One could argue that large-scale environmental crises also served to feed this increasingly globalised attitude. For instance a super-tanker, the *Torrey Canyon*, ran aground near Cornwall in the United Kingdom in 1967 and spilled 117 000 tons of oil into the North Sea (*Environmental Milestones*, 2005). Two years later an industrial accident on platform Alpha of the Union Oil drilling operation off the coast of Santa Barbara ruptured the ocean floor around the well; over 11 days some three million gallons of oil leaked out into the surrounding ocean (Clarke & Hemphill, 2002: 157-162).

Either way, the environmental awareness which picked up pace in the 1970s was reflected in a discourse between civil society, scientists and government which showed concern about pollution, over-exploitation of resources, population growth, food security and an early awareness of environmental degradation (*Environmental Milestones*, 2005). The United Nations hosted global environmental conferences, some governments set up the first ministries and

departments of the environment and environmental organisations such as Greenpeace increased their public presence.

The first Earth Day was held in 1970; as more plant and animal species were identified as being over exploited or pushed close to extinction by other environmental pressures, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) treaty was drawn up in 1973. In 1974 chlorofluorocarbons (CFCs) were identified as a possible agent for damaging the ozone layer (although it was only in 1985 that scientists identified that a hole was present over Antarctica in this protective atmospheric layer; two years later the Montreal Protocol was adopted to cut back on CFC production globally (*Environmental Milestones*, 2005)).

Some newsrooms responded by appointing reporters dedicated to covering environmental stories. *Time* magazine introduced its environmental beat in 1969 (Allan *et al*, 2000: 3). And thus the discourse around environmental issues gained momentum.

As environmental issues became increasingly newsworthy after 1970, Allan *et al* (2000) report that a surprising decline in interest in environmental news developed in the United States and Europe by the middle of that decade. They give several reasons for this decline, including that other issues (energy and unemployment, for example) displaced environment on the newsroom agenda. Furthermore, as environmental issues became "institutionalised" – for instance government-level response to this newly perceived issue was to establish the Environmental Protection Agency and the Council on Environmental Quality and corporate public relations campaigns portrayed these crisis events as "normal" – gave the public the perception that "problems were being solved" (Allan *et al*, 2000: 4-5). However this trend did reverse again, leading Allan *et al* (2000) to say: "by the start of the 1980s… something resembling an 'ecological conscience' finally began to penetrate the typical newsroom in countries such as Britain and the USA in a serious way".

At the same time the environmental lobby emerged, some of which have become powerful enough to influence global policy (Anderson, 2000: 93), others of which function at a "grass roots" level. While examining the media politics of environmental reporting within this context, Anderson argues that a "do it yourself" politics emerged. Out of this new method of engagement, political activism grew with roots in New Age humanism and paganism, amongst others.

This is significant to the debate because environmental pressure groups are often a source of information for environmental writers, producing their own experts and using their own tactics to gain public or government attention and hence the interest of journalists. The reporting of environmental issues should, however, no more be clouded by fundamentalist alternative

religious thinking than it should by political bias or economic agendas. Global warming is not a belief system, but observable scientific fact and it is the responsibility of environmental and science writers to convey this to the public.

1.3.2 Climate change science and the emergence of the hydrocarbon economy: an historical summation

The 1970s were equally important in the history of climate change and fossil fuels.

In 1973 Arab-Israeli conflict showed up the political and ideological fissures of the global community. In protest at US support of Israel during the conflict, OPEC (Organization of Petroleum Exporting Countries) countries embargoed oil to the US and reduced supplies to Europe. The developed world quickly learned what happens when the black lifeblood of industry gets pinched off at the source. Oil prices quadrupled, crude oil supplies fell and for a time industrial nations staggered to their knees. British industry was reigned in to a three-day work week. In the US, gas stations ran dry. Recession spread across the globe (Roberts, 2004: 100).

The first oil crisis, followed by another towards the close of the decade, bore witness to a new era in world politics. It also emphasised how fragile industrial success is, how dependent its survival is on natural resources which lie in the hands of a few petrostates, and how there is by no means an endless supply of this ancient natural resource.

While the mass burning of fossil fuels started with the industrial era in the mid-1700s, coal and wood were the main source of energy, it was only in 1859 that the first oil well was exploited for commercial purposes in Pennsylvania and by 1910 oil still only accounted for 5 percent of world energy supply. It took an uptake in the vehicle industry in the 1930s before wood and coal were supplanted by oil (Ponting, 2000: 800). Very soon the industrial world's demand for oil reshaped global geopolitics. This was the rise of the hydrocarbon economy.

"By the end of the twentieth century the world's annual consumption of energy reflected an entirely different pattern from that which had prevailed in all previous human societies. Over 90 percent of energy came from fossil fuels" (Ponting, 2000: 801).

In 1973 Ethiopia plunged into a famine, the likes of which the modern world had never before seen splashed over the front pages of newspapers. World food security became the hot topic in an increasingly globalised media network. During the same decade, temperature records in the Northern Hemisphere were showing a distinct warming trend.

Since the greenhouse effect was first proposed, Swedish scientist Svante Arrhenius hypothesised in 1896 that the human species would facilitate global warming by pumping more carbon dioxide into the atmosphere through burning fossil fuels. Anecdotal reports had first emerged in the 1930s, testifying to a general warming trend. Then in 1939 amateur meteorologist Guy Stewart Callendar calculated a general global increase of nearly 0.5°C between 1890 and 1935, matching a steady increase in atmospheric carbon dioxide. When computer technology finally allowed mass processing of meteorological data in the 1950s, it showed a confusing cooling trend in the North after 1940. This was later attributed to sunspot activity, the effects of which dissipated by the 1970s and the North began to warm again (Weart, 2003).

Droughts and other extreme weather events, notably the famine in Ethiopia, had the media abuzz with speculation about this new global consequence of industrial pollution. The First World Climate Conference was held in Geneva. The year 1981 was declared the warmest on record and the scientific community entered the 1980s by calling on governments to take action. The Montreal Protocol showed that it was possible for global action to reduce emissions into the atmosphere by placing a cap on the production of ozone-depleting CFCs.

Then 1988 achieved the new and dubious distinction as the hottest year on record (it would later be passed by an even hotter 1998 (Houghton *et al*, 2001: 2-5), and then again by soaring temperatures in 2005), and the United Nations established the Intergovernmental Panel on Climate Change (IPCC). Atmospheric carbon dioxide concentration was finally pegged at 350 parts per million (ppm), which was up from the pre-industrial level of 280 ppm. A 500 ppm concentration was believed to be “dangerous”. A strict call was made for the reduction in greenhouse gas emissions but it was understood that the planet was already committed to a small amount of global climate change.

The decade of the 1990s saw large scale global collaboration amongst the scientific community through the IPCC. A 1992 meeting in Rio de Janeiro had over a hundred countries sign the United Nations Framework Convention on Climate Change (UNFCCC) in which they acknowledged the climate system as a shared resource and produced the first global effort to curb global warming. The United States signed the agreement. However when in 1997 the members met to sign the Kyoto Protocol – which committed members to set targets for emissions reduction – the United States failed to ratify the agreement. Since the United States contributes to nearly a quarter of all global emissions (World Resources Institute, 2005), its lack of commitment to Kyoto remains one of the most contentious issues in the politics of climate change and will be looked at more closely later in this thesis.

In 2001 the IPCC released the most up-to-date and comprehensive body of work, *Climate Change 2001 – The Scientific Basis*. The consensus, now, is that the planet is committed to dangerous global warming against a background of unstoppable industrial growth.

Chapter 2: The climate change discourse

2.1 Timelines

There is a fundamental incompatibility between the timeframes of climatic change resulting from global warming – which play out in the context of geological time, and often over decades, centuries or millennia – and the daily, weekly or monthly deadlines of print media. This will inevitably influence the way in which climate change is reported and the accuracy with which it is done. The next section will also address the concept of how an event associated with climate change is deemed "newsworthy" within this context.

2.1.1 The geological timeline

"(I)magine that the earth – four thousand six hundred million years old – was a forty six year old woman. It has taken the whole of the Earth Woman's life for the earth to become what it was. For the oceans to part. For the mountains to rise. The Earth Woman was eleven years old when the first single-celled organisms appeared. The first animals, creatures like worms and jellyfish, appeared only when she was forty. She was over forty-five – just eight months ago – when dinosaurs roamed the earth.

"The whole of human civilisation as we know it began only two hours ago in the Earth Woman's life" (Roy, 1997).

While scientists sometimes find this level of anthropomorphism distasteful (see also Allan, 2002: 2-7) it does serve to illustrate well the extent of geological time which some laypeople find bewildering because of its vastness or how contrary it is to their religious world view. The geological history of the Earth spans 4 600 million years, in the context of a Universe which the scientific community has calculated at an estimated 13 000 million years old (Luhr, 2004: 22-23).

Earth, in its lifespan, only developed the nitrogen-oxygen blend of atmosphere in which current species can live about 2 000 million years ago, although its exact composition has fluctuated since then (Luhr, 2004: 28). Science has identified a natural fluctuation in climatic conditions during this time.

The Milankovitch Cycles:

Serbian scientist Milutin Milankovitch first argued that the Earth's path around the Sun wasn't as rigid as the scientific fraternity believed at the time, but rather that it wobbled and stretched its orbit in three predictable, rhythmic cycles all of which distinctly influenced the amount of Sun's heat entering the system. This is now an accepted scientific theory, known as the Milankovitch Cycles.

Firstly, Earth's path around the Sun stretches between a circular and elliptical course every 100 000 years. This changes its distance from the heat source and has a profound impact on global climate, triggering glacial and interglacial cycles that correspond to the 100 000 cycle.

Another two cycles repeat more regularly: every 42 000 years the Earth's axis tilts between 21.6° and 24.5° on its equatorial plain while every 22 000 years the axis wobbles like "a top about to fall" (Ruddiman, 2005: 49).

The latter movement, known as the precession, wobbles the planet between two phases: every 22 000 years, when the angle of precession puts the Northern Hemisphere closer to the Sun during its summer, it will receive the most concentrated sunshine (Ruddiman, 2005: 49), mirrored by warmer temperatures for the region; 11 000 years later, when the precession is at the opposite side of the cycle, the Northern Hemisphere will be further from the Sun during its summertime and thus receive less light. Temperatures there drop. A similar pattern will be seen in the Southern Hemisphere, but in reverse.

"Over the past three million years, these regular changes in the amount of sunlight reaching the planet's surface have produced a long sequence of ice ages (when greater areas of Northern Hemisphere continents were covered with ice) separated by short, warm interglacial periods" (Ruddiman, 2005: 48).

Other influences:

Volcanic activity can change the concentration of greenhouse gases in the atmosphere, thereby facilitating global warming (Benton, 2003); or it can put so much dust and ash in the atmosphere that incoming radiation from the Sun is unable to penetrate or is reflecting, causing global cooling (Houghton *et al*, 2001).

Sunspot activity, associated with tidal action of the Sun, occurs in 22 year cycles: in fact, in two 11 year cycles during which solar activity reaches a maximum and minimum (C. Rijsdijk, personal communication, April 8, 2005). Such activity has been written in the growth rings of Ponderosa Pines in Arizona, showing growth spurts during warmer periods. An increase in solar

activity is associated with increases in temperature and more rain in the Northern Hemisphere; less activity produces a decrease in temperature and decline in rainfall there.

The systemic lag:

Heat from the Sun constantly enters Earth's atmosphere. The laws of physics then determine that this heat drives the engine of convection in the atmosphere; which in turn drives circulation of ocean currents. This, along with the spin of the planet, produces constant systems of circulation which redistribute heat around the planet.

Without this redistribution of heat, life on Earth would be squeezed into a narrow belt of comfort at about "38° north and south of a boiling equator" while the rest of the planet would be a frigid hell (Watson, 1984: 20).

A dominant system is the thermohaline circulation: the Gulf Stream is a warm body of salty water which carries about one million billion watts of heat (Brown, 2005) on the surface of the ocean from the Gulf of Mexico northwards across the Atlantic to Greenland where it cools and sinks to the ocean floor. There it begins a slow journey south along the ocean floor until it reaches the Antarctic region. This conveyor belt drives global climate and can take as much as a thousand years for one cycle to complete (*Ocean model techniques,* No Date).

This illustrates just how slowly the system which redistributes heat around the planet actually works. This inherent lag in the system means that the consequences of global warming being witnessed today – large scale glacial retreat, earlier arrival of spring, plants and animals shifting their home ranges and extensive coral bleaching – are the result of greenhouse gas emissions put out during the 1960s and 1970s. Emissions from the current decade will only play their hand after about three to five decades.

If all greenhouse gas emissions were to cease immediately – if all factories were shut down across the globe, every car banned, cattle feedlots reduced – it would take decades, if not millennia, for the momentum of warming and change to slow down and normalise.

Changes in how the climate system performs will not be smooth or gradual, either, but will tend to lurch, producing sudden changes (*Essential Background*, No Date).

2.1.2 News, deadlines and event-oriented reporting

The human species only settled into an agrarian way of life as the planet exited the most recent glacial period about 10 000 years ago (Ponting, 2001: 51). While rudimentary writing dates back 3 200 BCE (before common era) where it developed in Mesopotamia (Ponting,

2001: 105), the Gutenberg press finally democratised reading and writing (and, by association, access to knowledge) with its movable type technology in the 1440s (Ponting, 2001: 375; also Diederichs & De Beer, 1998: 87), and the Renaissance brought a more scientific view of the world where previously religious explanations had prevailed for the way in which the world works.

News, as a means of communicating information to a mass audience – mass communication – can be traced back to as early as the Roman Empire under Julius Caesar in 59 CE (Common Era). Decisions made by the senate were recorded as "daily acts or transactions" and posted in the Roman Forum – the politico-economic seat of the administration at the time – in the form of daily bulletins (Diederichs & De Beer, 1998: 86).

"At the same time Caesar ordered the daily posting of *acta diurnal*. The content was… similar to modern-day newspapers, consisting of information about Caesar as head of state, and about… trials and executions. Information on aspects of special interest to the Romans, such as the fall of a meteorite and even sports news was included. A limited number of transcriptions were sent to other parts of the Roman empire, and copies were kept in the official archives… (it) comprised official information only, it should be seen as the forerunner of government or official propaganda publications rather than newspapers as such" (Diederichs & De Beer, 1998: 86).

A reporter in any newsroom today, in the context of geological time and human history, exists in such a tiny area of space and time. Yet their reality is what happens today and is reported on for the next deadline. It is a small wonder, then, that so many news reporters – whose lives are dictated by this flurry of daily/weekly/monthly deadlines – might lose sight of long-term climatic trends for the sake of sudden events which are immediately newsworthy.

The news event:

In delivering environmental stories, a sense of "immediacy and pertinence" is necessary, argue Allan *et al* (Allan *et al*, 2000: 5). This is in keeping with the function of news which is always to "answer… the basic question of journalism: 'What's new?'" (De Beer, 1998: 6) while meeting normal functions of a newsroom.

Even under Caesar's Rome a citizen began gathering information, anything from "bumper crops to the burning of witches at the stake… and selling this on the contemporary local markets". Diederichs and De Beer argue that this man, Chrestus, was the first journalist or "diary writer". He was criticised by Cicero, a writer and orator of his time, for the sensational nature of this news (Diederichs & De Beer, 1998: 86).

Already it is clear that the driving imperative behind news in mass communication is the need for the information to be new and in many cases somehow out of the ordinary. Furthermore, "news is the desire to find a new angle to stories… (which) contributes to the well-known issue-of-the-month syndrome… allow(ing) persistent and growing environmental problems to slide out of sight if there is nothing 'new' to report" (Wilson, 2000: 207). The climate change story, says Wilson, fits well into this category.

"The underlying causes and long-term consequences are often overlooked in the day to day grind to find a new angle by deadline" (Wilson, 2000: 207).

Environmental issues often do not make appealing news stories because in many cases they don't meet these criteria. Unless an environmental story is dramatic, such as an oil spill or chemical explosion, a news editor must appoint space for issues relating to politics, society, economics and sport which are topical today and old news tomorrow. The slow decline of a wetland, for instance, would not compete with these on the news agenda.

Within this context, how does one then prioritise the "newsworthiness" of environmental "events" which occur over a long period of time – the slow melting of a glacier, the decline of fish stocks over ten or fifty breeding seasons (which could be as many as one or five decades).

A volcanic eruption or hurricane, however, makes perfect news.

The result is that reporting on environmental crises is typically event-oriented (Allan *et al*, 2000: 8).

In the early coverage of environmental issues, say Allan *et al*, there was a tendency to focus on the spectacular. Natural disasters such as hurricanes and drought received greater coverage than "everyday hazards" such as pesticide dependent farming and lead in petrol. The result was media which "overstated sudden and violent risks and underestimated chronic ones" (Allan *et al*, 2000: 6).

This analysis is particularly pertinent to the reporting of global climate change. Certainly the steady rise in average temperature in the Western Cape, for instance, is a chronic regional symptom of wider global atmospheric pollution. However only those scientists who follow this trend with required equipment will notice this warming tendency over fifty years which will emerge from the daily and seasonal variances in temperature. Temperature would only feature on the news agenda if an anomaly occurred, such as a 50°C heat wave in Cape Town. If air conditioning units began to fail in office complexes and productivity dropped, a likely angle to emerge would be the cost to the economy – this would make a strong case for placing the article on the front page of a newspaper.

It is not within the scope of this thesis to conduct a thorough quantitative analysis of the increasing volume of global warming articles which have appeared in the press in recent years. However an anecdotal observation of newspaper archives suggests that reporting on the issue has increased significantly during the 18 months leading up to the penning of this paper. Three distinctive events have elevated the topic to the front pages of newspapers:

- Recurrent drought in the Western Cape, resulting in chronic water shortages and failure of the wheat crop with calculable losses to the economy.
- The G8 (Group of Eight) Summit in Gleneagle, Scotland, in July 2005. The G8 leaders placed at the top of their agenda the issues of global climate change as well as aid to Africa which as a continent will be amongst those hardest hit by climate change.
- The devastation of Hurricane Katrina to New Orleans, when it is increasingly understood that global climate change will result in increased frequency and intensity of tropical storms.

One can surmise, in light of what is known about the prioritisation of events by the newsroom, that global warming would not have featured as widely on the news agenda during this period had these distinctly event-oriented occurrences not happened.

All three events had considerable political implications which enhanced their newsworthiness:

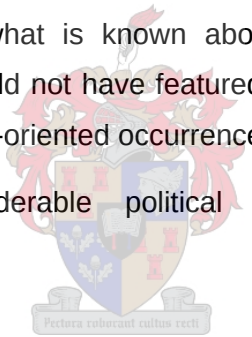

TABLE 1	
Event with social, political or economic implications	**Examples from the press**
Drought in the Western Cape: financial aid required by the farming community; social implications of drought particularly for socio-economically marginal farm labourers; questions arising regarding management of municipal water supplies to the Cape Metropole.	**"Cape water crisis to get worse"** (Gosling & Raymond, 2005). Reported on when Tony Frost, of the World Wildlife Fund, raised the issue of climate change to the Cape Town Press Club, saying that South Africa would be radically hit by drought and would run out of fresh water by 2015. Comments on the Western Cape water situation were received from Rashid Khan, regional director of water affairs. **"W Cape cabinet asks for R26m in drought aid"**

TABLE 1	
Event with social, political or economic implications	**Examples from the press**
	(Gosling, 2005) in which Western Cape Premier Ebrahim Rasool "called on the central government to declare the province's drought-stricken region a disaster area, and has applied for R26-million to ease the local agricultural crisis". He spoke of the need for "major intervention" to protect farm workers from losing their jobs as farmers "went under".
G8 Summit: the continued reluctance of US President George W Bush to ratify the Kyoto Protocol and thus set targets to cut greenhouse gas emissions and tackle climate change; this came under the spotlight as all other G8 leaders have committed themselves to resolving this problem.	**"Police warn G8 protesters"** (Gray, 2005). This was one of many articles pointing out "the major differences between the United States and other G8 nations over the severity of global warming and how much humans are to blame". "**G8 leaders agree, global warming is a problem**" (2005). In spite of these differences, the G8 leaders did reach "a basic agreement that recognises global warming as a problem partly caused by human activity" yet no emissions targets were set. "French President Jacques Chirac called the agreement… a partial victory, given US President George Bush's long-standing refusal to join the seven other G8 leaders in ratifying the 1997 Kyoto Protocol."
Hurricane Katrina: the US government was heavily criticised for failing to act speedily when this catastrophe hit; some critics blamed the war in Iraq for diverting funds required for	In **"This is turning into the ethnic cleansing of New Orleans"** (Klein, 2005), Naomi Klein wrote that "there is empty housing for the tens of thousands made homeless by Katrina - but the white elite have other plans". US president George W Bush meanwhile rejected

TABLE 1	
Event with social, political or economic implications	**Examples from the press**
upgrading the seaside levies; strong racial theme emerged as many blamed the government for not acting speedily because much of the population of New Orleans is black.	such claims of racism playing a part in the response to Hurricane Katrina (Wilson & Borger, 2005) but nevertheless accepted blame for the lack of action (Wilson, Borger & Glaister, 2005) as Michael Brown, head of the Federal Emergency Management Agency (Fema), resigned. There is no shortage of articles discussing the link between Hurricane Katrina and global climate change. Many articles also linked the hurricane refugee crisis with what can be expected as entire communities retreat into the hinterland as sea levels rise due to global warming. The Institute for Environmental and Human Security at the United Nations University in Bonn predicted that "rising sea levels, desertification and shrinking freshwater supplies will create up to 50 million environmental refugees by the end of the decade" while "environmental deterioration already displaced up to 10 million people a year" (Adam, 2005) and the situation would get worse.

These are all intensely compelling news stories; arguably much more so than a hurricane which does not make landfall (and hence causes no notable damage that can be measures in economic terms) or a decrease in rainfall in an uninhabited region which has no survival implication for people. They are certainly more likely to make the front page of a newspaper than the story of a glacier which has lost a few more millimetres of ice off its retreating front. Rather, the latter would be more likely to be relegated to the features section, and even so the occurrence of the above news stories would only serve to make global warming topical, and thus remind the news editor that the glacier feature might be worth printing because it is at the forefront of people's minds as long as the three other events are grabbing the headlines.

The result is an environmental crisis represented as “a specific event-oriented catastrophe” (Allan *et al*, 2000: 8). Later academic studies reviewed by Allen *et al* identified long-term environmental threats which were not covered by media because they were “issue-sensitive rather than event-oriented”, resulting in reporters not using those sources which could place events in context or could “speak to issues of mitigation and prevention” (Allan *et al*, 2000: 9). Such reporting may also tend to avoid the more complex causes behind the immediate crisis.

Furthermore, note the comment of Wilson who said that ”climate change is a difficult story to recreate for a daily news budget, while a short-term drought episode (or any other weather event) is much easier to visualise and portray” (Wilson, 2000: 206).

Punishing deadlines and the “noise” of news production:

The production of news hinges on the deadline. For a daily paper, this comes around once or twice (sometimes three times) a day. For weeklies and monthlies, the deadline will shift accordingly. This has a two-fold effect, specifically for daily print media. Firstly it allows for rapid turnover of news and hence for greater coverage of a wider range of issues. Secondly, it may undermine accuracy.

The production of a paper for publication in a scientific journal goes through a rigorous peer review process: a paper is submitted by a researcher to the editor of the journal; external specialists in the field concerned are requested by the editor to read the paper, checking for accuracy in the scientific process, the literature and the findings. If the article is found to meet the necessary criteria, the paper will be published. This process can take months to complete and while it is by no means infallible it does go a long way towards keeping the scientific community accountable within itself and the science up to a prescribed standard. It also means that before a paper goes to print, it will have to be edited, rewritten and re-edited several times. The opportunity for mistakes to make it past so many gatekeepers is significantly reduced.

The same cannot be said for the production of daily news. In the case of an environmental story, the generalist writer assigned to that beat will be required to cover a wide range of environmental issues (see Section 2.5). Information gathering in an event-oriented news situation will most likely involve visiting the site of the event along with interviewing experts and witnesses rather than gathering and reading through screeds of peer reviewed articles (even so, these would probably only provide background information and none that pertained specifically to the event which took place to put said environmental issue on the newsroom agenda for that day). The article will be hastily written in the course of a few hours before being edited, shortened and, in some cases rephrased by a sub-editor who has even fewer expertise in science writing and environmental issues than the writer.

"Noise" is defined by Diederichs and De Beer as "disturbance in the communication process that distorts the message and prevents the receiver from getting the message as it was intended by the source… it may be 'physical', such as ink blots on newsprint or poor technical reception on television, or 'semantic', such as misunderstood meanings" (Diederichs & De Beer, 1998: 11).

In this case the following could introduce "noise", thus undermining the accuracy of the story and the intended meaning: the generalist nature of the journalist's training (even if he or she is a specialist environmental writer, it is unlikely that the person will be trained in freshwater ecology, hydrology, oceanography or climatology, to name just a few of the areas in which the impact of climate change is experienced); the verbal transfer of information from a source to the reporter is spontaneous, unedited and potentially less accurate than information gained from a peer reviewed article (even though in the case of daily news, such articles usually best serve as background information rather than for information pertaining directly to the news event). The speed with which the article must be written can also dilute meaning. Further editing of copy by the sub-editor who is even less familiar with the scientific processes being referred to the in article may serve to falsify the meaning even further (see Section 2.5).

"The overwhelming pressure of deadlines, which tends to make the stories overly simplified and one-sided… (u)nder the pressure of a deadline, it is easy to rely on one source which can alter the balance of a story" (Wilson, 2000: 207).

Diederichs and De Beer maintain that a "tried and tested infrastructure for production" is necessary to meet the rigours of daily news production.

"Everything centres around the theme, 'the newspaper must be put to bed', and both experienced and inexperienced media people will maintain that every publication is nothing short of a miracle. Literally millions of words are processed daily and must be sorted, selected, checked, evaluated, edited, rewritten, typeset, laid out, made up into plates, printed and distributed. Most of this process takes place within cycles of 24 hours" (Diederichs & De Beer, 1998: 111).

During a symposium held in 1991 with the aim to foster the training of science writers by institutions in South Africa, veteran science writer, humorist and columnist James Clarke made the following observation:

"*The Star* publishes half as many words as the Bible every day and we change editions seven times. We are going to make mistakes. So is every major newspaper. Journalists' stories and articles have to be spontaneous, they cannot be subject to weeks and months of peer review. Journalists will get things wrong, just like accountants and scientists but they have to publish their mistakes immediately. The main thing is that… they are smartly and promptly

corrected. A scientist who enjoys showing his work, even if he is uncertain of what precisely he is on to, is, I suggest, a value to science and to newspapers" (J. Clarke, seminar paper, September 25, 1991).

While the processes behind the production of news are by no means an excuse to produce poor articles, it does explain why scientists regard the writing community with caution. "Scientists think that whatever they tell a reporter is bound to come out wrong" (Wilson, 2000: 205).

In a survey of undergraduate students and environmental reporters – which sought to gauge their understanding of climate change after exposure to the subject through media, in particular television – Wilson observed that poor comprehension of the subject cannot be apportioned entirely to "the media" or even to "television" because "how television journalism operates… affects the transference of information to the audience, not just the medium itself" (Wilson, 2000: 214). The same argument can surely be made for the functioning of a newspaper newsroom, too.

Yet journalists find the jargon associated with science almost impenetrable at times and may be put off by scientists who they perceive to be "unemotional, uncommunicative, unintelligible creatures" (Wilson, 2000: 205).

2.2 Where are all the dead bodies?

If it bleeds, it leads (Allan, 2002: 2). It's that simple.

Veteran foreign correspondent Edward Behr witnessed this predisposition of news for human tragedy – and how it can result in the manufacture of news – when he covered the evacuation of Belgian settlers from the Congo region as the colonial power suddenly lost its grip on the central African country.

In an aircraft hanger in Léopoldville, crowded with Belgian civilians waiting the next available flight out of the region, he observed a BBC reporter and his film crew wandering through the crowd.

"Anyone here been raped and speaks English?" the reporter was heard asking the crowd (Behr, 1978: 136).

Similarly, Wilson highlights another case study regarding NASA (National Aeronautics and Space Administration) scientist James Hansen, who declared to the United States Congress in the late 1980s that he was "99 percent confident that global warming" was happening (Wilson, 2000: 204). However Hansen did not say that the severe drought and heat experienced in 1988

across parts of the United Sates were due to increasing greenhouse gases – and yet scientists critical of the media's coverage of the issue argue that journalists made this inference and reported on it accordingly. Some journalists actively sought out scientific sources who would make a direct correlation between global warming and the seasonal drought (Wilson, 2000: 207). Journalists do seek out angles or "hooks" for their stories which can result in the manufacture of news.

This need for the human element is inherent in reporting.

The human element with "corresponding emphasis on the extraordinary at the expense of the ordinary" is necessary in the reporting of environmental issues (Allan *et al*, 2000: 5). As Allan *et al* point out regarding the crisis surrounding Bovine Spongiform Encephalopathy (BSE) in Britain: the subject received little coverage until a link was made with BSE and the fatal human variant of the disease, Creutzfeldt Jacob's Disease (CDJ). They quote a journalist who said "we needed dead people, well, now we've got them" (Allan *et al*, 2000: 10).

The United Nations Intergovernmental Panel on Climate Change (IPCC) has long predicted that tropical storms will increase in number and intensity. Hurricane Katrina became the ideal case study because this tropical storm was a record breaker: the most expensive natural disaster to hit the Unites States, with damages amounting to $125 billion (*In depth – Hurricane Katrina,* 2005).

The trend of increasing occurrence and intensity of such storms seldom receives mainstream news attention. Hurricane Katrina became the event which then facilitated the occasional references to the broader trends of climate change, placing the issue squarely on the front page for a period. Had the storm made landfall at a relatively unpopulated or economically unviable area, there would have been little news value and the climate change trend associated with the once-off event would probably have remain unreported.

The Hub model of mass communication proposes that mass communication is circular, dynamic and ongoing, where the process is not unlike dropping a pebble in a pool thereby causing ripples to expand to the edges of the pool before being deflected back (De Beer, 1998: 17). At the centre of this news flow model are the communicators (editorial staff, etc.). A codified message (i.e. a news story) must pass through these gatekeepers before it can reach the final audiences.

"These gatekeepers will decide what information will eventually reach the audience through the mass media. The message allowed through by the gatekeepers will subsequently be edited by the regulators: public interest groups, advertisers and consumers influencing the mass media… Each individual in society will receive the messages from the mass media through

filters or frames of reference. These filters may either have a positive or a negative effect on the message received" (De Beer, 1998: 17).

There is reason to believe that a maturity has crept into the reporting of climate change by some of the Western media. Where the early reporting of global warming "began with catastrophism, with dramatic overstatements at the beginning of the new finds as a news hook" it has evolved into "uncertainties being overstated as part of the new hook to a story that is generally accepted" (Wilson, 2000: 205). While these uncertainties stem from the complex results of the modelling used to predict climate change, and could be/has been used to insinuate that the climate change fraternity does not have enough clarity to say conclusively that climate change is happening, it suggests that reporters might be attempting to get to grips with the complexity of the science itself.

2.3 Local angles to global problems

2.3.1 Local versus global

Most environmental news must at least have a national or local angle, depending on the distribution of the print medium, in order to be prioritised in the news of the day. Global climate change plays out over a far grander scale. It is often difficult to make direct correlation between seasonal and climatic phenomena impacting on Western Cape wheat crops, for example, when global climate change is better recognised as an ongoing trend.

One of the biggest challenges for South African reporters is to find the local angles when talking about global warming predictions. This appears to be a problem for regional journalists everywhere. The IPCC has drawn up several possible scenarios for climate change using General Circulation Models. This is an enormously complex science and there are, predictably, some contradictions in the results; however this should not be reason enough to dismiss the findings.

When Wilson wrote about the complexities of reporting on climate change, these models painted their predictions in broad sweeps. Essentially the models used in predictions consisted of a grid of the Earth when trying to produce a "three-dimensional representation of the atmosphere" (Wilson, 2000: 204). The result was a broad prediction, for example, for the region of the Western Cape.

A second generation of modelling is producing more refined predictions using a smaller grid. It may still be impossible to predict exactly how the climate on the Cape peninsula would differ from that of the Agulhas Plain. However where the first generation modelling simply predicted a

warming and drying trend likely to sweep through the entire Western Cape of South Africa in the next 50 to 100 years, now the modelling is saying that while this is largely true, it appears that some mountainous areas in the region may in fact receive *more* rain (B. Hewitson, personal communications, October 18, 2005).

In providing a local angle, this will assist journalists in obtaining the "hook" needed to report on the global trends surrounding climate change (Wilson, 2000: 2004).

2.3.2 North versus South

A strong bias in weather records and scientific analyses of climate change exists in the Northern Hemisphere. This means that for reporters in the Southern Hemisphere, information and scientific papers relating to their local or national experience will be harder to come by.

That may, however, be changing. The South African government commissioned the South African Country Studies Report in the late 1990s which looked at the likely impact of climate change on the country's terrestrial and marine biodiversity, disease, water security and agriculture. This was eventually summarised into the *Initial National Communication under the United Nations Framework Convention on Climate Change* (2000), submitted to the United Nations late in 2004.

More recently the scientific community is in the process of releasing the second generation modelling which will give much greater clarity on the future of South Africa's natural heritage, agriculture, water resources and more. The numerous scientific, peer reviewed papers expected to emerge from this process in the next months could be a valuable resourced to journalists who are inclined to seek them out and utilise them.

2.4 Consumer demand: entertainment displacing information

The function of mass communication is to provide the audience with a constant supply of information, thus influencing, educating and entertaining us (De Beer, 1998: 6).

The entertainment role of media has long been understood. In the very first thesis on the press, the author Tobias Peucer wrote in 1690 that "the aim of news was to provide a reproduction of events in a form which would satisfy people's need for utility and entertainment".

De Beer argues that the different mass communication media today not only "realise people's need to get to know the world around them by means of information which is relatively easy to obtain at an affordable price, but mass communication also fulfils their need to be entertained" (De Beer, 1998: 6).

Some critics have commented on the growing tendency for feel-good entertainment to replace information in the media involved in mass communication.

Allan (2002) argues that many scientists view the world of media as a “superficial world driven by a frenzied obsession with entertainment over information, with style over substance” (see also Allan, 2002: 1). One might ask how a science writer must deliver a factually sound but no less complicated story about the impact of climate change on regional weather systems when so many audiences require entertainment first?

Speaking at a media conference hosted by Associated Press in New York in October (Shields, 2005) former US Vice President Al Gore warned that the trend for entertainment to supplant information, particularly through the medium of television, was serving to undermine the democratic process in the United States (Gore, 2005).

Since television replaced print in the 1960s as the medium of choice for the public to gain their news and information, the “marketplace of ideas” has been undermined along with other public debates which uphold a democracy. The result, argues Gore, is that the “shared democratic enterprise” of knowledge went from being in the hands of the people to being “mediated between wealth and power”. It is interesting to note that the Marxist-Leninist model of mass communication states that mass communication allows working class ideals to be put across and for the ruling class to be challenged and even undermined through this process. It would be interesting to explore further how such theorists would view Gore’s interpretation of this shift in the flow of knowledge through and ownership or control of media (De Beer, 1998: 18).

Previously, Gore maintains, individuals had easy and free access to participate in the “national conversation by means of the printed word” which globalisation in television now makes “virtually impossible for individuals to take part” therein. This is described as "the refeudalization of the public sphere" by German philosopher Jurgen Habermas – translated by Gore to refer to the “feudal system which thrived before the printing press democratized knowledge… was a system in which wealth and power were intimately intertwined, and where knowledge played no mediating role whatsoever. The great mass of the people were ignorant. And their powerlessness was born of their ignorance” (Gore, 2005).

This, along with the “imposition by (media) management of entertainment values on the journalism profession” is “damaging the public discourse in the media… result(ing) in scandals, fabricated sources, fictional events and the tabloidization of mainstream news” where “television news has been ‘dumbed down and tarted up’”. This serves the purpose of keeping “‘eyeballs glued to the screen’ in order to build ratings and sell advertising”.

Gore argues that this is evident in the amount of trivial issues which have headlined in US media – where, for instance, the O J Simpson and Michael Jackson murder and paedophilia trials received so much coverage (to the point that some networks even produced daily re-enactments of the Jackson trial) when issues such as "the global climate crisis, the nation's fiscal catastrophe and a long list of other serious public questions" remain firmly out of the headlines.

Quoting host of "The Daily Show", Jon Stewart, Gore reiterates that there should be "a distinction between news and entertainment… because the subjugation of news by entertainment seriously harms… democracy".

In an indication of how misinformed much of the US public is about issues of global consequence, Gore points out that "three quarters of the US believes that Saddam Hussein was responsible for the September 11 attack on Manhattan... (t)hat's how misinformed the public is".

Two examples emerge of how climate change has allowed for a crossover from news and information to entertainment.

2.4.1 The Day After Tomorrow

The Day After Tomorrow, product of *Independence Day* and *Godzilla* director Roland Emmerich, is a quintessential disaster "flick" about improbably rapid global climate change which almost overnight sees Tokyo shattered by hailstorms, New Delhi inundated by snowstorms, Los Angeles being torn apart by tornados, Scotland freezing over and a tidal wave engulfing New York as most of the Northern Hemisphere freezes over. The attendant human drama and predictable love interests are woven into this essentially shallow narrative as the chief protagonist (a climatologist played by actor Dennis Quaid) heads to the Arctic-like New York to rescue his son.

Some critics thought the movie might make the US Republican administration finally take note of the issue of global climate change. The *Washington Post*'s Patrick Michaels wrote of the movie: "if it doesn't actually unseat George Bush, it won't be for lack of trying" (Michaels, 2004). Instead it raked in a handsome $125 million and became just another "cheesy" flick with great special effects (Clinton, 2004).

Critics within the scientific fraternity were not quite as scathing as the film industry reviewers. While the time scales within which these events occur and the links between each event are extremely improbable, the spirit of the film is fairly true to the essence of the science: global climate change is happening and sudden, catastrophic weather phenomena may occur as a result. Oxford University physics lecturer Dr Myles Allen picks apart the accuracy of the science:

a storm is not going to send a tidal wave to New York (rather, ocean floor tectonics would be responsible for such an event); the laws of thermodynamics don't allow for a hurricane to bring stratospheric temperatures to sea level and the speed with which the film's scientists "embed a hurricane model into a global weather model in 48 hours" is highly unlikely (Allen, 2004: 347). However he gives the viewing public enough credit to understand that the film is not a climatological forecast and wonders if it might do for the geosciences what the movie "*Top Gun* did for US Air Force recruitment".

2.4.2 Michael Crichton's State of Fear

The scientific community is not this generous about the latest offering by science fiction writer Michael Crichton (creator of the television series *ER* and writer of *Jurassic Park*). In *State of Fear* a group of eco-terrorists are hired to stage a catastrophic weather event in order to convince the apathetic world that global climate change is a reality. The protagonist – the absurdly talented MIT (Massachusetts Institute of Technology) professor, Dr John Kenner – has the job of thwarting this plot and exposing the fanatic behind it.

Not unlike the view of climate change sceptic Bjørn Lomborg (see Section 2.6.2 below), Crichton believes that "the threat of global warming has been exaggerated by environmental organizations (who) are fomenting false fears in order to promote agendas and raise money" (Stossel, 2004).

This view comes through clearly in the text, for while Crichton's storyline of environmentalist conspiracy has a thin veneer of fiction, it is stretched over weighty scientific literature. Throughout the book, the Kenner protagonist lectures various characters on the science of climate change, the fruitlessness of the Kyoto Protocol and various other aspects of this highly politicised issue. The book is festooned with footnotes which the author says are "real". While the book "addresses real scientific issues and controversies… (it) is similarly selective (and occasionally mistaken) about the basic science" (*Michael Crichton's,* 2004). In the end, the author is using a fictional narrative to give his spin on the science of climate change where he suggests that anthropogenic climate change should not be of any great concern (see Mooney, 2005; and *Michael Crichton's,* 2004).

Most alarmingly of all, are the "footnotes and appendices… (which were) intended to give an impression of scientific authority (appear) to have succeeded, as the book has already been respectfully cited in the US Senate as a serious contribution" (Allen, 2005: 198).

In the end, Crichton's *State of Fear* is little more than "Viagra for climate sceptics", states Allen rather boldly in his review of the book for *Nature*. Worrying, still, is the notion that a

climate-conscious public might find its fears allayed by this text and undergo a change of attitude similar to the "transformation of… (the) lawyer who drives a clean 'hybrid' car and is too shy to admit he has never fired a gun, into a gun-toting carbon junkie at the wheel of a fuel-hungry sports utility vehicle" (Allen, 2005: 198).

2.5 Jack of all trades, master of none?

The environmental "beat" which emerged with the similar consciousness in the 1970s may have resulted in the appointment of dedicated writers, but these were few and far between compared with other specialist areas such as the political, financial or sports beat. The responsibility of environmental writers (in this the author would also include science writers as the two often cover similar or overlapping subjects) is no less than those of the more established beats.

Kris Wilson writes that the responsibility of translating "complex, scientific concepts to the 'lay person'" increasingly falls with the media. When it comes to doing so with the science of climate change, the responsibility is large and challenging particularly as the media are "bereft of environmental reporters and specialists" (Wilson, 2000: 201).

Furthermore accurately communicating climate change, with its complex range of angles and impacts, will be even more difficult for those reporters who have "little or no science background" (Wilson, 2000: 208).

Similarly, most environmental or science writers became specialists in this area through on-the-job experience, much the way other reporters become specialists (i.e. starting as a junior reporter, later being appointed to a specific beat and growing in their field as they gained experience).

It is noteworthy that in a survey of 249 members of the Society of Environmental Journalists in the United States, Wilson found that there was generally a great deal of ignorance and misunderstanding about many of the important but less well-known greenhouse gases such as "methane and nitrous oxide and their sources, cattle production, fertilisers and rice agriculture" (Wilson, 2000: 211). This may insinuate a broader lack of understanding of the subject.

Reporting on climate change is not limited to one field of science. Rather, the science itself is addressed by climatologists, oceanographers and specialists in the logarithmic modelling used to simulate and predict future changes in the global system. The consequences of global warming are so pervasive that they are studied by a significant number of specialist scientists from a variety of disciplines.

Here are some examples of the possible climate change consequences for the Western Cape and the likely expert sources in South Africa's scientific and government communities which could be used to gain additional information on each story:

TABLE 2		
Climate change consequences	**Scientific field or expert source**	**Reporting beat or angle**
Warming and drying in the region threatens a) the soft fruit industry and b) wheat farming in the Western Cape (Midgley *et al*, 2005); Economic depression and job losses.	Climatology, University of Cape Town (UCT); Horticulture, Stellenbosch University (SU); Provincial Dept of Agriculture; Social welfare.	Agriculture; Economics; Political.
Depletion of fisheries on the West Coast due to altered wind patterns; Economic depression and job losses (Midgley *et al*, 2005).	Climatology, UCT; Marine and Coastal Management (Dept of Environmental Affairs and Tourism); Marine experts at Anchor Environmental Consultants, UCT; Social welfare.	Environment; Economics; Politics.
Threat of extinction of rare flora and fauna in the Cape Floral Kingdom due to increased incidence and intensity of both drought and fire in the fynbos community; Potential spin-off to agriculture, where the Cape honey bee fertilisers commercial crops and is entirely dependent on fynbos to forage during winter (Turpie *et al*, 2003).	Climatology; SA National Biodiversity Institute; Protea Atlas Project (flora); Avian Demography Unit, UCT (sugarbird and other endemic birds); Horticulture, SU.	Environment; Agriculture; Economics; Politics.

TABLE 2		
Climate change consequences	**Scientific field or expert source**	**Reporting beat or angle**
Socio-economic implications.	Department of Agriculture; CapeNature (the Western Cape's nature conservation body); Specialists from botany and zoology departments across the region.	

Already it is evident that researching and writing an accurate climate change story can be difficult for the above reasons. These, and the need for mass media to grab attention in a competitive market, leads to problems with accuracy and a tendency to spin "dramatic, eye-catching, entertaining stories" (Wilson, 2000: 201).

"Cape water crisis to get worse" (Gosling & Raymond, 2005) illustrates how these two factors can result in sensational but inaccurate reporting on the issue.

The article, which was positioned on the front page of the *Cape Times*, quoted the Chief Executive Officer of the South African office of the World Wildlife Fund (WWF), Tony Frost, as saying "the two driest places on Earth as a result of climate change would be China's Yangtze River Valley and South Africa".

None of the scientific literature has suggested this fact to be true. While warming and drying will occur, particularly on the western side of the country (Midgley *et al*, 2005), some areas in the eastern region will have altered rainfall patterns that will result in increased sporadic inundations and flooding (*South Africa: Initial National Communication*, 2000).

Frost may have meant that these two regions would experience the greatest drying effect, relative to other places. Or he may have been misinformed by his source. Nevertheless, this extreme statement – which suggests that South Africa will become drier than the Gobi, Atacama and Sahara Deserts, amongst others – merely serves to mislead the public. If the reporter's error is pointed out to the public, it will undermine the public's faith in the reliability and trustworthiness of the reporters or the validity of the science.

“Scientists say there is no greenhouse effect” (Wilson, 2000: 201) is another example of how a lack of understanding in the newsroom can undermine the efficacy of journalistic interpretation of complex science into something which the public can access.

In this example presented by Wilson, it transpires that while the journalist who penned the article understood and reported on the science accurately, it was the headline writer (probably a sub editor) who did not have much background knowledge of the science of climate change and after a quick scan of the article, produced the above headline.

As discussed in Chapter One, the greenhouse effect is an accepted scientific theory and has been for many decades. The sub editor confused this accepted theory with the theory of anthropogenic global climate change. Again, the public is fed misinformation due to a lack of knowledge in the newsroom.

An interesting example to augment this argument comes from the pages of *The End of Oil*, written by a highly knowledgeable and specialist journalist Paul Roberts who says that “not everyone believes that temperatures have climbed so high or that the greenhouse effect exists or that anthropogenic CO_2 is playing any significant role in global warming. For years, skeptical (*sic*) scientists – some of them financed by skeptical energy companies – have claimed that the greenhouse effect is overblown and that the current warming trend is simply the latest in a progression of natural warming trends that have occurred throughout history” (Roberts, 2004: 119).

This is a curious misrepresentation of the debate. Nowhere in the heated discussion between scientists and climate change sceptics is the validity of the greenhouse effect questioned. What is questioned is whether anthropogenic greenhouse gas emissions and agricultural practices are causing the current global warming trend and, if so, by how much.

Wilson argues that the complexity of telling the story of global warming “acts as a constraint to good reporting and increased public knowledge. Reporters tend to explain their tendency to oversimplify as necessary to keep their readers’ or viewers’ attention, which may also perpetuate the perception that the media gloss over complicated stories like climate change” (Wilson, 2000: 207).

2.6 Risks and Agendas: who defines them and how?

Most of the general public will receive their knowledge and understanding of climate change from the mass media (Wilson, 2000: 201). Journalists, however, will receive their source material from many different places: climatological and other specialist scientists; politicians; environmental pressure groups; even from other media. During a survey of environmental

journalists, Wilson found that many preferred gathering their information on climate change from "previously published media reports". The problem with this is that the information is already diluted, it has already gone through one level of interpretation or translation in order to make it accessible to the public. Now, "any error or miscommunication in a previous media report could be passed along this 'news food chain', exacerbating any public misconceptions or misunderstandings" (Wilson, 2000: 214).

This section will discuss some of the likely sources for information in the highly politicised debate around global climate change and will allude to the possible agendas which might influence the type, quality and possible subjectivity of the information.

2.6.1 The Republican Agenda

Reporting on climate change, Wilson maintains, requires "not only good journalist skills and scientific literacy, but also an understanding of political dynamics" (Wilson, 2000: 208). This section will investigate some of the deeply complex political agendas underlying the subject of global climate change and how these might influence the ways in which society and media then grapple with the subject.

"American oil lust is a mixed blessing: on the one hand, such heavy dependence on foreign oil makes the United States vulnerable to disruptions in supply and to energy 'blackmail' and has, in addition, fostered a long tradition of doing whatever is necessary, covertly or overtly, to ensure that the United States – and US oil companies – have access to world oil supplies" (Roberts, 2004: 94).

The End of Oil author Paul Roberts identifies how critical oil has become in the basic functioning of global politics since the advent of the hydrocarbon economy. As developed countries have become increasingly dependent on cheap oil to fuel their heavily industrialised economies, so growth and the sustained lifestyles of their electorates have become dependent on their country's ability to source cheap oil. That, explains Roberts, has played out in government foreign policy and oil companies manipulating global oil markets.

"In a remarkably short time, oil had moved to the very epicentre of geopolitics. Just as nineteenth-century imperial powers had competed for the colonies with the best sugar and tea and slaves, the industrial powers of the twentieth century manoeuvred for the choicest oil regions. Driven by the ravenous demand for oil, Western governments and their able assistants, the international oil companies, vied for control over the hapless oil states of Venezuela, Mexico, Sumatra, Borneo, and especially the Middle East, where European and US diplomats redrew the map to maximise access to oil. As one French diplomat declared during a period of

particularly frenzied boundary drawing, 'He who owns the oil will own the world'" (Roberts, 2004: 38).

The 1991 Gulf War, Roberts argues, was the first military conflict which was entirely about oil. Kuwait, fearing Iraqi President Saddam Hussein's strength in the region, responded to the dictator's need to sell oil by flooding the market with their own oil supplies. This caused the price of crude to plummet. Hussein read these tactics "as tantamount to economic war" and invaded the country. The United States responded by sending their troops into the region in January 1991.

A decade later, following a series of manipulations of the oil market which saw the price fluctuate dangerously and trigger another energy crisis in the United States, the US launched its second invasion of the Gulf region. The smokescreen thrown up by the US administration was that the motivation was the "war on terror", having identified Saddam Hussein as a key figure who had pursued a programme to advance the production of weapons of mass destruction (WMDs) as well as being aligned with the al-Qaeda terrorist group blamed for the attacks on the World Trade Centre, Manhattan, on 11 September 2001. Justification from the White House for the second Gulf War was that it sought to bringing down global terror, dethrone a tyrant and bring democracy to the region. George W Bush's speech to the citizens of the US in March 2003 opened with the words: "My fellow citizens, at this hour, American and coalition forces are in the early stages of military operations to disarm Iraq, to free its people and to defend the world from grave danger" (*Operation Iraqi Freedom*, 2003).

Critics, on the other hand, say this transparent veil thinly hides the far more obvious motivation: the US needed to secure and stabilise their oil interests in the Gulf region and "revive American oil imperialism" (Roberts, 2004: 109-110). The neoconservative goal was for the US and its oil companies to secure access to Middle Eastern oil, thereby bypassing OPEC control of the commodity (this group had been manipulating the market for decades) (Roberts, 2004: 112). This would also increase the US's power over other countries which were dependent of Gulf oil, namely China and Europe.

This vast Republican agenda in the realm of geopolitics caused a "lopsided slant towards oil" in the administration's energy policy, explains Roberts.

It is no secret that the two men behind both Gulf Wars have their own vested interests. George Herbert Walker Bush, incumbent in the White House from 1989 to 1993, and his son George Walker Bush (2000 onwards) come from a family deeply rooted in the oil industry. Kevin Phillips, writing for the *Los Angeles Times* in 2004, reminded the reading public that the "Bushs' ties to John D Rockefeller and Standard Oil go back 100 years… Prescott Bush (grandfather to George W Bush) acquired experience in the international oil business as a 22-year director of

Dresser Industries (an arms manufacturer with an oil-services component)… George H W Bush worked for Dresser and ran his own offshore oil-drilling business, Zapata Offshore. George W Bush mostly raised money from investors for oil businesses that failed" (Phillips, 2004).

Enron, the giant US energy company, had strong links with the Bush family since the 1980s and George H W Bush gave one of its key personnel, Kenneth Lay "two prominent international roles: membership on the President's Export Council and the task of planning for a G-7 summit in Houston" after he became president.

"Lay parlayed that exposure into new business overseas and clout with Washington agencies. Family favoritism soon followed. When Bush senior lost the 1992 election, Lay picked up with son George W, first in Texas and then as a top contributor to Bush's 2000 presidential campaign. Before Enron imploded in late 2001, it had more influence in a new administration than any other corporation in memory" (Phillips, 2004).

It is interesting to note that George W Bush's biography on the White House web page skirts around this complicity by euphemistically referring to the president's ties with the oil industry as being his "career in the energy business" (*Biography of George W Bush*, No Date).

Dick Cheney, vice president to the incumbent US president, resigned from his position as Chief Executive Officer of the oil services company Halliburton when he joined George W Bush in the campaign for the White House in 2000. Cheney was later accused of securing lucrative business for Halliburton while serving in the White House, including of securing a "no-bid contract to rebuild Iraq" (*Sources: Cheney curses,* 2004).

Condaleezza Rice, formerly the national security adviser to George W Bush before being appointed as the US secretary of state in January 2005, served on the board of directors of the Chevron Corporation (*Biography of Dr. Condoleezza Rice,* 2005), the massive California-based energy company, for a decade before her appointment by Bush.

Rice's connection to the company – and the conflict of interest – was again highlighted when the company named one of its oil tankers after her in 2001 (Marinucci, 2001).

In her article for the *San Francisco Chronicle*, writer Carla Marinucci quoted Centre for Public Integrity's Chuck Lewis as saying there had never before been an "administration that has been so close to a single industry – in this instance, the oil-and-gas industry… Look at the president and his background, the vice president Commerce Secretary Don Evans and his oil interests . . . and now this (referring to the naming of the oil tanker after Rice)".

Damien Cave eloquently summed it up for *Salon.com*, the liberal online news service:

"No administration has ever been more in bed with the energy industry… The Bush administration's ties to oil and gas are as deep as an offshore well. President George W Bush's

family has been running oil companies since 1950. Vice President Dick Cheney spent the late '90s as CEO of Halliburton, the world's largest oil services company. National Security Advisor Condoleezza Rice sat on the board of Chevron, which graced a tanker with her name. Commerce Secretary Donald Evans was the CEO of Tom Brown Inc – a natural gas company with fields in Texas, Colorado and Wyoming – for more than a decade" (Cave, 2005).

According to the World Resources Institute, the United States is by far the largest producer of annual global anthropogenic greenhouse gas emissions. It produces 20% of all emissions, but coming from less than a fifth of the world's population, that amounts to about 23.8 tons of carbon dioxide per person in the US. Compare that with China which, while the second largest emitter at 14% of total annual emissions, with 20.7% of the global population, is thus responsible for only 4 tons of carbon dioxide per capita.

TABLE 3

Country	**Status**	**Kyoto Ratification**	**% of Global Emission**	**Per Capita Emissions, Measured in Tons of Carbon Dioxide**
USA	Annex I	No	20.64%	23.8
China	Non- Annex I	Yes	14.74%	4.03
European Union	Annex I	Yes	14.05%	10.26
Russia	Annex I	Yes	5.72%	13.2
India	Non- Annex I	Yes	5.48%	1.83
Japan	Annex I	Yes	3.98%	10.63
Australia	Annex I	No	1.46%	25.3
South Africa	Non- Annex I	Yes	1.23%	9.16

Information derived from World Resources Institute Climate Analysis Indicators Tool: Total GHG Emissions in 2000.

When the Kyoto Protocol first came into being, President Bill Clinton (two terms from 1992 to 2000), a Democrat, was in the Oval Office. The US signed the Kyoto Protocol on 12 November 1998 (*Kyoto Protocol,* 2005). But when Republican George W Bush succeeded him, the incumbent president failed to ratify the agreement.

The conflict of interest is obvious.

“The United States… has been the dominant figure, first as the world’s largest producer of oil and other energy and now as its largest consumer. Today, one out of every four barrels of oil produced in the world is burned in America, and this enormous, apparently limitless appetite exerts a ceaseless pull on the rest of the world’s oil players and on the shape of the world political order” (Roberts, 2004: 94).

If the United States were to reach its goals in order to contribute to slowing anthropogenic global warming, the country would need to reduce its emissions by 70% by the end of this century (Mintzer, Leonard & Schwartz, 2003: 28). This significant reduction would be required not only of the current American population, but of the future population which is expected to become larger and increasingly wealthy. This means that for greenhouse gas emissions goals to be achieved, a significant change in lifestyle and economic output would be required of this wealthy nation.

Hence one has insight into the foreign policy and energy policy of the current US administration.

The purpose of this background information is critical to understanding the political agenda inherent in the rhetoric around global climate change which comes out of the White House. And this, in turn, will be reflected by the manner in which news reporters write about global warming. Either they may choose to adopt the Bush administration’s cautionary approach to climate change, or they might be highly critical of it. Encapsulating the ethos of denial that so commonly emerges from the White House is the now infamous quote by Oklahoma Senator James Inhofe (chairman of the Senate Environment and Public Works Committee) who said global warming is "the greatest hoax ever perpetuated on the American people" (*Senator Inhofe*, 2005).

Media critic Kris Wilson argues that the “increasingly fractious political milieu of climate change” adds to the “scientific quagmire” (Wilson, 2000: 202). The global nature of the pollution and its consequences – which are so intrinsically linked to how audiences live their lives and hence their own complicity – seems also to “strike a raw nerve”.

When Clinton backed the Kyoto Protocol, it was “a dramatic shift in policy from previous administrations and brought about a strong response” (Wilson, 2000, 202). In particular a document, *The Climate Report*, published by the University of Virginia and edited by outspoken climate change dissident Patrick Michaels was sent free to journalists across the United States. Wilson points out that the critic of mainstream science on this subject failed to declare that the publication was funded by US major energy provider Western Fuels Corporation (Wilson, 2000: 202).

Michaels’ report was strongly critical of the science emerging from the United Nations Intergovernmental Panel on Climate Change (IPCC).

"The IPCC consists of more than two thousand of the world's leading atmospheric scientists charged with creating climate change consensus. Scientific consensus is rarely achieved, and Michaels and a handful of other scientists remain unconvinced that climate change can be proven to be a real threat… Many reporters, untrained in science… are caught in the middle of this seemingly contentious scientific debate. Too often, reporting has promoted an ersatz 'balance' of the scientific debate" (Wilson, 2000: 202).

The debate is politically loaded, the consequences of which have sometimes become almost sinister: in 1998 a group of scientists published a paper in *Nature* which argued that of all the factors changing temperature globally during the past 600 years, greenhouse gases were the main driver behind temperature increases in the 20th Century (Mann, *et al*, 1998: 779–787). A political backlash was to follow early in 2005 when Joe Barton – Chairman of The Committee on Energy and Commerce with the US House of Representatives and an ardent climate change sceptic – requested information on the scientists. This included "not only raw data but personal financial information, information on grants… and computer codes" (*Hunting Witches*, 2005).

This highly unusual request prompted *The Washington Post* to call it "hunting witches" while the newspaper's sources called the process "misguided and intimidating", "intrusive and far reaching" and could have "a chilling effect on the willingness of people to work in areas that are politically relevant" (*Hunting Witches*, 2005).

These two vastly polarised and politicised approaches to climate change, increase the complexity of reporting on the subject. Journalists are trained to give opposing views on any subject in order to show objectivity and provide balance to a story.

In a survey of 648 undergraduate students (at the University of Colorado) and 249 specialist reporters (members of the Society of Environmental Journalists in the United States) (Wilson, 2000: 217) to gauge their comprehension of the subject of climate change, Wilson found that of all the individual sources of confusion for both groups, politicians ranked highest (Wilson, 2000: 211).

2.6.2 The "Skeptical Environmentalist" and other sceptics

In 1998 Danish political statistician Bjørn Lomborg released a weighty volume titled *The Skeptical Environmentalist: Measuring the Real State of the World*. Lomborg argues that while global climate change is occurring and that it is (in part) the result of human activities on the planet, it will not be as severe as the worst case scenario predicted by the IPCC.

Lomborg says the unrealistic future scenarios (Lomborg, 1998: 278) which forecast a 6°C increase in mean average temperature by 2100 are not plausible "because of the limitation of

computer modelling, the unrealistic nature of the basic assumptions made about future technological change and political value judgements have distorted the scenarios being presented to the public" (Lomborg, 1998: 259).

In a detailed 66-page chapter he questions the accuracy of the science behind the predictions.

Lomborg maintains that the issue is not about "*whether* man-made CO_2 increases global temperature, but by *how much*" (Lomborg, 1998: 266). The feedback effects of air-born particles, water vapour and clouds – which are understood to bring about a certain amount of atmospheric cooling – are not well understood, he maintains, and hence the climate models not terribly robust (Lomborg, 1998: 265-273). Similarly he accuses the IPCC of not giving sunspot activity enough emphasis. "Solar brightness has increased about 0.4 percent over the past 200 – 300 years, causing an increase of about 0.4°C, and the trend over the last decades is equivalent to another 0.4°C to 2100" (Lomborg, 1998: 276). Also changes in solar radiation alter the development in low level cloud which reflects heat and causes cooling.

"A number of unanswered questions and unsolved scientific problems still remain in these theoretical relationships" (Lomborg, 1998: 277).

In light of this uncertainty and the fact that the effect of emissions reductions under Kyoto will be marginal (Lomborg, 1998: 302) it would be far more expensive to cut CO_2 emissions than it would to adapt to a changing world.

The industrialised world (whose northern territories are largely frozen at present and thus inaccessible for habitation, agriculture and industrial settlement) will in fact benefit from increased warming (Lomborg, 1998: 318) (this argument emerges occasionally, referred to broadly as the "Greening Earth" theory). The developing world will be most vulnerable to the changes but that global wealth will be able to assist such countries with adaptation (Lomborg, 1998: 322).

"We should not spend vast amounts of money to cut a tiny slice of the global temperature increase when this constitutes a poor use of resource and when we could probably use these funds more effectively in the developing world". (This might be a possible scenario in a world where only a small temperature increase is predicted, but when temperature increase becomes dangerous, it is doubtful that the developed world would have sufficient resources or will to rescue the developing world from the plight in which it found itself.)

Lomborg argues that the "constant media barrage of possible greenhouse related catastrophes… (where) almost every weather event is now linked to climate change" (Lomborg, 1998: 259) is symptomatic of what he calls "the Litany" (Lomborg, 1998: 3). The Litany is a pervasive narrative running through public debates on matters concerning the environment – it

is a pessimistic take on the state of the environment (including the state of forests, fish stocks, top soil, wilderness destruction, biosphere decimation, etc). The Litany says that humanity is "fast approaching the absolute limit of viability" (Lomborg, 1998: 4) and that climate change has now become the "environmental trump card" (Lomborg, 1998: 258).

This over-exaggeration of the state of the environment is the result of three things:

Research has become a "veritable industry", Lomborg says, "a natural tendency to secure funding for their own special field will encourage scientists not to criticize the overall field of research (Lomborg, 1998: 37).

Quoting the former secretary general of the United Nations World Meteorological Organization, retired professor Aksel Wiin-Nielsen (Lomborg, 1998: 37), Lomborg says the "most important explanation as to why so much extensive theoretical work in the development of climate models has been done during the last ten years is that the development of models sustains funding and secures jobs at research instructions".

Furthermore institutions such as Greenpeace, WWF and Worldwatch Institute have "vested interests in the political consequences and decisions which result from research" (Lomborg, 1998: 38). Basically he argues that environmental activism has itself become an industry which is dependent on winning support from sympathisers. Such organisations need to maintain a public profile "and base their activities on a desire to promote decision which are good for their members" who in turn bring the organisations "money, prestige and influence". Without the backing of "members, sympathizers and supporters" such organisation campaigns would be more or less worthless (Lomborg, 1998: 38).

In a complex world, the media have become the main source of information for a public that can no longer access the primary sources. Media then "pass on the results of research" (Lomborg, 1998: 39) but due to factors inherent in the news production process produce a "lopsided version of reality: a picture of reality which is incoherent and sporadic, though at the same time reassuringly predictable and familiar" (Lomborg, 1998: 39).

The consequence of this media-based reality is that the public is insufficiently informed to take part in the "democratic decision-making process". And yet gives the public a feeling of comfort that it believes it actually does have sufficient knowledge to take part in the debate.

Finally, this trend gives the public a "far too negative and distorted impression of the problems" (Lomborg, 1998: 39).

The tendency of bad news to sell also lends the media towards reporting on such events (Lomborg, 1998: 40) and even to exaggerate in order to give a perception of a dramatic news event which will secure greater sales.

A vigorous challenge of Lomborg's thesis came out of the scientific community, critiquing his "incomplete use of the data or a misunderstanding of the underlying science… (and) his interpretations (which were) frequently off the mark" (Rennie, 2002: 61).

Stephen Schneider, professor of biological sciences at Stanford University, writing in the popular science journal *Scientific American* stated: the large number of end notes give the perception of "comprehensive and careful scholarship". However, "most of his 3 000 citations are to secondary literature and media articles" and where peer reviewed papers are cited, it's usually done so "elliptically from those studies that support his rosy view that only the low end of the uncertainty ranges will be plausible". In other words, he is accused of cherry picking the articles which suite his argument (Schneider, 2002: 63). Schneider offers several examples from Lomborg's work which illustrate how poorly he understands the science (Schneider, 2002: 63). Yet for a previously unknown statistician to take on such a massive scientific subject and purport to measure the "real state of the world" is "a high bar to set, given the large range of plausible outcomes" (Schneider, 2002: 62).

The scientific community is aware of the limitations in modelling climate change and delivering projections and the reports emerging from institutions such as the IPCC tend towards being cautious in their write-ups. This is a far cry from the impression which Lomborg gives of a "pessimistic and dishonest cabal of environmental groups, institutions and the media who distort scientists' actual findings" (Rennie, 2002: 61).

But as Allen points out, both *The Skeptical Environmentalist* and Crichton's *State of Fear* illustrate "intelligent reviewers, given a complex issue and sufficiently rich literature, can find support for whatever position they care to adopt" (Allen, 2005: 198), meaning that they can cherry pick the scientific sources they need to support their view of the matter.

Many more sceptics abound, including in the scientific community: the journal *Nature* reported in August 2005 on a $10 000 wager between two Russian scientists and a British climate modeller. Solar physicists Galina Mashnich and Vladimir Bashkirtsev, both sceptical about the mainstream predictions of global climate change, predict that global temperatures will begin to decline over the next two decades. The physicists argue that the Sun's natural sunspot activity, which pulses rhythmically over time and sends slightly altered amounts of radiation out into the solar system as a consequence, will shift to a "less active phase" and bring about cooling on Earth over the next few decades (*Climate sceptics place bets*, 2005).

The bet resulted after British scientist James Annan dared the wider community of climate change sceptics to show their degree of commitment to their fringe theories. The two Russians and the Britain have agreed to compare the "average global surface temperature between 1998

and 2003 with that between 2012 and 2017". If temperatures climb, then Annan will receive $10 000 from Mashnich and Bashkirtsev. If temperatures go down, the Russians get the cash.

It is not within the scope of this thesis or even the skill of the author to give a full critique of these "sceptical" theories. The purpose of inclusion is to illustrate how compelling these arguments can be for anyone who is not intimately familiar with the science of climate change and the political rhetoric surrounding it.

However, increasingly the mainstream thinkers are arguing that it is time to move beyond these generally fruitless arguments and begin to grapple with the policy decisions that need to be made in order to mitigate against climate change. South Africa's Environmental Affairs and Tourism Minister, Martinus van Schalkwyk, stated at the opening of the National Climate Change Conference held in Gauteng in October 2005 that there was no longer any room for academic debates with fringe scientists and climate sceptics about whether or not climate change is a reality (Van Schalkwyk, 2005).

Similarly, United Kingdom Environment Secretary Margaret Beckett called on the United States in May 2005 to accept the "overwhelming scientific evidence that climate change is happening and manmade… The science is incontrovertible. We want that understanding to be widened and deepened. Those who argue against the science are fewer and fewer in number and treated as less and less respected" (Brown, Wintour & White, 2005).

A final word of caution on this matter to journalists who report on climate change: professor of organic chemistry at Emory University, Atlanta, Fredric M Menger famously said that "if you torture data sufficiently, it will confess to almost anything". It is easy for journalists, reporting from the sidelines of scientific research and acting as commentators and interpreters of the resultant findings, to be lead astray or even manipulated into giving false or skewed messages to the public. For this reason they must treat all information with caution, regardless of the source, and use tested journalistic techniques in order to achieve accuracy and truth.

2.6.3 Environmental Activism

With the arrival of the notion of the environment as a globally shared resource, followed by the normalisation and institutionalisation of environmental issues and crises, (Allan *et al*, 2000: 4-5) came the emergence of the environmental lobby. At one level this new form of politicising become powerful enough to influence global policy (Anderson, 2000: 93), while other groups functioned at a "grass roots" level. In an examination of the media politics of environmental reporting within this context, Anderson argues that a "do it yourself" politics emerged.

"Individuals becoming frustrated with the alienating forces of globalism, coupled with the ineffectivity of mainstream political channels… (took) things into their own hands to bring about real social change." The origin of this counterculture, Anderson states, has "a number of diverse roots in, among other things, anarchism, paganism, New Ageism and humanism" (Anderson, 2000: 98).

Biologist and Pulitzer Prize-winning science writer Edward O Wilson describes this thinking as emerging from such "hybrid movements as ecofeminism, which holds that Mother Earth is a nurturing home for all life and should be revered and loved in premodern (paleolithic and archaic) societies and that ecosystematic abuse is rooted in androcentric – that is to say, male-dominated – concepts, values and instructions… The greening of religion has become a global trend, with theologians and religious leaders addressing environmental problems as a moral issue" (Wilson, 1995: 331-332).

This is significant to the debate because environmental pressure groups are often a source of information for environmental writers and the reporting of environmental issues should no more be clouded by alternative religious thinking than it should by political bias or economic agendas. Global warming is not a belief system, but observable scientific fact and it is the responsibility of environmental and science writers to convey this to the public.

When feeding information to the media – whether sound, science-based information or not – many environmental activists produce their own experts and use their own tactics to gain public or government attention and hence the interest of journalists. News, as one of many vehicles in the basket of mass communication methods, is also a most effective way to deliver a message to a variety of large and non-homogenous audiences (De Beer, 1998: 9).

In order to harness this vehicle, such pressure groups are known to use certain tactics in order to gain the attention of the media. In a sense, one could argue that such groups manufacture events in order to gain the attention of the news media through their activities. An example is the incursion into the Koeberg nuclear facility outside Cape Town by Greenpeace anti-nuclear activists in August 2002 (*Greenpeace clamber,* 2002).

Such "symbolic content of environmental actions… has acquired a new significance in a society increasingly dominated by the circulation of images and signs" (Anderson, 2000: 93). Although while this reliance on "pseudo-events" was a hallmark of such groups from the 1970s on – as a way of "generating public sympathy and political support" – these sorts of activities had been taking place since the early part of the Twentieth Century (Anderson, 2000: 93).

A certain *quid pro quo* now exists between journalists and environmental pressure groups – pressure groups reach their audiences and occasionally acquire influence at a policy and

political level; journalists get their interesting and alternative angles through reporting on the headline-grabbing events provided by the activists.

Chapter 3: Conclusion – stepping into the breach

Against this background of loaded agendas and polarised views on climate change – whether from government officials, mainstream scientists or environmental activists – one can see how many messages a journalist must decipher when trying to provide accurate coverage of global climate change.

The "inflamed rhetoric used by many sources… (and) the polemic language some scientists and politicians use" can also add to journalists' confusion on the subject (Wilson, 2000: 211). The same could be said for debates around nuclear power in general and, specifically in South Africa, the matter of HIV/AIDS and its treatment with antiretroviral drugs. Vastly polarised groups of activists, politicians and scientists can bewilder even well-trained and informed journalists.

"In the constant effort to present a 'balanced' view, a reporter will seek an opposing opinion and controversy is created once again" (Wilson, 2000: 207). Balance should not be abandoned to avoid controversy. But the journalist must research sources well and not simply use a source because it disagrees with the first source. Rather the journalist should understand that if a source is regarded by the larger proportion of the scientific community to be extremely fringe, it would suggest that the journalist treat such a source with due caution. Given the highly politicised nature of the subject, it would also help to understand what possible agendas a source could have.

However once the message is received by the journalist, it is not broadcast or published without some level of translation beyond that of the journalist. Rather the message is "controlled or influenced by a number of individuals, known as 'gatekeepers'" (De Beer, 1998: 9). This can further alter the meaning as "slanting in news reports and editing of television documentaries (which are defined as semantic noise or 'filters')" (De Beer, 1998: 11) also serve to change the final message or even falsify it in so far as some accurate facts are given greater exposure than other accurate facts.

Nevertheless, the responsibility of the journalist is no less, regardless of the peripheral factors influencing how accurately or not they might report on the subject. "A well-informed public is essential to promote public policy on climate change… citizens need accurate and understandable information, but unfortunately… many articles are either sensational, technical or too abstract for the general public, and do not help people make a connection between their everyday actions and the impending long-term global changes that will probably take place" (Wilson, 2000: 217).

Global climate change, argues Kris Wilson, has “evolved into a scientific and political lightning rod, challenging us to develop new connections among science, public policy and journalism” (Wilson, 2000: 202).

Bucchi recommends the need for dedicated science journalists to bridge the gap between scientists and the public which has grown wider with time as scientific disciplines have become increasingly specialised. This “knowledge gap” has widened over the past three centuries, resulting from the “stable codification and institutionalisation of the scientists’ professional role”; this “professionalization… and disentanglement from both the public and from general culture has been accompanied by the creation of new channels of communication between specialists and non-specialists”. A specialist science writer is needed to mediate in order to make science accessible to the public, Bucchi argues (Bucchi, 1998: 1-3).

In fact, Allan *et al* (2000) argue that something similar happened in the management of information around these subjects as the environment increasingly featured on the newsroom agenda. As reporters were placed on the environmental beat, they discovered that they needed additional sources from the usual government or corporate spokespeople and “news organisations were recognising the need to hire specialist personnel who were better able to critically appraise the scientific and technical climates being made by special interest groups” (Allan *et al*, 2000: 4).

Bucchi’s theory certainly holds true for the reporting of some of the more complex aspects of global warming, such as the functioning of oceanographic currents and their response to increased temperature in the system, or the climatological mechanisms behind why global warming would produce an increased frequency and intensity of tropical storms and hurricanes.

However the consequences of global warming are multi-layered, the reporting of which are not limited to a single discipline. For instance the environmental beat would adequately cover the story of species of protea in the Cape Floral Kingdom that might be threatened by increased drought in the region. While the health reporter would cover the malaria story and whether or not the extent of the disease’s distribution will increase with climate change or whether mechanical control measures will supersede any changes which altered rainfall and temperature increase might have on the incidence of the disease in southern Africa.

This suggests that it would not be feasible to have a single, multidisciplinary reporter in a newsroom trained to report specifically in the field of climate change (and it may not even be necessary). Neither would it be realistic to have a dedicated science journalist who covers every aspect of climate change. For instance, the financial reporter is probably best positioned to write on the impact of climate change on the insurance industry. The more codified science of climate change would already have been interpreted as it was passed from the scientific community to

the insurance industry. Thereafter the onus would be on the financial reporter to find the most knowledgeable person in the insurance industry to once again transfer and interpret the information for this new audience. The result would probably be a story which addressed the damage to property and the cost implications due to the increase in storm activity and rising sea levels; certainly the story would not address the physical mechanisms driving the storms and sea level rise.

Finally, when it comes to science journalists reporting on the science of climate change, Wilson says it is best to go to the primary source: the scientists themselves. After a survey of 249 environmental reporters in the United States (all members of the Society of Environmental Journalists), Wilson found that those who went directly to scientific sources for their information had a considerably better understanding of the complexities of global climate change than those that relied on mass media for their information (Wilson, 2000: 215).

This is particularly true these days since the field of climate change science is so dynamic (Wilson, 2000: 201) and new reports and findings are constantly being released and updated.

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