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Roles of religion and ethics in addressing climate change

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ABSTRACT: After a brief introduction summarizing current climate change knowledge and potential responses, climate ethics are discussed within an historical context and a preliminary timeline of climate ethics is set forth. The paper argues as its central thesis that religion has major roles to play in enabling the world's societies and individuals to take the actions necessary to address climate change causes, impacts, and related issues in an effective and ethical manner. The pivotal roles of religion in issues of climate change and environmental justice hinge primarily on religions' functions in society, ethical teachings, reach and influence, and ability to inspire adherents to action. Religions' ability to inspire action is evaluated empirically against data from 2 compilations of religious activity on climate change. The analysis indicates significant religiously based involvement and influence on ethical aspects of climate change and point to much greater potential for the role of religion in future solutions to the climate crisis.

KEY WORDS: Ethics · Religion · Climate ethics · Climate change · Global warming

INTRODUCTION

The global mean temperature has risen approximately 0.76°C since 1850 and continues to rise, largely as a result of human activities that increase the concentration of greenhouse gases in the atmosphere (i.e. burning fossil fuels, land use change) (IPCC 2007a)[1]. Without successful efforts to reduce worldwide greenhouse gas emissions, particularly of carbon dioxide, the global mean temperature may rise an estimated 1.1 to 6.4°C over the next 100 yr (IPCC 2007b). Yet increases in global mean temperature of just 1.5 to 2.5°C will provoke major changes in ecosystem structure and function, threatening many species and negatively impacting ecosystem goods and services (i.e. water and food supply). Climate change impacts already documented include accelerated glacier retreat from the arctic to the tropics, longer growing seasons, shift of species ranges, increases in extreme meteorological events (severe storms, drought, heat waves), ocean acidification, and changing weather patterns (IPCC 2007b), with scientists reporting that some changes like Antarctic ice cap melting and sea level rise are happening more rapidly than initially predicted (Black 2007, Hopkin 2007). These changes are affecting populations across the globe, whether through direct environmental consequences or economic, social or security ramifications (Barnett 2003). In order to stabilize the atmospheric carbon dioxide concentration to between 445 and 490 ppm (for an estimated global mean temperature increase of 2 to 2.4°C above the pre-industrial average), current worldwide emissions would need to peak before 2015, and be

[1]The Intergovernmental Panel on Climate Change (IPCC) is a respected panel that presents broad consensus views based on international peer-reviewed research. It defines climate change as 'any change in climate over time, whether due to natural variability or as a result of human activity' (IPCC 2007b, p. 21)

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reduced to 50 to 85% of 2000 levels by 2050 (IPCC 2007c).[2] At this important moment in history, national leaders and the international community have a pressing responsibility to agree on targets, devise a workable plan for reducing greenhouse gas emission worldwide, and promote strategies for adapting to impacts already underway.

Ways of addressing climate change fall into 2 broad categories: mitigation and adaptation. Mitigation occurs through reduction in sources or enhancement of sinks[3] of greenhouse gases, while adaptation involves adjustments in human and natural systems to actual or expected climatic changes. The Intergovernmental Panel on Climate Change (IPCC) report stresses that, 'Even the most stringent mitigation efforts cannot avoid further impacts of climate change in the next few decades, which makes adaptation essential, particularly in addressing near-term impacts. *Unmitigated climate change would, in the long term, be likely to exceed the capacity of natural, managed and human systems to adapt*' (IPCC 2007b, p. 20; italics added). The IPCC thus recommends a portfolio or mix of strategies that includes mitigation, adaptation, technological development (to enhance both adaptation and mitigation), and research (on climate science, impacts, adaptation and mitigation). The portfolios could combine policies with incentive-based approaches, and actions at all levels from the individual citizen through to national governments and international organizations (IPCC 2007b).

Among the above-listed approaches to addressing climate change are climate science and other research, technological development, policies, and incentive-based approaches. In general, no one disputes that science, technology, policy, and economic measures are critical components in mitigating and addressing climate change. But religion, too, this essay will argue, has pivotal roles to play in helping identify, promote, and implement ethical solutions to climate change. The complementary and unique roles of religion in addressing climate change stem primarily from religion's functions in society, ethical teachings, reach and influence, and ability to inspire adherents to action. In particular, because of these factors, religious involvement helps support the critical linchpin of ethics that is often missing from science, economic, technology, and policy discussions.[4]

After an overview of the ethical dimensions of climate change, the above proposition on the roles of religion will be explored in detail. The 4th element, inspiring adherents to action, will be empirically evaluated using data from 2 compilations of current religious efforts on climate change.[5]

CLIMATE CHANGE ETHICS

Climate change is an inescapably moral and ethical issue (Coward & Hurka 1993, Brown et al. 2006a, Gardiner 2006). The IPCC (2001, p. 2) acknowledges this, saying that decisions being made about climate change are 'value judgments determined through socio-political processes, taking into account considerations such as development, equity, and sustainability, as well as uncertainties and risk'. Gardiner (2006, p. 398) observes more directly:

> …we cannot get very far in discussing why climate change is a problem without invoking ethical considerations. If we do not think that our own actions are open to moral assessment, or that various interests (our own, those of our kin and country, those of distant people, future people, animals and nature) matter, then it is hard to see why climate change (or much else) poses a problem. But once we see this, then we appear to need some account of moral responsibility, morally important interests, and what to do about both. And this puts us squarely in the domain of ethics.

Ethics is a 'field of philosophical inquiry that examines concepts and their employment about what is right and wrong, obligatory and non-obligatory, and

[2]Even those targets may not be enough, argues Monbiot (2006). Unfortunately, worldwide carbon dioxide emissions have continued to increase up to the present and are currently 19% above 1990 levels (WB 2007). See WB (2007) for figures and breakdown of current worldwide emissions by country and sector. Carbon dioxide is the most important anthropogenic greenhouse gas, and the IPCC reports that 'The global atmospheric concentration of carbon dioxide has increased from a pre-industrial value of about 280 ppm to 379 ppm in 2005. The atmospheric concentration of carbon dioxide in 2005 exceeds by far the natural range over the last 650 000 yr (180 to 300 ppm) as determined from ice cores' (IPCC 2007a)

[3]Carbon dioxide sinks are carbon reservoirs that soak up more carbon than they emit; conversely, sources release more carbon than they absorb. About 30% of the carbon dioxide emitted is absorbed by the oceans and 30% is taken up by terrestrial ecosystems, especially tropical forests. The remaining 40% percent accumulates in the atmosphere (Stephens et al. 2007)

[4]Touching on these areas, Jamieson (1996) convincingly argues that ethical considerations need to be much better and earlier integrated into any contemplated intentional climate change technology research

[5]Compilation of religious activity on Yale School of Forestry and Environment's 'Current Climate Change Work in Religion and Ethics' website and Allison (2007)

[6]The Merriam-Webster dictionary clarifies that while 'moral' implies conformity with established sanctioned codes or accepted notions of right and wrong, 'ethical' usually suggests the involvement of more difficult or subtle questions of rightness, fairness, or equity. Nevertheless, ethics and morals are often used interchangeably in common parlance

when responsibility should attach to human actions that cause harm' (Brown et al. 2006a, p. 7).[6] Personal morality can vary widely, but at the level of societal moral codes and ethics there are many commonalities to be found among the particularities (Fleischacker 1999) and some notable 'trans-cultural overlapping values' and principles (UNESCO 1999) that might be understood to constitute a universal — rather than culturally or religiously specific — ethic (see further discussion in Wesley & Peterson 1999). This is relevant because, on a routine basis in the context of global climate change, questions with significant ethical dimensions have to be answered. Among the host of 'inconvenient' questions arising from an ethical examination of climate change, Brown et al. (2006a) emphasize the most obvious as: What atmospheric concentration of greenhouse gases should the world community identify as a target? The answer to that question will literally determine whether some cultures (due to e.g. sea level rise, water scarcity) and species continue to exist. In order to meet safe targets, significant worldwide reductions in greenhouse gases will be required. Should some countries be allowed to generate more carbon dioxide per capita? If so, which ones, and on what basis is that determination made? A third ethical issue is who will pay for the damages of climate change? No country will be immune to the impacts, though the world's poor and vulnerable (who are least responsible for climate change) will suffer the most (see Annan 2006, Brown et al. 2006a, IPCC 2007b)

Why is it important to address climate change ethically?

Frank and transparent discussions of climate change's ethical dimensions are essential for making worldwide progress on addressing climate change (Brown et al. 2006). Naturally, good faith follow up on agreements is also important. There are some key reasons why it is important to address climate change ethically, beyond the obvious reason of it being an honorable and moral way to do business. These other reasons include

- Consideration of ethical dimensions often helps leaders continue to see common ground and have a way forward. Despite a diversity of ethical approaches to human problems, a convergence of ethical conclusions about some climate change issues is possible (i.e. UNFCCC, agreements of the 33rd G8 Summit). In areas of no agreement, at least (1) ethically unsupportable conclusions can be clearly identified and (2) compromises among ethically based alternatives can lead the way toward a consensus (Brown 2006)
- When ethical dimensions are not recognized or addressed appropriately, key issues are missed; negotiations and debate are weakened and progress becomes stalled[7]
- An ethical understanding of the issues highlights starkly what is really at stake and sometimes goes right to the heart of the problem. By identifying what is most important or what principles are at issue, those in discussion can avoid becoming entangled in side debates that fail to take into account the core issues
- Among the economic, political, environmental and social factors considered in decision making, ethical arguments (with big picture and long term views) merit a place at the table. An ethical perspective can sometimes transcend the competition among or compartmentalization of the different factors, allowing key issues from them all to be pulled out and given importance. An ethical perspective can also be advanced by anyone equally, independent of specialization
- Including ethical issues in discussion forces values out into the open so that they can be discussed and debated. Leaders' values and decisions are then under scrutiny and they can be held accountable, e.g. in the polls, elections for obvious disregard for ethics
- An ethical way of looking at things lends importance to the voices of those who are vulnerable or negatively impacted because in an ethical context those voices are highly relevant. Acknowledgement and discussion of harm promotes a culture of taking responsibility, if only because of increased awareness due to consequences, impacts, and likely recipients of harm having been clearly presented and considered

[7]A case in point is what occurred in the USA after it withdrew from the Kyoto Protocol in 2001, saying it was unfair (i.e. unfairly favoring developing countries). Frontline's Deborah Amos asked why 'Kyoto is not fair' was such a powerful idea that couldn't be countered. Without a moment's hesitation, her interviewee, Ms. Jessica Tuchmann Matthews, President of the Carnegie Endowment for International Peace, replied: 'Well, it could have been countered, because of course you could say, 'Look, we have been responsible for the problem up until now. They are going to be responsible for the future, but we have to act as a consequence of our past emissions before we can ask them to act in anticipation of their future emissions. That's not a hard argument to make. That's why I've always believed it was a red herring designed to avoid action, because it's obviously a phony argument.' Wesley & Peterson (1999) elaborated similar arguments about the US position based on in-depth ethical analysis. If these ideas and refutations had been more prevalent in the public consciousness then, at the very least, there would have been more real debate and less tolerance among the public and media for that position and, as a result, more pressure on politicians to act constructively on the climate issue

- There is an imperative and urgency that all people and nations work on the climate challenge together, or all will suffer the interconnected consequences. Behaving ethically keeps everyone at the table, maintains cordial relationships, and facilitates working together over the long term, which this task most assuredly requires

What is the difficulty then in incorporating ethics?

Prevailing trends over the past several hundred years have been to cast science and economics as value-neutral and separate them and those who study them from the social and ethical contexts in which they operate (Heilbroner 1996). Yet it has been conclusively demonstrated by many in these fields (e.g. COSEPUP 1995; Heilbroner 1996) that values and social context neither can nor should be separated from scientific enterprise or economics. Similarly, despite centuries of interaction (Olson 2004), 'artificial barriers erected between faith and reason, science and religion' (UHJ 1985, p. 4) have made religion largely unwelcome in the public realm and expected to operate in non-overlapping spheres with science and economics.

Prevailing philosophical assumptions associated with positivism further reinforce the marginalization of ethics and religion, stressing the Platonic separation of thought and action (Gore 1993) rather than encouraging the application of *phronesis*, the ethical practical wisdom prescribed by Aristotle for a well functioning society (Flyvbjerg 2002, 2004).[8] Some contend that these trends have created a moral schism that has 'conditioned our civilization to *insulate its conscience* from any responsibility for collective endeavors that invisibly link millions of small, silent, banal acts and omissions together in a pattern of terrible cause and effect' (Gore 1993, p. 237; emphasis added). Such lingering conditions and the resulting 'insulation of conscience' leave humans ill-equipped to tackle reducing greenhouse gas emissions or other damaging trends. The limitations of an ethics-avoiding approach become especially poignant in the context of multidimensional issues like global climate change, which require taking responsibility, responding to ethical conundrums, and reconciling divergent values on a worldwide scale. The present climate precipice presents one of the strongest possible cases for ethical considerations to be more routinely and explicitly knit back into modern affairs, from individual to international decision making.

[8]The aim of a phronetic approach is to contribute to 'society's capacity for value-rational deliberation and action' (Flyvbjerg 2001, p. 167) and asks questions such as: where are we going, is this desirable, what should be done, and who gains and who loses, and by which mechanisms of power?

Milestones in the development of climate change ethics

As alluded to above, the profound ethical implications of climate change-related decisions have not always been so obvious to the general population. Interest in ethical dimensions of climate change seems to have been sparked most significantly in relation to post-Kyoto Protocol discussions,[9] judging from journal article titles of the time (see Wells 2006) and a survey of the topic by Gardiner (2004).[10] From the standpoint of climate ethics, 1999 and 2000 could be characterized as periods of increasing reflection and publication, but from 2001 onward, climate change ethics reached the international spotlight and has stayed there to the present. While young and perhaps 'still in its infancy' (Gardiner 2004, p. 556), climate ethics[11] is a rapidly growing area as reflected by the 21 events and developments included in the timeline shown in Fig. 1. To facilitate organized explanation, the timeline entries will be divided into historical background, publications and media, and international events and agreements.

Historical background

While many more entries could be included in the historical background, the first 5 entries in the timeline are deemed most pertinent with respect to climate ethics. Although in 1824 the Frenchman Jean-Baptiste Fourier was the first to use the greenhouse analogy

[9] This makes sense as the Kyoto Protocol required intense grappling with questions of fairness, meshing political agendas with ethical principles, and commitment to specific approaches to greenhouse gas reduction

[10]For an excellent early discussion of climate change ethics and a primer on it that chronicles relevant historical context, see Coward et al. (1993) and Gardiner (2004), respectively. Regarding the more limited academic writing on climate change ethics prior to 1999, Gardiner lists in his first footnote the notable exceptions, including for example Coward et al. (1993) and Grubb (1995)

[11]The term 'climate ethics' seems to have evolved spontaneously in various contexts (National Center for Atmospheric Research, Rock Ethics Institute, and others) and it is generally understood as 'a new and growing area of research that focuses on the ethical dimensions of climate change' (Wikipedia definition). In this essay, it is referred to interchangeably as climate ethics or climate change ethics (see Brown et al. 2006b, p. 552, for a characterization of the literature)

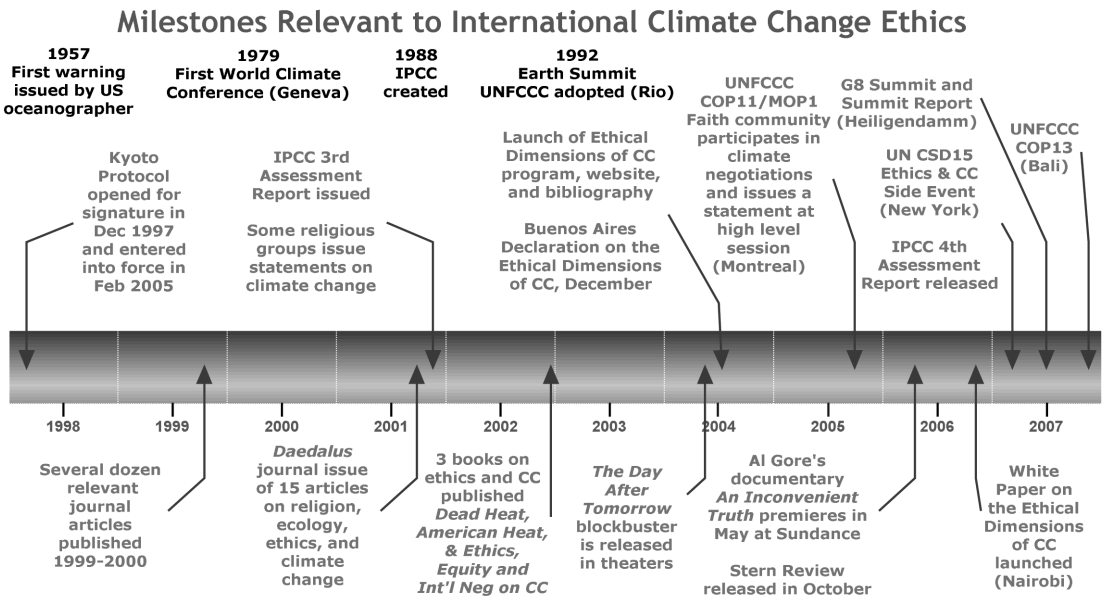


Fig. 1. Timeline of international actions on climate change (CC)'s ethical dimensions

with respect to the atmosphere and by 1900 the Swedish and American scientists Svante Arrhenius and P. C. Chamberlain had both proposed models of warming from carbon dioxide buildup in the atmosphere, it was not until 1957 that US oceanographer Roger Revelle and Austrian scientist Hans Suess warned that humanity was conducting 'a great geophysical experiment' on the planet and that carbon dioxide emissions from burning of fossil fuels would not all be absorbed into the oceans and could cause global warming over time (for further historical detail, see Hart & Victor 1993). In 1979, the First World Climate Conference adopted climate change as a major issue and appealed to nations of the world 'to foresee and prevent potential man-made changes in climate that might be adverse to the well-being of humanity' (IPCC 2004, p. 2).

Nine years later, the IPCC was jointly created by the World Meteorological Organization and the United Nations Environment Program to provide governments with available scientific and technical information, socio-economic impacts, and possible response strategies (IPCC 2004); in carrying out its mandate, the IPCC submitted comprehensive reports in 1990, 1995, 2001, and 2007. The IPCC's first assessment report served as the basis for negotiating the 1992 UN Framework Convention on Climate Change (UNFCCC) (IPCC 2004) adopted at the Rio Earth Summit. The UNFCCC is the world's first treaty on climate change and sought to prevent 'dangerous' warming from greenhouse gases and set initial emissions targets for industrialized countries (1990 levels by the year 2000). The UNFCCC came into force in 1994 but its voluntary measures were not enough to precipitate any significant action and so in 1997 an amendment to the UNFCCC known as the Kyoto Protocol was made — mandatory emissions targets for signatory nations, with the objective to stabilize greenhouse gas concentrations in the atmosphere 'at a level that would prevent dangerous anthropogenic interference with the climate system' (Gardiner 2004, p. 590). While a major step forward, the Protocol's effectiveness has been limited inter alia by inadequate emissions reductions targets for the 2008 to 2012 commitment period and weak compliance mechanisms (Gardiner 2004).

Publications and media

Some 40 publications appearing in 1999 and 2000 address climate change ethics, including Page's (1999) journal article 'Intergenerational justice and climate change' and Wesley & Peterson's (1999) journal article 'The ethics of burden-sharing in the global greenhouse.' *Contraction and convergence: the global solution to climate change*, by Meyer (2000), offered an ethically based framework to reduce global greenhouse gas emissions that would lead to equal per capita emissions rights at some agreed future 'convergence' date. His idea has gained interest among many nations and is often referred to in international climate negotiations. Publications in 2001 increased further, including for example 'Global partnership, climate change, and complex equality' (Arler 2001), 'Scales of governance and environmental justice for adaptation and mitigration of climate change' (Adger 2001), and

'Religion and ecology: Can the climate change?' (Tucker & Grim 2001a). The latter was the title of the Fall 2001 issue of *Dædalus*, the journal of the American Academy of Arts and Sciences, which included 15 articles on religion, ecology, ethics, and climate change.

Growing attention by religions to the ethical aspects of the climate crisis began in 2000 with Coalition of the Environment and Jewish Life's *Global warming: a Jewish response* prepared for the National Interfaith Training on Global Warming. More statements followed in 2001 after the IPCC's third assessment report appeared with more conclusive evidence of human influence on the atmosphere and accelerating climate changes. These statements included the US Catholic Bishops' *Global climate change: a plea for dialogue, prudence, and the common good* and Church of the Brethren's *Our environment, resolution on global warming/climate change*. In 2002, 2 major books on climate change ethics were published — *Dead heat: Global justice and global warming* (Athanasiou & Baer 2002) and *American heat: ethical problems with the United States' response to global warming* (Brown 2002). The former argues for a social justice framework and outlines key features that would be needed in a just international climate treaty, and the latter critically analyzes the US position on climate change and highlights the necessity of an ethical approach for globally acceptable solutions to global environmental problems. Published shortly thereafter was Pinguelli-Rosa & Munasinghe's (2002) edited volume *Ethics, equity, and international negotiations on climate change*, which offers multidisciplinary perspectives on the ethics of climate change policy, including the UNFCCC, the Clean Development Mechanism, and emissions trading.[12]

The 2004 Hollywood blockbuster *The day after tomorrow* presented a catastrophic science-fiction view of global warming's effects, but its subtext consisted heavily of social commentary and morality play. The film closes with the US President in the story coming to an awakening and thanking 'the countries we used to call the Third World' for sheltering Americans and others from wealthy countries, a sort of ironic twist on what is likely to happen under current scenarios, in that environmental refugees from Pacific islands and elsewhere will likely need to be taken in by wealthy industrialized countries.

In 2006, former US Vice President Al Gore presented dire non-fiction accounts and projections about climate change in his Academy Award-winning documentary *An inconvenient truth*. This slideshow-based film expressed the urgency of addressing global warming and called it 'the biggest moral challenge facing our global civilization'. Though produced on a low budget, it won dozens of awards, grossed over $49 million worldwide as of June 2007, and helped meaningfully present and popularize the issue of global warming to both US and international audiences. It also gave viewers a way to become further educated and take action, using the climatecrisis.net website. Gore's *New York Times* bestselling book *An inconvenient truth: the planetary emergency of global warming and what we can do about it* was published to coincide with the movie release and has now also been adapted into a version for young people.

The *Stern review on the economics of climate change* (Stern 2006) helped keep climate change issues, including ethical dimensions, in the public consciousness. Sir Nicholas Stern, lead author and Chief Economist of the World Bank from 2000 to 2003, gave the report credibility and drew worldwide and high level attention to estimates of the costs of climate change mitigation and inaction. Alan AtKisson (2006), International Director of the Earth Charter Initiative, suggests that the most important contribution of the report though is not its conclusions or its methods, but its ethics. The *Stern review* identifies ethical dimensions of climate change in more than 20 places (Brown 2007), builds intergenerational ethics explicitly and transparently into its models, and assesses climate change impacts against the UN Millennium Development Goals, thereby demonstrating a multidimensional (rather than strictly monetary) view of economic and social goals. AtKisson posits that the *Stern review* is helping solidify a 'tectonic shift in economics …Climate change is forcing economists to think differently' (AtKisson 2006, p. 2). One economist critical of the *Stern review* contends that some policies to mitigate climate change would not pass cost benefit analysis, but nevertheless asserts that 'there is a solid economic case for emissions reductions — and a stronger moral case' (AtKisson 2006, p. 6).

Also in 2006, the Rock Ethics Institute compiled a bibliography of over 390 books and articles on climate change ethics; 178 of them occurred in peer-reviewed journals including *Science* and policy, planning, management, economics, ethics, and environment journals (see Wells 2006). Compilation of the bibliography culminated in the collaborative writing and release of the final milestone publication for 2006, the *White Paper on the ethical dimensions of climate change,* which will be further discussed in the next section. The last significant publication on the international scene to date appeared in 2007: the 4th IPCC report.[13]

[12]The book argues that solutions to the problem of climate change are best founded on ethical and equitable grounds, which lead to more practical, effective solutions than the present utilitarian, market-driven strategy (see insightful book review by Reibstein 2005)

International events and agreements

The Rio Declaration and UNFCCC have first and foremost been instrumental in establishing norms about responsibility for climate change, including that 'nations have the responsibility to reduce greenhouse gas emissions of activities within their jurisdictions' and that 'developed nations have the responsibility to take the lead in reducing the threat of climate change' (Brown et al. 2006, p. 14). Nevertheless, there has been a significant lag and even unwillingness of parties to take responsibility or meaningful action, which is why much further action and commitment is needed.

Launched at the 10th Conference of the Parties (COP10) to the UNFCCC in Buenos Aires, 2004, the Rock Ethics Institute Program on the Ethical Dimensions of Climate Change established itself as a key player in increasing international attention to the issue of climate ethics.[14] At UNFCCC-COP10, the Program's partners spearheaded the *Buenos Aires declaration on the ethical dimensions of climate change,* which posits the urgent need for ethical reflection on climate change.[15]

There are 3 further particularly illustrative instances of the increasing acknowledgement of climate change's ethical nature and implications at the international policy level. In December 2005 at Montreal's UNFCCC-COP11, faith community participants sponsored several side events and delivered their *Spiritual declaration on climate change*, which highlighted a number of climate change's ethical aspects and pledged solidarity with those most affected by climate change. Building from the 2004 *Buenos Aires declaration*, the *White Paper on the ethical dimensions of climate change* (Brown et al. 2006a) was launched, presented, and discussed at the UNFCCC-COP12 in Nairobi. It argues that ethics, human rights, and distributive and procedural justice must be integral components of international negotiations on climate change solutions and exposes several unethical, but widely used, arguments for inaction or delayed action.

In 2007, an 'ethical dimensions of climate change' side event at the United Nations Commission for Sustainable Development (UNCSD-15) featured Don Brown of the Rock Ethics Institute and speakers representing science, religion, affected populations, and least developed nations. All focused on the ethical aspects and moral imperative to address the unequal impacts of climate change and tendency of it to harm the poor and least responsible for it. Various articles on this well-attended event and its availability on the video-sharing website YouTube (www.youtube.com) allowed it to reach a much wider audience.[16]

The 33rd annual G8[17] Summit (June 6 to 8, 2007), hosted in Heiligendamm by German Chancellor Angela Merkel, represents a milestone in any context, including an ethical one, as critical players in the international debates found common ground on climate change's ethical aspects and pledged to take concrete steps in the needed direction. In their joint statement, they assert that 'tackling climate change is the shared responsibility of all' (G8 2007, p. 13) and specify that further action should be based on 'the UNFCCC principle of common but differentiated responsibilities and respective capacities' (G8 2007, p. 16). They reaffirm as G8 leaders their responsibility to act and acknowledge 'the continuing leadership

[13] It asserts with the most confidence yet (90%) the human influence on the climate and offers many scientific observations, future global and regional projections, and insights into how climate change might be adapted to and mitigated. Ethics are explicitly mentioned, and climate change's impacts are noted to be unevenly distributed and already adversely impacting the poor and vulnerable in some geographical locations

[14] The program holds as objectives, among others, (1) facilitating examination of the ethical dimensions of climate change; (2) creating a better understanding of these dimensions among policy makers and the general public; and (3) assuring that people around the world, including those most affected, participate in any ethical inquiry about responses to climate change (see additional objectives in Brown et al. 2006)

[15] The Buenos Aires Declaration cites the following: (1) Unless the ethical dimensions are considered, the international community may choose responses that are ethically unsupportable or unjust; (2) Many profound ethical questions are hidden in scientific and economic arguments about various climate change policy proposals; (3) An equitable approach to climate change policy is necessary to overcome barriers currently blocking progress in international negotiations; (4) An ethically based global consensus on climate change may prevent further disparities between rich and poor, and reduce potential international tension that will arise from climate-caused food and water scarcities and perceived inequitable use of the global atmospheric commons as a carbon sink (Brown et al. 2006a)

[16] The event was sponsored by the Bahá'í International Community with the UN Permanent Missions of Tuvalu and of the Marshall Islands. Also co-sponsoring were the UN Office of the High Representative for the Least Developed Countries, Landlocked Developing States and Small Island Developing States (UN-OHRLLS); the UNEP Interfaith Partnership for the Environment; Rock Ethics Institute at Penn State University; International Environment Forum; and the NGO Committee on Sustainable Development. For articles and YouTube links, see IEF (2007) and BWNS (2007)

[17] The Group of Eight (G8) is an international forum of the world's most powerful industrial democracies: the USA, the UK, Canada, Germany, France, Italy, Japan, and Russia. The European Union is also represented at meetings, but is not an official member. The G8 presidency rotates annually among members, and the holder of the presidency sets the group's annual agenda and hosts the annual summit attended by the heads of government of member states

role that developed economies have to play in any future climate change efforts to reduce global emissions, so that all countries undertake effective climate commitments tailored to their particular situations' (G8 2007, p. 16). Finally, the G8 (2007, p. 19) addresses climate change adaptation and affirms its 'willingness to continue and enhance cooperation and support for developing countries,' particularly those most vulnerable to climate change's negative impacts. These points of agreement on ethical principle and the full G8's endorsement of the UN climate process as 'the appropriate forum for negotiating future global action on climate change' in the words of Ivo de Boer (CCS 2007, p. 1), Executive Secretary of the UNFCCC, represent a 'breakthrough' that has 'reenergised the UN's multilateral climate change process,' paving the way for December 2007 negotiations at UNFCCC-COP15 in Bali on a post-2012 global climate regime.

ROLES RELIGION PLAYS IN SUPPORTING ETHICAL ACTIONS ON CLIMATE CHANGE

Of the many definitions and characterizations of religion available, this essay defines religion as a system of belief concerning the supernatural, sacred, or divine, and the moral codes, practices, values, and institutions associated with such belief.[18] The influencing power of each of these elements and others has long been recognized, as is exemplified in a 1990 appeal by scientists (including the aforementioned Revelle and Suess) to the world religious community. They asked for commitment in word and deed to preserve the environment of the Earth, as: 'The historical record makes clear that religious teaching, example, and leadership are powerfully able to influence personal conduct and commitment' (Sagan 1990, p. 615). In 1992, the Union of Concerned Scientists' 'warning to humanity' extended a specific invitation to several groups, among them religious leaders, to embrace a new environmental ethic sufficient to 'motivate a great movement, convincing reluctant leaders and reluctant governments and reluctant peoples themselves to effect the needed changes' (UCS 1992, p. 4). [19] In the intervening years, scholars, religious leaders, and other influential figures have also solicited a more active role for religions in climate change concerns and climate ethics (Tucker & Grim 2001a, Millais 2006, UNNS 2007, USRO 2007, Wilson 2006).[20]

One early thinker on climate ethics asked, 'Why should the question of religious responsibility to the environment be included in a book on ethics and climate change?' He answered with 3 reasons (Coward 1993, p. 39):

> First, just as philosophy and law and economics may offer guidance based on long history of human thought, so also religion has been and remains a major part of human civilization; therefore its wisdom should be considered. Second, since many in today's world are believers in one or another religion, an appeal for individual environmental responsibility could use as a part of its argument, at least, an appeal to the individual's religious beliefs. Third, some states are religious rather than secular (e.g. Pakistan and Iran); therefore, knowledge of religious responsibility can help in appealing to such states for international cooperation on environmental problems such as global climate change.

In addition to laying out this cogent rationale, Coward (1993) provided an overview of most major religions' scriptures and traditions relevant to climate change (see also Millais 2006), and thus they will not be developed in this paper other than to be employed in an illustrative fashion.

After Coward, many others have similarly recognized a special role for religions to play in climate concerns. Some authors cite religions' moral authority and institutional power as the attributes most likely to effect changes in attitudes, practices, and public policies (Tucker & Grim 2001b). Others believe religions can aid to broaden the dialogue on climate change by speaking the language of morality and faith itself (Millais 2006). Still others identify religions' unique contribution as broad agreement on the seriousness of the problem and organization of educational and outreach campaigns (Stults 2006). Sagan (1990) highlight religious institutions' strong potential influence on modern affairs. The present essay acknowledges and agrees with these, but sees several more roles and prefers to combine the most salient ones in a larger framework, thus arguing that the key role of religion in climate matters derives from 4 main sources: religions' (1) traditional and unique functions in society, (2) ethical teachings, (3) reach and influence, and (4) ability to inspire adherents to action. The first section of this paper adduced reasons why ethics constitute a necessary part of negotiations and discussion, and this section endeavors to demonstrate that the principal func-

[18] Adapted from Wikipedia definition

[19] Much of the groundwork and institutional build up for climate change has already been undertaken in past decades of effort on the intersection of religion and environmental issues more broadly

[20] It should be noted that greater religious activities on climate change and environmental issues does not infringe on the 'separation of church and state' doctrine enshrined in the US Constitution. That requirement refers to governments and religious institutions remaining separate and independent from one another so that religious freedoms are maintained, but it is not intended to exclude religious and moral values from public life.

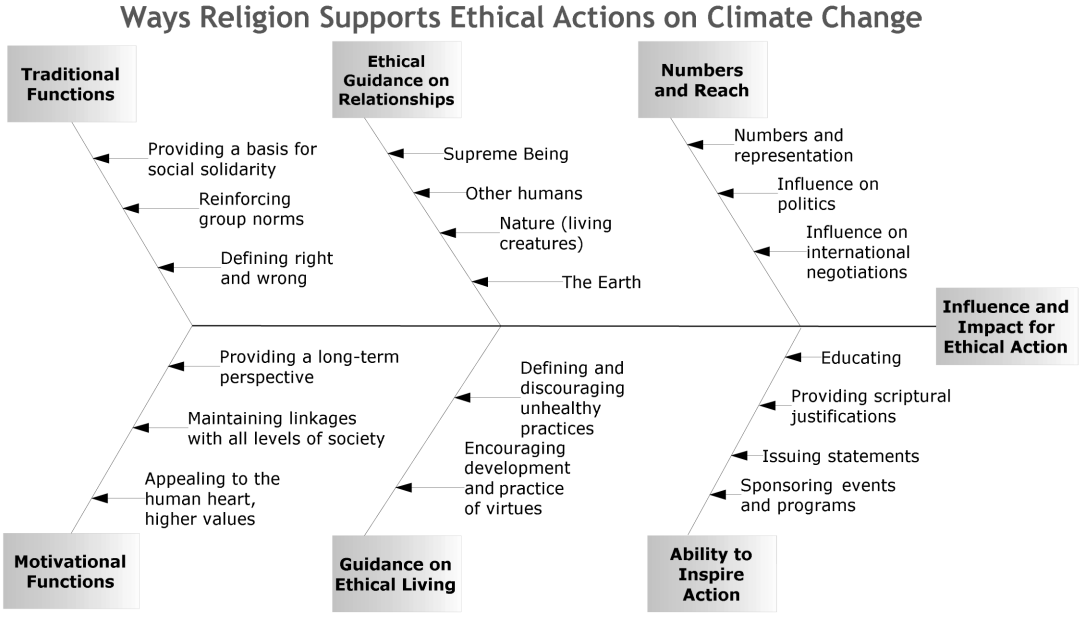


Fig. 2. Religion's multiple contributions to ethical actions on climate change

tions and attributes of religion strongly support ethical treatment of climate change issues.

Fig. 2 outlines the 14 key ways in which religions contribute to ethical responses to climate change. These will be elaborated in the following pages. It is worth mentioning here that ethics and climate-related ethics do not arise solely from religious belief and can form from human reason, compassion, and experience. Nevertheless, like Mr. Millais, CEO of the Climate Institute in Australia, whose secular organization deliberately reached out to religious groups in *Common belief*, most individuals promoting ethical examination of climate issues recognize the natural and powerful ally in religious communities.

Functions of religion in society

From the time of Durkheim, Weber, and Marx, who stressed religion's role in social cohesion and control, sociologists of religion have been identifying functions of religion in society. Social functions of religion identified by Durkheim include providing a basis for common purpose and values that can maintain social solidarity, binding people together, reinforcing group norms, and exerting social control by defining right and wrong behavior and setting boundaries (Johnstone 2004). The ethical and social aspects of each of these functions add to the potential of religious adherents to collectively and individually tackle climate issues. Perhaps most fascinating is that religion is in fact promoting social solidarity not only at the level of individual religions but among religions. While the great influencing power of religion is sometimes used for ill purposes[21], in the present day climate crisis there is an overarching spirit of looking past differences, reaching out across faith communities, and arising to realize common goals. With reference to Australia's *Common belief* document, the Chair of the Islamic Council of South Australia states: 'I believe that people of all religions should put aside all their differences and work together to save the world's climate for the future generations to come' (Macey 2006, p. 2). *Common belief* also records: 'For our part, the Catholic Bishops of Australia offer the hand of cooperation to all spiritual and secular leaders in Australia. We do so in an act of solidarity, knowing that the Earth is our common home' (Millais 2006, p. 18). These are striking leadership statements indicative of a good faith willingness to work together across religions for the benefit of the planet and its current and future inhabitants. Religion, through the climate crisis is becoming a stronger uniting force, stressing commonality rather than otherness and difference.

With regard to contemporary issues and climate change, several more specific and unique functions of religion come to mind. The continuity and long view of religion is one of its special contributions to the climate issue. Grim (2006, p. 1) expands upon this saying that

[21]This paper focuses on the functions rather than the dysfunctions of religion, the latter being outside the scope of this paper but extensively discussed in Johnstone (2004)

while policy solutions are appropriately aimed at short-term managerial or legislative strategies, 'long term ethical and spiritual perspectives are also required to address issues of human motivation to make needed changes. Religions bring long term perspectives not only through their ancient historical scriptures and oral narratives, but also in their contemplative, devotional, and ritual commitments to shaping abiding values in communal life.' Religious elements that reinforce long-term perspectives tend to link members to the past, contextualize them in a common history, and 'provide motivation and inspiration to carry on' (Johnstone 2004, p. 30).

Secondly, religions' institutional arrangements allow them to maintain connection to the grass roots and hear the voices of people in all reaches of the Earth. Canberra's Bishop George Browning hears about the climate's current impacts from his 'brother bishops': (1) those from Polynesia and Micronesia describe how low-lying atolls in Tuvalu experience coastal flooding and contamination of fresh water; (2) bishops from Australia and Africa report longer and more severe droughts, food security issues, poverty and suffering; and (3) reports from bishops in the US, Canada, Oceania, and the Philippines describe how increasingly damaging storm activity impacts vulnerable coastal populations. Personal accounts and connection with those who are suffering or at risk provide a compelling reason for action.

A final function provided uniquely by religion is an appeal to the heart, human empathy, and higher values that inspire individuals and societies to transcend narrow self interest. Such appeals help in establishing moderation, restraint, and willingness to sacrifice for the common good.[22] Science, technology, politics, and economics are less able to provide these perspectives and transformational services to the masses of humanity.[23] This last function may in fact be a major key for sustained progress on mitigating climate change. As Beck (1995) and Buell (2001) have persuasively argued, the success of environmentalist initiatives hinges not only on new developments in science and technology, but on a state of mind that is bound to be influenced as much (or more) by the power of images, narratives, metaphors, and by appeals to feeling as by appeals to data, statistics, expertise, and formal reasoning.

[22]In support of these ideas Donald Brown, leading thinker in climate change ethics, was quoted in *Christian Science Monitor* as saying 'If you only appeal to self-interest and not to people's sense of ethics and justice, you aren't going to get the responses necessary to make needed [greenhouse gas emissions] reductions' (Lampman 2006, p. 2). Likewise, Tucker & Grim (2001b, p. 19) suggest that in relation to the natural world, religions hold common values of 'reverence, respect, restraint, redistribution, and responsibility' (5 'Rs' of religion), and these can be utilized to help bring about a change in thinking (see Yonke 2007)

[23]Though economic incentives or penalties can also encourage restraint and moderation

Relevant ethical teachings of religions

It is important to note at the outset that religion can both deliver and obstruct solutions in relation to the climate crisis, in part depending on which aspects of their scriptures and traditions are stressed. For example, perceived scriptural license to 'dominate the Earth' rather than steward it, has arguably led to a great deal of environmental damage over time (White 1967). Various denominations of major Western religions interpret scripture in a way that de-emphasizes the importance of the Earth. A percentage of these denominations interpret scripture to not require a position on climate change, contending that climate change is not a consensus issue (Hagerty 2006). The current essay does not stray into contrary aspects which are treated elsewhere (Coward 1993), but rather remains focused on providing a sampling of scriptures conducive to environmental and climate ethics. The presence of great intra-religious diversity and possibility for divergent scriptural interpretation underlines that religious support for ethical action on climate change is not necessarily a tenet of faith, but is a deliberate choice likely to be influenced by an individual's or group's understanding of scriptural mandates. Various interpretations notwithstanding, this essay has turned up a preponderance of scripture and scriptural interpretation that lend support for an ethical approach to climate change solutions. Scripture in support of climate ethics can be broadly classified under the headings 'Ethical guidance on relationships' (with Supreme Being, other humans, creatures, the Earth) and 'Guidance for ethical living'.

Ethical guidance on relationships

Religion has been called 'the most powerful source of ethical guidance for our civilization' (Gore 1993, p. 242), whether transmitting ethics in terms of virtues, values, duties, customs, compassion or sacred law (UNESCO 1999). Tucker & Grim (2001b, p. 13) refer to religions as 'key shapers of people's worldviews and formulators of their most cherished values'. Every major religion to one degree or another prescribes principles for the human relationship with a Supreme Power (and religious teacher or prophet), other humans, the Earth's creatures, and the Earth itself. Through a mix of parables, exhortations, command-

ments, and traditional practices, the nature and importance of these relationships are reinforced in various ways in each of the world's sacred traditions. The relative emphasis and priority assigned by religious leaders to one relationship over another has until recently appeared to be a major sticking point in terms of seeing environmental stewardship as a moral duty.

For several millennia, McKibben (2001, p. 301) posits, some ancient religions have taken the natural world for granted, 'assumed it as a given, the backdrop against which humans and deities worked out their various relationships'. Yet, more recently, 'responding to the urgent alarms of scientists, historians of religion and theologians have pored over old texts and traditions, seeking to find in them sources for a new environmental ethics — a repair guide for what suddenly seems our most broken relationship of all, namely, our human relationship to the natural habitat'. He continues: 'It turns out that buried in plain sight throughout our various traditions are myriad clues and suggestions about how we might live more lightly on the planet,' and thereby avert more severe global warming.

Whether distant or personal, most religions define an ideal relationship between the individual and Supreme Being that involves worship and love. As well, one of the most fundamental teachings common to every major religion is the ethic of reciprocity or 'Golden Rule' for human-human interaction (Table 1). Religions also provide guidance for how to regard the Earth and its creatures, with most religions explicitly

Table 1. Golden rule or ethic of reciprocity in world religions (adapted from Religious Tolerance 2007)

Ethic of Reciprocity in World Religions

Ancient Egyptian
- Do for one who may do for you, that you may cause him thus to do. *The Tale of the Eloquent Peasant, 109–110.* Translated by R. B. Parkinson. The original dates to 1970–1640 BC and may be the earliest version ever written

Bahá'í Faith
- Blessed is he who preferreth his brother before himself. And if thine eyes be turned towards justice, choose thou for thy neighbour that which thou choosest for thyself. *Tablets of Bahá'u'lláh 6.71 and 6.64*
- Wish not for others what you wish not for yourselves. *Bahá'u'lláh Kitab-i-Aqdas 148.73*

Buddhism
- ...a state that is not pleasing or delightful to me, how could I inflict that upon another? *Samyutta Nikaya v. 353*
- Hurt not others in ways that you yourself would find hurtful. *Udana-Varga 5:18*

Christianity
- Therefore all things whatsoever ye would that men should do to you, do ye even so to them: for this is the law and the prophets. *Matthew 7:12, King James Version*
- And as ye would that men should do to you, do ye also to them likewise. *Luke 6:31, King James Version*

Confucianism
- Do not do to others what you do not want them to do to you. *Analects 15:23*
- Tse-kung asked, 'Is there one word that can serve as a principle of conduct for life?' Confucius replied, 'It is the word 'shu' — reciprocity. Do not impose on others what you yourself do not desire.' *Doctrine of the Mean 13.3*
- Try your best to treat others as you would wish to be treated yourself, and you will find that this is the shortest way to benevolence. *Mencius VII.A.4*

Hinduism
- This is the sum of duty: do not do to others what would cause pain if done to you. *Mahabharata 5:1517*

Humanism
- (5) Humanists acknowledge human interdependence, the need for mutual respect and the kinship of all humanity.
- (11) Humanists affirm that individual and social problems can only be resolved by means of human reason, intelligent effort, critical thinking joined with compassion and a spirit of empathy for all living beings.

Islam
- None of you [truly] believes until he wishes for his brother what he wishes for himself. *Number 13 of Imam Al-Nawawi's Forty Hadiths*

Judaism
- ...thou shalt love thy neighbor as thyself. *Leviticus 19:18*
- What is hateful to you, do not to your fellow man. This is the law: all the rest is commentary. *Talmud, Shabbat 31a*

Native American Spirituality
- Respect for all life is the foundation. *The Great Law of Peace*
- All things are our relatives; what we do to everything, we do to ourselves. All is really One. *Black Elk*
- Do not wrong or hate your neighbor. For it is not he who you wrong, but yourself. *Pima proverb*

Taoism
- Regard your neighbor's gain as your own gain, and your neighbor's loss as your own loss. *T'ai Shang Kan Ying P'ien*
- The sage has no interest of his own, but takes the interests of the people as his own. He is kind to the kind; he is also kind to the unkind: for Virtue is kind. He is faithful to the faithful; he is also faithful to the unfaithful: for Virtue is faithful. *Tao Teh Ching, Chapter 49*

Zoroastrianism
- That nature alone is good which refrains from doing unto another whatsoever is not good for itself. *Dadistan-i-dinik 94:5*
- Whatever is disagreeable to yourself do not do unto others. *Shayast-na-Shayast 13:29*

enjoining responsibilities for 'creation care' or Earth stewardship (Gore 1993, Tucker & Grim 2001a, Millais 2006). Relationships and responsibilities to humans, other beings, and the Earth are central to climate change debates, as at a practical level, actions in one part of the world can have disproportionate negative impacts on humans, life, and the farthest flung reaches of the Earth — the poles, tropical glaciers, and low-lying and small island states — and on future generations of Earth's inhabitants. The relationship with the Supreme Power is central in another way; it is the allegiance establishing personal responsibility and accountability for the other relationships.

It is instructive to take a closer look at the scripture of faith communities. Both Jewish and Christian statements on climate change quote from the Old Testament. Often quoted passages that touch on these essential relationships include 'The Earth is the Lord's and the fullness thereof… ' (Psalm 24:1), 'The Lord God took and placed the human in the Garden of Eden, to till and to tend it' (Genesis 2:15), and 'Choose life, that you and your descendants might live' (Deuteronomy 30:19). Also frequently quoted is the New Testament scripture from the Judgment of the Nations, referring to what has been done 'unto the least of these my brethren, ye have done it unto me' (Matthew 25:40, 45). Elias Abramides, a Greek Orthodox member of the World Council of Churches, eloquently captured much of the essence of these teachings and the 4 relationships at the April 2007 Vatican conference on climate change: 'As Christians … we need to recognize and accept the intimate ethical and deeply religious implications of climate change. It is a matter of justice, it is a matter of equity, it is a matter of love: love for God the Almighty, love for the neighbor, love for creation' (Pullella 2007, p. 2).

Writings from the Koran of Islam speak about human beings being appointed by God as 'viceroys' or guardians of the Earth and the heavens and the Earth as extensions of God's throne (see Khalid 1996). The Koran also speaks about balance and states, 'And earth — He set it down for all beings' (Khalid 1996, p. 9).[24] Notably, the teachings of other religions share many commonalities with the guidance expressed above.[25] For example, Sikh scripture, *Guru Granth Sahib*, declares that 'Creating the world, God has made it a place to practice spirituality' and that the purpose of human beings is to achieve a blissful state and be in harmony with the Earth and all creation (Millais 2006, p. 34).

Guidance for ethical living

Johnstone (2004, p. 12) asserts that religion is unique in claiming a 'higher' source or basis for its morality and, on such basis, religions provide ethical guidance both to steer humans towards beneficial living and away from what is harmful to the individual or society. Buddha's message from 2550 yr ago offers insight and practical guidance for ethical living, warning followers against poisons that remain relevant today (Millais 2006, p. 16):

> The three poisons greed, hatred and delusion have effects going beyond the now. The arising of unwholesome unpleasant states is the result of ignorance of the consequences of wrong action and perpetuation of bad habits. One who practices *Sila* — moral living, *Samadhi* — concentration leading to mindfulness, and *Panna*, wisdom, heeds the universe, and the preservation of all forms of life.

Hinduism offers many specific guidelines for ethical living, including self control, restraint, simplicity, and dietary guidelines 'respectful of the sanctity of all life' (Millais 2006, p. 24). Bahá'úlláh, the prophet-founder of the Bahá'í Faith, explained in the late 1800s that, 'Every age hath its own problem, and every soul its particular aspiration' and exhorts followers to 'Be anxiously concerned with the needs of the age ye live in, and centre your deliberations on its exigencies and requirements' (Millais 2006, p. 19).

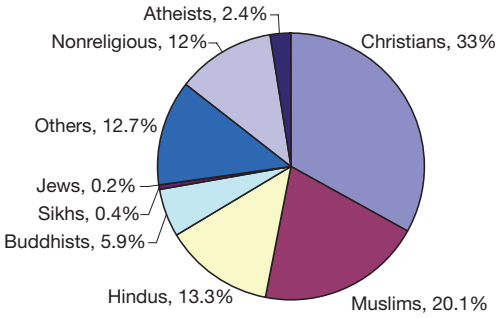
Reach and influence of religions

Religions hold unparalleled potential reach and influence in terms of numbers, ability to cross-cut all social strata and professions, and overt and subtle influence at all political levels. In terms of numbers, Fig. 3 shows that 73% (4.7 billion) of the world's population (6.38 billion) identify with one of the world's 12 classical organized religions, ranging from about 2 million to 2 billion adherents each (mid-2004 estimates, Encyclopædia Britannica 2004).[26]

Partly due to such significant numbers of people within religious communities, faiths wield immense

[24] For those who wish to read further quotations and perspectives on climate change from Judaism, Christianity and Islam, recommended reading includes an interfaith liturgy of sacred writings (GWIPL 2007a) and sermons from each tradition (GWIPL 2007b) available from the Greater Washington Interfaith Power and Light website

[25] Expressions of these types of teachings as applied to climate change can be found in *Common belief*, a joint statement of 16 faith communities facilitated by Australia's Climate Institute (Millais 2006), in Coward's (1993) book chapter, and in the individual climate statements issued by religious denominations



Classical religions	Adherents (millions)
Christians	2107.0
Muslims	1283.4
Hindus	851.3
Buddhists	375.4
Sikhs	25.0
Jews	15.0
Bahá'ís	7.5
Confucianists	6.4
Jains	4.5
Shintoists	2.8
Taoists	2.7
Zoroastrians	2.6

Fig. 3. Percentages and numbers of religious adherents[27]

financial influence, some with 'assets far greater than many banks or multinationals' (see Palmer & Findlay 2003, p. 39). Ethical investment by religious groups is becoming more common, and has even begun to be coordinated between religious groups. The International Interfaith Investment Group (3iG), consisting of likeminded faith organizations, seeks to invest responsibly to 'contribute to a just and sustainable society' (IIIG 2007, p. 1). Through entities like this, and their partnerships with private advisory bodies and 'cascade effects' tens and hundreds of billions of dollars can be harnessed for ethical investment and promoting development in specific areas, such as alternative energy (Palmer & Findlay 2003, p. 43). With religion's long-term perspective on investments and newer interest in supporting ethical investment (rather than only avoiding unethical investment), the potential of religion's financial clout for helping address global challenges is only beginning to be understood and appreciated.

Religion is important in the lives of individuals across all social strata, professions, and levels of influence, and religious institutions further magnify the influence of individuals in diverse areas of modern life. Carl Sagan (1990) notes that, 'As on issues of peace, human rights, and social justice, religious institutions can … be a strong force encouraging national and international initiatives in both the private and public sectors, and in the diverse worlds of commerce, education, culture, and mass communication'. Through these various means, the convergence of the problem, policy, and politics streams (Kingdon 1995) are hastened, facilitating swifter response and action. Finally, there are today numerous examples of religious influence on politics and decision-making, including evangelicals pressuring the Bush Administration on climate change (Hagerty 2006), testimonies to Senate Committees (Carr 2007, USRO 2007), and religious leaders in Australia making climate policy an election issue (Crittenden 2006). Religions increasingly open forums for dialogue on ethics, even at the level of international negotiations. Religious groups have lead or sponsored popular side events on climate change ethics at several international meetings (e.g. UNFCCC-COP11, UNCSD-15).

Inspiring action on climate change

Religious teachings on ethics, stewardship, and responsibility, such as those mentioned in the previous sections, catalyze action among adherents. There are abundant cases in which religious teachings have inspired followers to champion important ethical causes, such as abolition of slavery and establishment of civil rights in the USA or education of both boys and girls in Persia. Religions are often far ahead of the curve on both discussing and acting on issues of ethics and social and environmental justice. One relevant case in point is the concept of sustainable development, defined in the famous 1987 Brundtland Report[28] as development that 'meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED 1987, p. 43). Most authors attribute the beginning of the sustainable development concept to the 1980 World Conservation Strategy, yet the University of Stavanger's Oluf Langhelle (2000) traces it back further to the World Council of Churches in the early 1970s.[29]

A recent compilation (Allison 2007) lists over 32 distinct religiously based organizations active on climate change. These represent only the most active ones, with the caveat that much of the work of climate change action takes place at the state and local level

[26]The encyclopædia provides further disaggregation by branch and continent and lists many more religions, but for the purposes of illustration Fig. 3 will suffice to give an idea of worldwide percentages

[27]Source: Encyclopædia Britannica (2004). The table shows the classical Abrahamic (Judaism, Christianity, Islam, Bahá'í Faith), Dharmic (Hinduism, Buddhism, Jainism, Sikhism), and Taoic (Taoism, Confucianism, Shinto) religions. Zoroastrianism falls in a separate category. The combined 12 are the classical world religions most often referenced in world religion courses

[28]Brundtland Report is the common name for the World Commission on Environment and Development (WCED)'s *Our common future* publication. It and the 1992 United Nations Conference on Environment and Development in Rio de Janeiro, Brazil gave the term international exposure and prominence

Table 2. Religious efforts for ethical actions on climate change: review findings. The specific groups used for a basis of analysis are (1) International Environment Forum (Bahá'í-inspired), (2) Buddhist Peace Fellowship, Green Sangha, (3) National Council of Churches USA Eco-justice Program, (4) Evangelical Environmental Network, (5) Islamic Foundation for Ecology and Environmental Sciences, (6) Coalition on the Environment and Jewish Life, (7) United States Conference of Catholic Bishops, (8) Anglican Communion Environmental Network, and (9) Unitarian Universalist Ministry for the Earth. ✔ = clearly apparent, ⇔ = indirect or weak, × = not apparent

	Has an entity/ organization that maintains a relevant website	Educates on the science of climate change	Educates on the ethics of climate change	Provides scriptural justification for ethical action on CC	Hosts or sponsors relevant events	Employs mechanisms to promote further action and education	Religious leadership has issued a formal statement or position on CC	Leads or participates in CC efforts going beyond these
(1) Bahá'í	✔	✔	✔	✔	✔	✔	×	✔
(2) Buddhist	✔	×	⇔	⇔[a]	×	⇔	×	×
(3) Christian Ecumenical	✔	✔	✔	✔	✔	✔	✔	✔
(4) Evangelical	✔	✔	✔	✔	✔	✔	✔	✔
(5) Islamic	✔	⇔	✔	✔	✔	✔	×	✔
(6) Jewish	✔	⇔	✔	✔	✔	✔	✔	✔
(7) Roman Catholic	✔	✔	✔	✔	⇔	✔	✔	✔
(8) Anglican	✔	✔	✔	✔	✔	✔	✔	✔
(9) Unitarian	✔	✔	✔	⇔[a]	✔	✔	✔	✔

[a]Relatively less emphasis on scripture; Buddhists refer more often to a dharmic perspective and healing; Unitarian Universalists refer to the Seventh Principle affirming and promoting 'respect for the interdependent web of all existence of which we are a part'

and in groups that are part of larger networks, while the compilation focuses primarily on the larger networks. Based on available information from the Allison compilation and the Yale University website on climate change work in religion and ethics, this paper establishes 8 criteria for measuring action: maintaining a website, educating adherents on climate change science and on the ethical dimensions of climate change, providing scriptural justification for action, hosting events, employing mechanisms for further learning and action, issuing formal statements, and efforts going beyond those. In each of 9 religious traditions profiled, 1 religious organization or entity was selected as the basis for analysis. In cases where there were several entities simultaneously taking leadership positions on climate change within a specific religion, the organization that appeared most active based on website information was chosen. Each criterion was deemed either clearly apparent, indirect or weak, or not apparent as of mid-May 2007. The findings are summarized in Table 2[30].

Each religious organization's website speaks in the language and terminology of that particular religion and offers a range of rationales and motivations for action. In all cases, both scripture and supporting rationale are articulated. Most explain and also provide links to websites on science and ethics of climate change. Relevant events sponsored range from sermons to talks, workshops, conferences, and side events at international forums. Mechanisms to promote further action include recommendations for living and modifying behavior[31], educating others, and speaking to community leaders and national representatives. Statements (see Yale 2007) have been issued on climate change's ethical and religious dimensions from

[29]Their 1976 statement as quoted in Langhelle (2000, p. 306–307) asserts: 'The twin issues around which the world's future revolves are justice and ecology. 'Justice' points to the necessity of correcting maldistribution of the products of the Earth and of bridging the gap between rich and poor countries. 'Ecology' points to humanity's dependence upon the Earth. Society must be so organized as to sustain the Earth so that a sufficient quality of material and cultural life for humanity may itself be sustained indefinitely. A sustainable society which is unjust can hardly be worth sustaining. A just society that is unsustainable is self-defeating. Humanity now has the responsibility to make a deliberate transition to a just and sustainable global society'

[30]This is not meant to be an exhaustive list or exercise, but rather represents a sampling of the 'potential and actual resources embedded in the world's religions for supporting sustainable practices' (Tucker & Grim 2001b, p. 2) with respect to the climate and natural and social environment

[31]There is 'high agreement' in the IPCC that changes in lifestyle and behavior patterns can contribute to climate change mitigation across all sectors, and ones that 'emphasize resource conservation can contribute to developing a low-carbon economy that is both equitable and sustainable' (IPCC 2007c, p. 12)

2000 to the present, and there have been suggestions that Pope Benedict XVI may be considering an encyclical on climate change (Pullella 2007). An encyclical is the highest form of papal writing, meant to inform the whole Catholic Church on some particular matter of importance and even to reach beyond the church to all people of good will. Whether or not such a letter is ever issued, the carbon offset arrangement sanctioned by Pope Benedict XVI, which makes the Vatican the world's first carbon-neutral sovereign state (CNA 2007), sends an equally powerful message and segues into the last 'going beyond' category (see above).

The last category is one in which religions showcase a diverse and innovative range of efforts and programs going beyond the other categories. These programs include the Evangelical Environmental Network's 'What would Jesus drive?' campaign, efforts on climate-friendly policy by Unitarian Universalist state legislative groups, testimonies at Senate hearings (many Christian groups), among many others. The Coalition on the Environment and Jewish Life and Shalom Center promote Kosher Kars (hybrids or other high-mileage cars), Greening Synagogues and energy audits of synagogues, annual holiday cards with scripture and 8 actions for the 8 days of Hanukkah, and 'Oiloholics anonymous' groups in synagogues and other congregations for people to help each other 'kick the oil habit' in their household and congregational lives. The Bahá'í-inspired International Environment Forum has sponsored several international conferences on global warming, including the 2006 'Science, Faith and Global Warming: Arising to the Challenge' in Oxford, UK, which was made available electronically and carbon offsets purchased by the in-person participants in order to make the conference carbon neutral.

All the religions reviewed can be considered overall to be promoting individual responsibility and religiously inspired or ethically based action to reduce climate change risks. Some have made more sustained efforts than others[32], but a common theme is that religions are calling their members to take action based on (1) moral responsibilities to fellow humans and (2) a God-given duty of Earth stewardship. Aware of the commonalities in religious perspectives on the ethical dimensions of climate change, many groups have formed interfaith organizations and networks to combine forces and be more influential on the issue.[33] Levels of activity and awareness of climate issues cannot be extrapolated to all members of profiled faith communities or perhaps even most, but these findings confirm that some subset of each religion is informed, mobilized, engaged, and committed to teaching others and taking part in reducing emissions and addressing the ethical dimensions of climate change.

CONCLUSIONS

The field of climate change ethics has developed rapidly over the past decade, to the benefit of climate negotiations, debate, and action at all levels. Ethical dimensions of climate change represent a critical issue and ingredient to continued progress on mitigating and adapting to climate change. Religion is a partner in facilitating more wide-reaching recognition and discussion of ethical issues and responses to climate change.

Religion, through the climate crisis, is becoming a uniting force, stressing commonality rather than otherness and difference. This is evident in joint statements, expressions of solidarity, and strong widespread and numerous interfaith efforts related to climate change and its ethical dimensions. It fills functions that science, technology, economics, and policy cannot fulfill alone or as effectively. Distinguishing characteristics and unique contributions are consistently associated with religious involvement in climate change and particularly its ethical dimensions. Religious groups are in fact adding light to the debate, as Mr. Corin Millais had hoped. They are articulating compelling moral and ethical reasons for tackling climate change. They are drawing linkages with spiritual principles and modern challenges that illuminate human responsibilities and highlight what priorities are needed.[34] Religions are rousing their members to action and using their numbers and influence to pressure world leaders into taking stronger stands and more ambitious measures.

[32]Renowned biologist and author Edward O. Wilson, in an interview on his new book *Creation*, asserted that 'Judeo-Christian communities … have begun making important strides and awareness and conservation activity, but at present, Islam and those practicing Eastern religions have not moved significantly in that direction, but could in a very short time — and I'm rather hoping they will' (NPR 2006, min 24). No other comparisons of degree of religious environmental activism, particularly on climate change, have been uncovered during this research. On the whole, this review confirms that Jewish and Christian communities, at least in the USA, are the most publicly active on climate change. In terms of absolute numbers in the global population, Christians are the most active, with Catholics (from the Pope to bishops to lay people) being notably at the forefront at all levels (international to individual) and from the earliest dates. Notwithstanding, it is the author's decision not to make further comparisons, as each religion has its own way of being active, through private decisions, lifestyle choices, and others. If climate change activity were to be weighed in terms of size of carbon footprints, for example, other religions would be leading

[33]These include the Alliance of Religions and Conservation, GreenFaith, Interfaith Climate Change Network, Interfaith Power and Light Initiatives, Interreligious Eco-Justice Network, The Regeneration Project, and Religious Witness for the Earth

Local communities up to the international community, including the United Nations, have much to gain in recognizing the fact that they have a broad base of active, committed partners in the religious communities that have already placed climate change ethics on and often at the tops of their agendas.

Ethics could proceed on its own in the climate context, without religion, but religion can help bring the needed changes from the realm of the 'required' to the realm of the 'desired' at the individual and wider levels. Religion provides a critical missing link by assigning and instilling a profound sense of individual responsibility due to the context of the 4 relationships and associated duties; in this way, religion acts as an antidote to our civilization's conditioned weakness of conscience for collective acts, such as greenhouse gas emissions.[35] Further, spiritual principles (sometimes called human values) additionally induce 'an attitude, a dynamic, a will, an aspiration, which facilitate the discovery and implementation of practical measures' (UHJ 1985, p. 9), principles whose identification and guidance would help those in authority to solve problems.

There are many more practical areas to explore regarding the intersection of religion, ethics, and climate change. Further research could include (1) measuring religious influence on climate friendly behaviors, such as consumer choices and use of public transport, (2) Likert questionnaire surveys on degree of influence of climate change ethics sermons on individuals, (3) public perceptions of religion's place or role in climate issues, (4) review of religious imagery, stories, and themes pertinent to climate change, (5) survey of people most active in the climate change agenda for the sources of their initial motivation for action and specifically how much of their concern for climate ethics is attributed to religious beliefs and obligations, and (6) assessing which specific arrangements and courses of action members of religious groups consider ethical national behavior in the context of a post-2012 international climate agreement.[36] A greater understanding of religion's influence along these lines would allow religion's contributions to be better orchestrated with the other essential elements of climate solutions.

This exploration of the roles of religion and ethics in climate change will conclude with the closing testimony of John L. Carr to a US Senate Committee (Carr 2007, p. 6), as it shows the priority of ethics and summarizes well the role and contribution that faith communities can make:

> While there are no easy answers, the religious community has moral principles, everyday experience, engaged people and leaders to make a constructive contribution to climate change debate and decisions. The religious community can re-affirm and re-articulate our traditional message of restraint, moderation, and sacrifice for our own good and the good of God's creation. …We are convinced that the moral measure of debate and decisions on climate change will be whether we act with prudence to protect God's creation, advance the common good, and lift the burdens of the poor. Both our faith and the best of our national values call us to these essential tasks.

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[34] For example, Bishop of Canberra, George Browning, Chair of the Worldwide Anglican Communion Environmental Network, observed: 'One of the Millennium Goals was to make poverty history by 2015, but unless we stop climate change, this great aim will be just an empty dream. Indeed, without action now, we will assuredly make poverty permanent.' The charge to steward the Earth and all creation, including unborn future generations, makes climate change not an 'optional extra but a core matter of faith' (Millais 2006, p. 8). Catholics see themselves as simply applying traditional principles to modern challenges

[35] 'Nothing strengthens the judgment and quickens the conscience like individual responsibility.' This is the quote of Elizabeth Cady Stanton (fortuitously read on a Celestial Seasonings tea box) to which the above insight is owed

[36] One of the most useful areas to follow up, suggested by a colleague, would be to investigate ways to make ethics function more effectively at the policy level. An example of this would be identifying heuristics and approaches to help ethical dimensions be more systematically considered by policymakers (similar to what Harvard's Norman Daniels is doing with healthcare)

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