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ENVIRONMENT

**EQUITY IN ADVERSITY: CLIMATE CHANGE
AND INTERDEPENDENCE**

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WITH ENVIRONMENTALISM AND
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Equity in adversity; Climate Change and Interdependence

Aubrey Meyer

From 1952, aged five, I grew up in South Africa during the 'apartheid' years. Apartheid means 'separateness'. As public policy, apartheid meant 'separate development' for white people and 'non-white' people. To a child, this construct was definitely 'adult' and strange, as South Africa's national motto was, 'eendrag maak mag' or 'unity is strength'. When you put the two ideas together you got 'separateness is weakness'. This flawed logic was pervasive.

During those post-war years economies worldwide grew steadily. We were, so the story goes, becoming wealthier and wealthier. While South Africa was no exception to this, its society was polarised, racially and economically, more than anywhere else in the world. Land and wealth were concentrated in the hands of the few. Poverty was their gift to the many, and most of the poor were indeed separated, for not being white skinned.

We had centres of wealth and 'Bantustans' of poverty; in practice this separation was into a vast periphery of moneyless people and a core of people-less money. With unintended irony and percipience, the South African Tourist Board attracted visitors to our 'beloved country' with the slogan that, 'South Africa is a World in One Country'. The economics, if not the politics, was just like the larger world.

The tension in this contradiction, more than anything else, drove the ultimate defeat of white South Africa nationalism and the election victory of the ANC after Nelson Mandela was released from prison. Rejecting segregation took years, but the nation did finally come together, believing that integration and inter-dependence were the better and safer option. There is an object lesson here for the UN climate negotiations.

By 1989 I had been living in London for ten years working as a musician. Looking for the subject of a musical, I became aware of the issue of global climate change. It suddenly seemed possible that the Greens were right. They argued that with our greenhouse gas (GHG) emissions, human beings have been causing changes in the atmosphere that - if continued - are capable of bringing civilization to its knees. The enormity of this insight was paralysing and it as good as overwhelmed me. The music in me was silenced.

A little investigation revealed that the human story behind this was all too familiar. Here again were moneyless people and people-less money, but at a planet threatening level. It was clear that getting beyond this delusory separateness globally was imperative. It seemed obvious that integration and inter-dependence would be central to any story of success that humanity as a whole would be writing, if we learned how to stop causing these climate changes. Apartheid doesn't work.

With three friends from the UK Green Party, I co-founded the Global Commons Institute (GCI) in London. Our mission was 'equity and survival'. In June 1990 we published a statement based on this. It was the first of hundreds of widely-supported GCI statements in the UK press and elsewhere over the following years. As the story unfolded, we found we were engaging in the climate change debate in numerous fora including climate negotiations, meetings with experts, off-the-record meetings, and meetings in Switzerland, New York, Delhi, Washington, Beijing, Bonn, Nairobi and even beloved Cape Town.

With the help of Tony Cooper, I produced a response to the global challenge of climate change and the inequity of which it was a symptom. 'Contraction and Convergence' (C&C) is a proposal that overall global emissions must contract, while overall the amount of emissions per capita must converge across the world. Primarily about GHG emissions, C&C is actually like a musical score. It is a global framework arising from basic principles. It is mathematically a resolution, like an 'Amen' cadence. In the language of the mediaeval churches, C&C is e pluribus unum, unity-in-diversity. I have called it equity-in-adversity, a just response to the global crisis. C&C makes possible projections of how to cope with the changes ahead by keeping in tune and in time with each other and the natural world. It shows how we might integrate through equity-in-adversity across the years so that we, and children yet to come, may survive and prosper in our increasingly fraught but interdependent future.

Human enhanced global warming

Since around 1800, the industrial economies of the Western world have been growing by burning fossil fuels,

The CRUCIBLE editorial observes; -

"The poor, less industrial countries are largely those that will suffer the consequences of global warming: 'worsening and greater frequency of storms, floods, desertification, crop failures, famines, eco-system collapse, species migrations and extinctions, disease vectors, refugees, social tensions, economic failures and large-scale political conflicts . . . [with] the rising of sea levels through warming of the waters . . . [to] cap all of these tragedies'. [Aubrey Meyer's article "Equity in Adversity"] compares the global apartheid, with the few offering a legacy of poverty - in the widest sense - to the many, with the political apartheid with which he grew up in South Africa. In the end, the only solution that ensured a future of any description was one that involved every citizen of the country. The visionary genius and transcendental forgiveness of Nelson Mandela made that possible. Similarly, the solution to global warming has to be planet-wide, or it will not work. Contraction and Convergence answers this call to unity."

first coal, then oil, and more recently gas. When these are burned to generate electricity, for example, greenhouse gases such as carbon dioxide, nitrous oxide, sulphur dioxide and methane are emitted to the global atmosphere, where they stay. CO₂ is the most abundant of these and it remains in the atmosphere for decades, even hundreds of years. This means that 19th Century emissions have lingered into the 20th Century atmosphere, while 20th Century emissions have simply added to the total.

We know this because measurements of the atmospheric concentration of, for example, CO₂, have shown a steady increase since we started burning fossil fuels. The increasing CO₂ emissions shown in the image below are measured in 'Giga' (billions) of Tonnes of Carbon (GTC) only. The concentrations shown are measured in atmospheric parts per million by volume (ppmv). The concentration in 1800 was 280 ppmv. Today it is rising through 373, a rise of over 35% in the last 200 years. Natural cycles notwithstanding, this contemporary rise is higher and faster than anything in the geological record of the last 500,000 years.

Sunlight to planet earth includes a radiation frequency that is faster than the visible rainbow spectrum. It is called ultra-violet (UV) light. When the UV light rebounds off the surface of the earth, it re-radiates at a wavelength slower than the visible spectrum called infra-red. CO₂ is called a greenhouse gas (GHG) because, like all gas molecules comprised of three atoms, it is excited by this infra-red radiation. This means in other words that the gas traps heat. The outcome therefore is straightforward: the more greenhouse gas that accumulates in the atmosphere, the more the temperature on average will be influenced upwards. This is the basis of what is called 'human-enhanced global-warming'.

On the balance of available evidence, this GHG accumulation is substantially responsible for the almost one degree Celsius increase of global temperature that has been observed over the last 200 years. It is what Mrs Thatcher correctly referred to in 1989 as "the vast uncontrolled experiment we have begun with the global atmosphere". It is common knowledge that applying more heat to anything makes it increasingly turbulent and unstable. Think of how agitated water becomes as you increase heat to it in a pan on the stove.

Since at least 1989, climate scientists

have been telling us that these trends of increased emissions, concentrations and temperature are moving towards 'dangerous' rates of climate changes. The use of the word dangerous is deliberate. It points to a worsening and a greater frequency of storms, floods, desertification, crop failures, famines, eco-system collapse, species migrations and extinctions, disease vectors, refugees, social tensions, economic failures and large-scale political conflicts over the years ahead. The rising of the sea levels through warming of the waters will cap all of these tragedies. The event as a whole will be 'stochastic', that is, very hard to predict in local detail but easy to explain and predict in general global terms. I shall call it here simply 'damages'.

Because of all this, the scientists' message to us has consistently been: unless we act collectively and decisively to reduce greenhouse gas emissions to the atmosphere by 60% to 80% of current levels as soon as we can, the upward rise of GHG concentration in the atmosphere will continue.

The United Nations Framework Convention of Climate Change

Recognising this awesome potential, the nations of the world came together between 1991 and 1992 to create the 'United Nations Framework Convention of Climate Change' (UNFCCC). It was signed at the Earth Summit in Rio de Janeiro in June 1992 (Rio 1992). Its objective "is to achieve . . . stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".

This is Article 2. It recognises that greenhouse emissions have to contract globally.

The Principles of Precaution and Equity Part of our present and terrible dilemma is that we can't prove that dangerous climate change is going to occur, any more than it is not. The future is about

probabilities especially including human behaviour. We can't sensibly adopt a strategy of simply observing passively whatever happens as it happens. Neither can we adopt a de facto policy of 'global apartheid' where peoples, their economies and nations simply have to make their various ways forward separately, hoping to adapt as best they can to whatever happens separately.

The reasoning for this is simple. If various local and even regional efforts to adapt to climate change are to be meaningful, there have to be global measures to avoid the worst outcomes, since, in the light of the above, mere adaptation will be a hiding to nowhere. At the same time, if various local and even regional efforts to limit and reduce emissions are to be meaningful, some collective account of global action to control greenhouse gas emissions as a total contraction event is required. If it happens it will by definition be in a precautionary equitable framework of inter-dependence. It won't happen in conditions of increasingly random guesswork. If there was to be market activity in this regime, it would be a framework-based-market, not a market-based-framework. When this overall goal is clear, principle has to inform practice.

Those who negotiated the UNFCCC engaged with these difficulties. The treaty document states the global principles of precaution and equity as follows: -

The Parties, "should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures . . ." (Article 3.3) . . . The Parties, "should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity". (Article 3.1).

They note that, "the largest share of historical and current global emissions of greenhouse gases has originated in

developed countries and that per capita emissions in developing countries are still relatively low" (Preamble). They therefore conclude that, "in accordance with their common but differentiated responsibilities and respective capabilities the developed country Parties must take the lead in combating climate change and the adverse effects thereof" (Article 3.1), while "the share of global emissions originating in developing countries will grow to meet their social and development needs" (Article 3.3). This recognises convergence.

The treaty document goes on to say that, "policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at lowest possible cost" (Article 3.3). This points to 'market-mechanisms', such as the global trading of emissions rights. Overall, however, a framework based on precaution and equity was being established, with efficiency introduced in a subsidiary role purely to assist achievement of its objective. There was political tension, the essence of which was this: was the objective of the treaty merely an aim, or something to which we were collectively committed?

Just before Rio 1992, Michael Howard, then the UK Environment Minister, inserted the word "aim" in the clause on commitments. The tension between guesswork and framework continues to dog the debate.

Challenging 'Expansion and Divergence' and the 'Economics of Genocide'

Without formalising contraction and convergence, the UNFCCC had in a loose form laid out the preconditions for it. The globally safe and fair future allocation of emissions or emissions permits was coming to the fore. While this was not fully seen at the time, awareness of this and its political dynamics had increased. With our early graphic imagery, GCI had maintained a lobbying presence throughout the negotiations publishing these points for 'equity and survival' as best we could. Still short of a real deal, we felt that progress had been made.

Between 1993-95 we became involved in a stark effort to challenge the counter-thesis to 'equity and survival' launched by economists. They suddenly descended on the UN, very well-resourced and in great numbers, with the slogan 'efficiency with no regrets'.

Climate change was correctly seen by them and their sponsors as a threat to continued economic growth. Instead of denying the reality of climate change and its origins in fossil fuel dependent economic growth, they suggested that generating more units of economic growth per unit of fossil fuel consumption was 'efficient' as it meant paying less for the energy content of 'growth'. They argued about what carbon tax levels should be introduced and devised a global cost-benefit analysis of climate change to help determine this figure. The figure was identified as the 'social cost' of carbon, and their cost-benefit-analysis claimed to determine how much tax people were willing to pay to avoid a unit of damage caused by climate change. However, this seemingly innocent approach ended in farce and diplomatic scandal. These economic experts brought humiliation on themselves with two fundamental errors. The first was their valuation of the planet's resources as a whole as threatened with increasing and potentially catastrophic

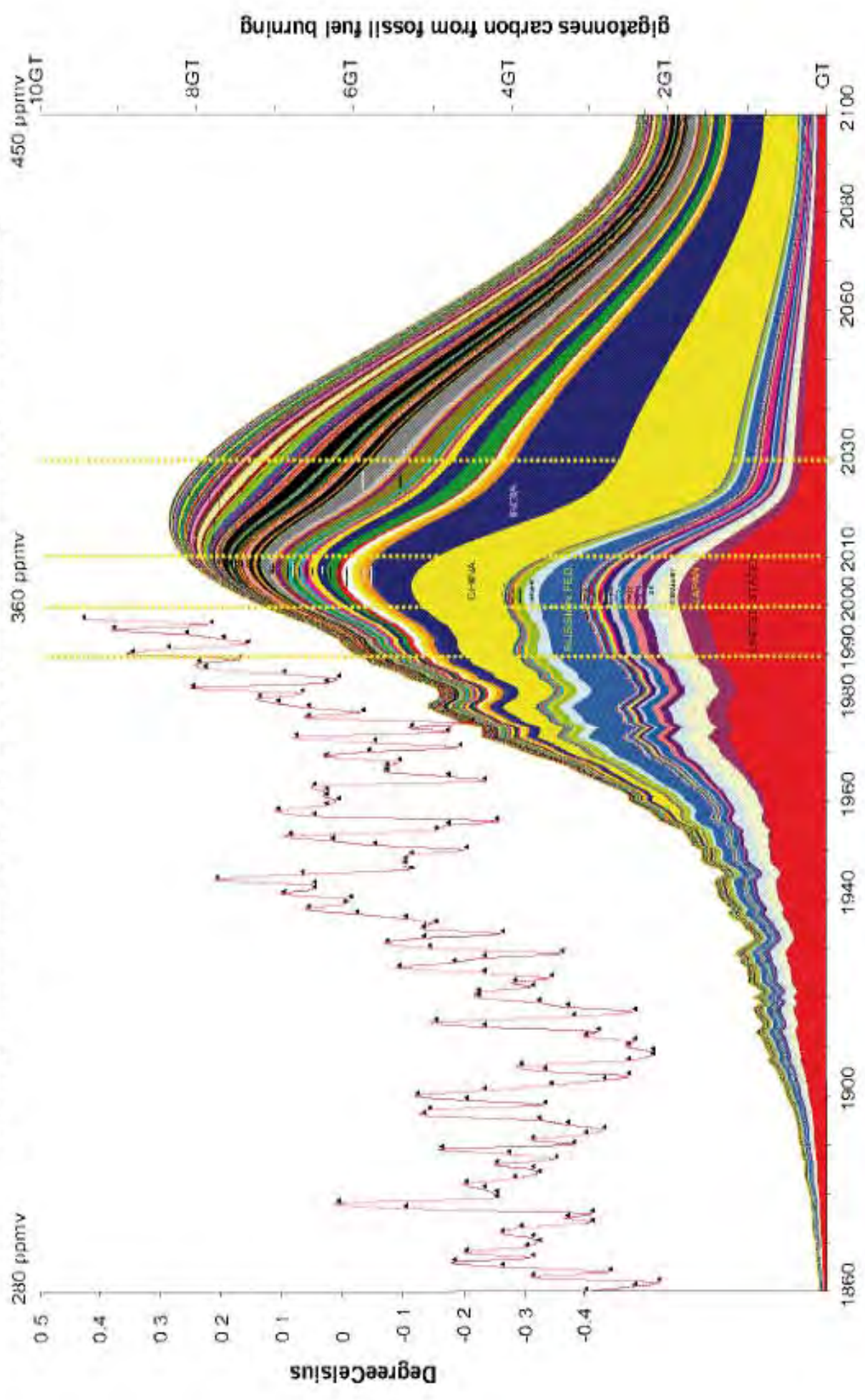
damages. Insurance company data show these damages have been growing steadily at 12% a year for the last 40 years. But the economists, blind to this and any projections of such trends, spot priced their entirely petty damage estimates well below the value of the economy as a whole.

They reasserted that its incontestable purpose was to grow at three or more percent per annum ad infinitum. The climate spin was that damages would be negligible, and there would be no regrets if we could find a way of burning less carbon in the process; apart from the benefit the planet might experience from less pollution, we would be saving on fuel bills as well. In short, they advocated selling the planet to the economy.

The second error was their failure to recognise the enormity of global economic apartheid. Their handling of mortality due to climate change was bathetic and shameless. They valued these statistical deaths as functions of the disparate incomes of the people involved. Crudely, poor and rich globally were valued fifteen to one; on average fifteen dead Indians had the same value as one dead Englishman. Normal to the economists perhaps, but it caused outrage.

The Intergovernmental Panel on Climate Change (IPCC) asked GCI to undertake a study of the unequal use of the global commons. This study demonstrated that the economies of the world have been jointly and severally growing in a persistent pattern of expansion and divergence since the war. By 1990 this pattern showed the distribution of global purchasing power between people-less money and moneyless people as follows; (1) the one third of global population who had consistently on average emitted more than 0.4 of a tonne per capita of carbon from fossil fuel burning had 94% of hard currency equivalent purchasing power and (2) the two thirds of global population who had consistently on average emitted less than 0.4 of a tonne per capita of

atmospheric concentrations of CO2 in parts per millions by volume (ppmv)



carbon from fossil fuel burning had the remaining 6%. This is what I mean by global apartheid.

The link between fossil fuel burning and income was nearly 100% in 1990. The two thirds of the global population in our study were people in the poor countries of the South who rightly said they had not triggered this global crisis. They denounced cost-benefit, global economic apartheid and the absence of policy to prevent climate damages and deaths that suggested the poor were "too poor to worry and too poor to worry about".

GCI ran a successful campaign to discredit this economics of genocide. We then formalised and established 'Contraction and Convergence'. The economists were furious and called it the stupidest campaign in history.

Establishing 'Contraction and Convergence' and 'the Economics of Survival'

We returned to the UN climate negotiations in 1996 with the first version of this image. It shows all countries past CO2 emissions in a pattern of 'Expansion and Divergence' and the 'Contraction and Convergence' of these in a future where rising atmospheric CO2 concentrations are held to no more than 450 ppmv (parts per million per volume). Convergence to equal per capita shares globally is complete by 2030 under an overall regime that brings emissions down to 40% of 1990 values by 2100. It is GCI's resolution or, if you will, our 'Amen' in the face of climate change.

We enlarged this beautiful image to billboard size and put it on the wall in the restaurant area. The effect on the negotiators was salutary; everybody could see themselves full-term in relation to everyone else. Moreover, the very basis of the negotiation could actually be seen!

Questions were asked by delegations. Helpful organisational suggestions were made. The following year we received invitations from many parties, including the US and Chinese governments, asking

us to visit their capitals and brief their officials. We accepted them all. The Africa Group of Nations collectively passed a resolution in favour of Contraction and Convergence.

The Indian government repeated statements that they would accept no other basis for a solution. The Chinese government issued a similar statement. The US Senate unanimously passed the famous Byrd Hagel Resolution effectively endorsing Contraction and Convergence.

Then, just before the Kyoto meeting in December 1997, members of the US Senate Armed Services Committee arrived. "We won the cold war; C&C is Communism!" they said. "Maybe so," we countered, "but at least you get a Capitalist management system."

A globally inclusive and full-term climate-framework-based-market is what everyone knew was needed. 'Contraction and Convergence' is the only idea that has ever been presented for the interdependent future that makes development sustainable. We so nearly got agreement for it in principle at the climax of Kyoto. Instead we got the Kyoto Protocol with all permit allocation postponed. It has since been so enfeebled by disputes that it may not now hold up. Beyond that, a new plague of internet-based 'carbon-carpet-bagging' (carbtrage) has infected it with such fraudulent economics, that many are now more nervous of having it than not.

Contraction

GCI calls a global reduction of emissions, in its entirety, a global contraction 'event'. This is strictly with regard to the sum of GHG emissions per se. It is not necessarily to do with analysis of technologies and techniques, or cultural, economic and political affairs.

It is concerned purely with the overall reduction of carbon emissions necessary to avoid dangerous climate change as assessed by Working Group One (WGI, the 'science group') of the Intergovernmental Panel on Climate Change (IPCC).

Following IPCC 1994, here are three examples of different rates of CO₂ emissions contraction, leading to three different levels at which atmospheric CO₂ concentration could be expected to stabilise: 550 ppmv, 450 ppmv, and 350 ppmv. The comparison shows that the slower we complete the contraction event required to stabilise the concentrations, the higher their ultimate level will be. The concentrations' influence on temperature upwards will therefore be greater the lower the target rate we set, as will the resultant stream of damages.

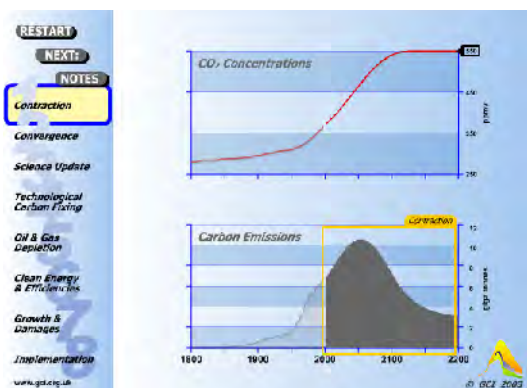
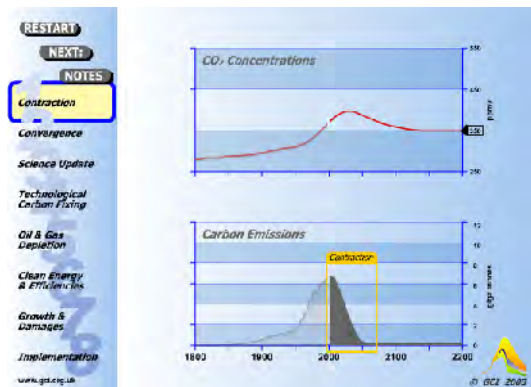
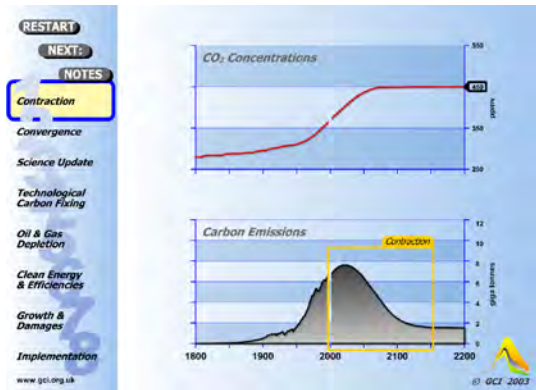
What is certain is

- (1) to stabilise concentrations, a full contraction event is required by definition
- (2) the volume of damages will, more or less sharply, rise throughout the contraction event, whatever its rate.

This makes much less certain what rate of contraction-delay we can get away with, taking account of modernity's near total dependence on fossil fuels, aggravated in turn by the absence of clean alternatives commensurate in scale.

If full contraction is not fast enough, runaway climate changes can come upon us and future generations with unavoidable and drastic consequences for all living species. As Professor Michael Benton of Bristol University has observed, during the Permian Extinction 251 million years ago, 95% of living species were obliterated in what is estimated to have

become a runaway greenhouse event when vast and sudden natural methane release augmented a warming triggered by volcanic activity in Siberia.



Convergence

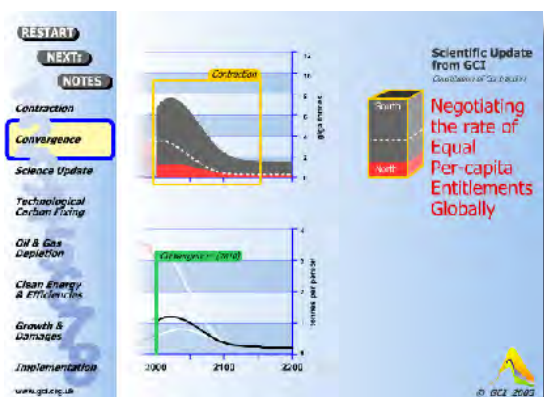
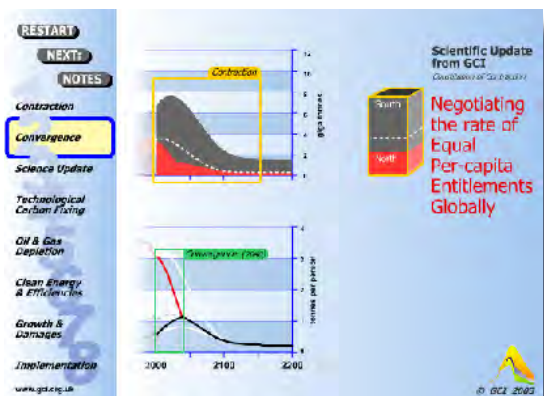
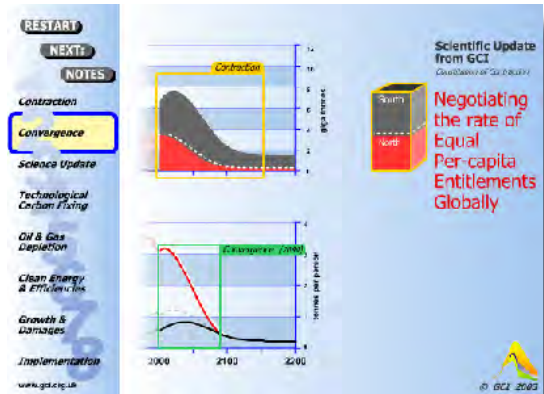
Within such a global contraction event, a convergence process will happen by definition. Even UK climate bureaucrats from DEFRA are beginning to be heard saying that Contraction and Convergence is a mathematical inevitability if dangerous climate change is to be avoided.

Here are three examples of different rates of emissions convergence: by 2100, 2050 or 2000. Because no other indicator is globally or morally viable, the convergence is measured to equal per capita sharing of this global resource. It shows that the faster we agree the convergence within the contraction event, the larger is the future share to the countries whose historic share was smallest but whose exposure to future damages is greatest.

The C&C model will calculate any rate of convergence at any rate of contraction. There is an additional function that enables users to run or to freeze, at any date, future population projections for the first fifty years. Just as we have reserved our views about the rates of C&C that are needed, we have reserved our views about population projections. The latter function is included simply to assist technical analysis of our collective options.

Again, convergence is strictly about any non-random international sub-division of the GHG emissions or emissions entitlements defined in the contraction event per se. For simplicity, the world is subdivided into the industrialised country group (in red) and the rest (in black). Red and Black shares start where they were in 2000 i.e. proportional to income, and converge by an agreed date to being proportional to population or base year thereof.

Here, unlike the micro-deliberations of Working Group Three (WG3, the 'policy group') of the Intergovernmental Panel on Climate Change (IPCC), 'convergence' is concerned with the constitutional properties or rights of sharing carbon permits in a future contraction event



in a non-random manner. WG3 IPCC has in fact recorded in their 3rd Assessment Report that, 'Contraction and Convergence' takes the rights-based approach to its logical conclusion.

Armed with this simple moral logic, GCI has won many skirmishes since 1989 when the campaign for equity and survival began. However, we recognise that the larger global battle with climate change has hardly begun.

At the same time the way ahead is clear at least to some, as indicated in the words of Clive Hamilton, Director of the Australia Institute, when he nominated GCI for the Sasakawa Award this year: -

"The idea of Contraction & Convergence is destined to be one of the most important principles governing international relations in the twenty-first century. It is a powerful ethic that incorporates global justice and sustainability and thereby bridges the dominant concerns of the last century and this one. It is the only way to accommodate the interests, ethical and economic, of developing countries and rich countries in the struggle to find a solution to the most important environmental problem facing the world."

In the words of former UK Environment Secretary Michael Meacher, advance in the direction of C&C is "remorseless". Meanwhile, global climate is changing and at present reinforcing the trend into global apartheid. For countering these trends, the 'unity in diversity' of C&C is a great strength. The campaign for it is increasingly active.

Aubrey Meyer is Founder and Director of the Global Commons Institute. For more of the detail of C&C in graphics and animations and detailed evidence of the considerable and growing support it enjoys, please visit the GCI website <<http://www.gci.org.uk>>.