

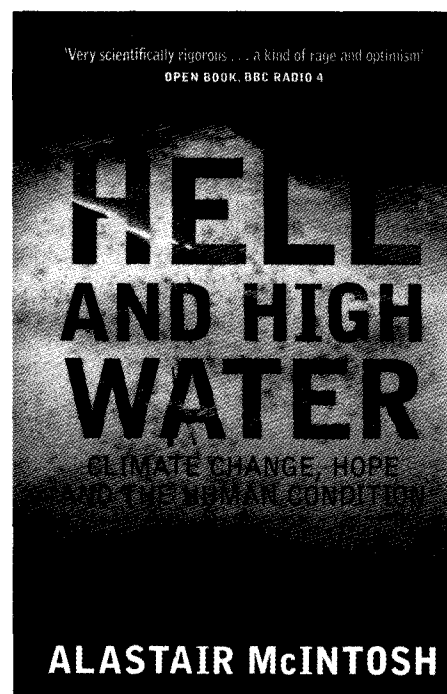
Where now 'Hell and High Water'?

In Hell and High Water Alastair McIntosh described the harrowing process of being asked to write a book that spoke truths about climate change and the human condition challenging even to the green movement. ECOS asked him to reflect on where he currently sees the cutting edges of the debate.

ALASTAIR McINTOSH

Science – rigorous or adventurous?

In summer 2008 my book *Hell and High Water: Climate Change, Hope and the Human Condition* was published by Birlinn. Now into its second edition, here is a personal take on how I see the debate moving.



First some background on the book. Part One is a run-of-the-mill perspective on climate science with illustrative anecdotes and a chapter that assesses the democratic latitude for radical political action. The science I use is the mainstream consensus where, "if it ain't peer reviewed, it ain't science." I take as my baseline the evaluations of bodies that have a reputation worth losing such as the IPCC, the Royal Society and the Met Office. I acknowledge but generally keep some distance from the climate change sceptics on the one hand, and those with a radical scientific position such as James Lovelock and James Hansen (director of Nasa's Goddard Institute for Space Studies) on the other. Although I have a first degree in earth sciences I am not a climate change scientist. My main interest is to take the consensus view on climate change and employ it as a springboard to much deeper questions about the human condition, as developed in Part 2 of the book.

Having said that, it is difficult to give a public lecture on climate change without being pushed to give a view on perspectives that deviate from mainstream science – the position of climate change 'sceptics', 'contrarians' or 'denialists'. My first response is to say that I hope they might be right! Beyond that, I'm just not able to debate in depth because, as a generalist human ecologist, I just don't understand the arguments on either side deeply enough. Often I'll listen to a contrarian

argument and find it very persuasive. But when I listen to an informed counter-perspective the glamour falls away. I have observed that much contrarian science, even when based on reputedly peer-reviewed work, stands on a narrow evidential base. But we need to remind ourselves that in science, as we know from biology, one swallow doesn't make a summer. Solid science must be built on findings that triangulate and replicate.

For these reasons I find myself weighing up the credibility of published authorities as much as the ostensible logic of their arguments. I therefore try and avoid basing my work on expertise that's outside my bounds of ability to appraise. For example, when challenged from the floor during a public lecture with the theory that global warming is caused not by carbon dioxide but by solar activity, I usually don't try to tackle the objection head on. Instead, I defer to a higher court, such as the UK Met Office's recent climate change factsheet. This refers to Myth No. 1 of climate change as being the "purely speculative and unquantified" notion that "the intensity of cosmic rays changes climate".¹ If the Met Office boffins are happy to sit with that on their web site, then who am I, and usually my interrogator too, to argue otherwise?

The weakness of this approach is that can appear to be an evasion of doing my own scientific thinking. That must be infuriating to my critics, even though I'm not doing it to wind them up. But the strength of such prudence is that it gives a springboard for deeper argument; if I might mix my metaphor perhaps all too fittingly, a *solid springboard* from which to address hope and the human condition in Part 2. The result is that a number of reviewers (including climate change scientists) have praised *Hell and High Water* (HHW) for its grasp and communication of the science. BBC Radio 4's *Open Book* called it "very scientifically rigorous." That's what I wanted: rigorous, but not adventurous in its presentation on which to base the psychological and spiritual issues that I wanted to tackle in Part 2.

Climate change and credit crunch

In bringing out the second edition of HHW the only material change was to add a postscript on the "credit crunch" pointing out that it had the same leading-edge driver as climate change – namely, consumerism. But I also took the opportunity to draw readers' attention to the communiqué from some 2,500 scientists of the International Alliance of Research Universities who had met in March 2009 to prepare for the UN's Climate Change Conference in Copenhagen in December. This said: "Recent observations confirm that, given high rates of observed emissions, the worst-case IPCC scenario trajectories (or even worse) are being realised".²

In Part 2 of HHW I had derived a qualitative equation: *Hubris = pride → violence → ecocide*

I presented evidence from history, philosophy, literature, folklore and theology suggestive that this had started at least with early urban civilisation and has progressively damaged both the outer life of the world and the inner life of the

soul. We are left with hollowed-out emptiness – even deeper than that of Freud's "civilisation and its discontents". My study of 20th century marketing in particular in Part 2 leads me to conclude that the human psyche – the totality of body, mind and soul – became wide open to the blandishments of consumerism. Violence to a person's primal integrity – whether specific or systemic within their culture – makes for insecure people, and insecure people make "good" consumers. Because consumerism is a false satisfier – just another form of addiction that masks the emptiness – it keeps most of us on the economic treadmill, pressed on by the usurious dynamics of debt, but ever-failing to tackle the underlying human condition and thereby compounding ecocide.

This analysis led Rowan Williams, the Archbishop of Canterbury, to make extensive reference to *HHW* in his position statement on climate change and ecocide delivered in Southwark Cathedral on 13 October 2009. As the religious correspondent of *The Guardian* summarised:

*"People should use the climate change crisis as an opportunity to become human again, setting aside the addictive and self-destructive behaviour that has damaged their souls, the Archbishop of Canterbury said yesterday"*³

It is an eclecticism similar to this – from science to the soul – that makes *HHW* what a *Times* columnist called "a fantastically unlikely combination of insights". To *The Scotsman* it "takes a step back from the problem and looks at the causes behind the causes [in ways that are] of genuine international importance." *The Sunday Herald* concluded "It's odd that a book of such bright hope should be based on such practical despondency".

Such weaving of the physics with metaphysics in the crucible of transforming consciousness has not been welcome in all quarters. I have felt stiffness and even overt hostility from some environmentalists, including friends, who, I sense, resent the suggestion that politics, economics and technology alone will not be enough to confront the problems, and who find talk of the soul to be out of synch with secular humanism. For example, an Amazon.com reviewer fittingly pseudonymous as "depressed leftist", panned *HHW* as, "An unsatisfying melange of mainstream analysis and pseudo-spiritual tripe [that shows] more faith in 'the soul' than strictly in reason". A blogger, equally fittingly called "Suitably Despairing", missed the point of extended metaphor and surmised: "Disappointing book of the year was *Hell and High Water* by Alastair McIntosh. This ticked all the right boxes for me, detailing climate change ... but then he started talking about faeries". Well, at least it raised my smile!

Confusion of focus

But I don't think it's just my pushing out of the spiritual boat – whether skippered by the faeries or otherwise – that disturbs a few of my readers. It's also the tectonic question – the one that also disturbs me – of whether there actually is a politically and technically achievable way out of the situation we're in.

In London last March just before the G20 protests I gave a talk that ruffled the feathers of some of the audience. I was challenged as to what I thought of the planned G20 demo and I replied, "Well, who are you going to be marching with? Will it be the environmentalists, urging zero or negative growth to save the planet, or will it be the trade unions, urging the stimulation of growth to save jobs?"

Ideally this should be a false dichotomy. Ideally we should all be advancing to a "green new deal" that both saves the Earth and produces material wellbeing. My worry is that the socio-environmental backdrop to the green movement has changed in ways that have confused our focus. We find ourselves straddled between adjectives of the ideals and nouns expressed as some brutal numbers. As the Cambridge physicist Professor David MacKay says in his acclaimed new book:

*"I'm concerned about cutting UK emissions of twaddle – twaddle about sustainable energy. Everyone says getting off fossil fuels is important, and we're all encouraged to 'make a difference,' but many of the things that allegedly make a difference don't add up."*⁴

The happy-clappy green bubble

Consider, for example, the current proposal to upgrade the railway line between London and Scotland to half the journey time. Superficially it makes for impeccable green logic. Astonishingly, the rail:air market share on this route is 15% to 85%. That means, leaving aside those who travel by road, about six times as many people fly as go by train. A faster line should change that ratio and presumably cut carbon emissions.

However, the Department of Transport has now released findings that the embodied energy required to upgrade the line, including 170 new bridges and 34 miles of tunnels (more than the Channel Tunnel), would take 60 years to repay its own embodied carbon footprint. What's more, the cost, which started off at £12 bn is now widely pitched at £34 bn, and a specialist rail technology website brings it in at £60 bn.⁵ Even if we take the £34 bn figure, that's the same as the annual government cost of running Scotland, or the same as the entire British defence budget for a year – including our nukes and Afghanistan! We're therefore left with the question: how many such 'green' projects could the nation afford? The Severn Barrage loosely at £14 bn and what else? And if we assume that the mainstream climate science is broadly right, what happens when the carbon-saving benefits of such projects simply aren't 'in time' to stop the anticipated 'tipping points' of runaway climate change?

I believe there's a historical problem here in the green mindset. It was one of the hard knocks I confirmed while writing *HHW* and it goes back half a century. As a green movement (if I might generalise about 'us'), we tend to circulate in what I call the 'green bubble'. Faced with the burden of ecological awareness we mutually buoy up optimism. Greens maybe never get much more than 5% of the vote, yet we're often like one of those fringe happy-clappy churches where, 'if only' everyone stopped doing this, and started doing that, we'd all be 'saved'.

What easily slips our notice is that many of our cherished green scenarios took shape in the 1960s. Their roots extend even further: for instance, Frank Fraser Darling published his seminal back-to-the-land stuff actually during WW2. We've thereby been left imprinted by the sustainable green idyll that the American artist, R. Crumb, in one of his cartoon scenarios called 'Ecotopia' www.citykin.com/2009/04/r-crumb-short-history-of-america.html.⁶ We've been enraptured, and rightly so, because it's a beautiful vision. But what's not occurred to us, until now when the world is asking us to stand and deliver on a green new deal that politically stacks up, is that it no longer adds up. It might have done so if our society had chosen those pathways immediately following World War II when frugality (as distinct from destitution) was no stranger to the body politic. But instead we chose Harold Wilson's "white heat of technology" – the scenario that Crumb represents as his high tech energy intensive 'Futurama'.

Now that we're faced with climate change we're trying to reverse engineer our way back to Ecotopia. The debate on wind turbines says it all. What was and is a perfect component of a back to the land solution becomes a recipe for turning the landscapes that we need to feed the soul into whirling industrial monstrosities. It's the scale that's gone wrong, and as a green movement we've only woken up to it after it's split us down the middle, and in my own case, divided me within myself as well. For the mainstream agencies the name of the game is all the "green new deal" understood not in terms of an holistic human ecology, but in terms of sustained growth. For example, UNEP's *Global Green New Deal Policy Brief* of March 2009 explicitly calls for "future sustainability, while stimulating the economy for growth, jobs and tackling poverty".⁷ Talk to the people who write such reports as I do, and they'll tell you they have to work within the politically acceptable ballpark. Also, I suspect, within the ballpark of their own highly-salaried comfort zones.

The happy-clappy wing of the green movement colludes with this "because we must stay optimistic". Thus, for example, my confidence in the scientific peer review process of the esteemed Worldwatch Institute was severely dented by their 2009 *State of the World* report, 'Into a Warming World'. Here a chapter by Betsy Taylor, 'Not Too Late to Act', looks back from 2025 where "we defied the doomsday prophets" by an array of green hopeful fixes. Included is one where "Pedestrians generate electricity just by walking on energy-generating sidewalks, while health clubs produce electricity through treadmills and aerobics classes".⁸

Leaving aside such abject green wackiness that eschews all sense of thermodynamic quantification, my general point is that pathways of possibility have closed and a one-way ratchet has tightened. We've only been able to garner a world of nearly 7 bn people, half of them urban, because carbon-intensive energy drives a high-velocity just-in-time commodity supply system which is predicated on the competitive application of global comparative advantage with alarmingly long chains of seamless supply ... and virtually zilch resilience to systemic shock!

To talk of "the transition to a zero-carbon economy" as Taylor and many green hopefuls do, is all very well, and very necessary ... but in my view, utterly



NEIL BENNETT

undoable enough to make a difference unless we are also willing to entertain real hits to our quantitative material standard of living, and learn to substitute qualitatively. As part of the new Green Economy Coalition of international environment, development, labour and business agencies, my question is always, "A green new deal for what?"⁹ To sustain current levels of consumerism? At growing levels of population? No can do! Because oil and its associates have become our lifeblood. We can't suddenly expect to run our bodies on one pint of blood instead of eight! We therefore have to factor in not just carbon, but what renders it so intensive.

My critics will say that this ignores substitution by renewables, but I'm impressed by David MacKay's presentation of the physics, and he reckons that renewables,

even in the UK, can only credibly add up to about 15% of *current* energy demand.¹⁰ In my experience most international climate change agency personnel take the view that “we just can’t go there” in terms of the politics of cutting consumerism – for example, banning the advertising of profligate products. I experience such bounding of the debate as a leakage of energy. The optimism it professes actually conceals pessimism because it keeps us in the displacement activity of barking up the wrong tree. It is an evasion of reality, and with it, the need to fundamentally appraise the human condition in order to seek the roots of hope.

Resilience in the 1966 seamen’s strike

If the quantitative scale of carbon-sourced energy demand is one face of our problem, qualitative impacts on socio-ecological cohesion are the other. Here, in the footsteps of such ecologists as C.H. Holling and Allan Savory we must contrast brittleness with resilience and apply it to human ecology. Let me give an example of what was a resilient human ecology turning brittle, so that we might better sense how it might be reversed.

In May 1966 the National Union of Seamen went on strike for six weeks. Harold Wilson was being forced to declare a national state of emergency. Growing up on the Isle of Lewis, 40 miles NW of the UK mainland, we noticed no real hardship. However, I remember, aged 10, going into a half-built house that was being communally built by striking seamen. Over a peat fire a string of fish was being cured. Thinking back, that was the clue. We had resilience by way of local food security.

During the past summer (2009) I proposed this as a thesis project for a Canadian student, Lauren Eden, who was seconded to me from Edinburgh University’s MSc course in Ecological Economics. She was interested in community dynamics such as those the Transition Towns initiative is rightly promoting. I suggested that she went up to Lewis and interviewed people of my age and older. She should compare what happened in 1966 with what happens today when, for just 24 hours or so, the ferry doesn’t sail because of bad weather.

Lauren spoke to 30 key informants including a strike leader, the former Stornoway Provost, the harbour master, fishermen, taxi drivers and shopkeepers. She actually had to jog memories of the strike by showing old newspaper cuttings. Its impact had simply bounced off most people because local food production in the “crofting” subsistence agriculture system was still very much alive. People still had a milking cow, chickens, sheep untethered by legislation, potatoes in the hopper and a boat down on the sea loch that had not yet been industrially fished out. There was also the strong Hebridean ethic of sharing and looking out for one another. She found that the only real shortage had been beer in the pub!

In contrast, when the ferry fails to sail today there’s panic buying within hours in both supermarkets. Also, today’s supermarkets hold only 24 hour’s worth of stock on most lines. Everything’s just-in-time, but the resilience, the ability of the system to respond to knocks, has gone. Today’s system is utterly brittle. And

imagine if, in October 2008, the banks had crashed to the point where lines of credit dried up. Food supply, not just to a remote island but also to our cities, would have seized up like an engine running out of oil. Civil unrest is just two or three days away.¹¹

The ethical watershed

But what can we do about it? A dilemma that I often see for industry, government and NGOs is that most of the differences that we think are important within the green bubble add up to very little. As MacKay says, “Don’t be distracted by the myth that ‘every little helps’. If everyone does a little, we’ll achieve only a little. We must do a lot. What’s required are big changes in demand and in supply”.¹² And by ‘big’ he means either nuclear, or such solutions as wind farms covering whole countries.

There’s something in this that troubles me greatly, because I can see its truth, but where does it leave the ‘small change’ within most people’s power? I think that we mustn’t enter into the hubris of fooling ourselves, yet small change can still be important, not for its physics, but for its effect on our integrity, our consciousness.

If we want to keep building a movement for change I find it helpful to think which side of the watershed of consciousness we should throw our efforts onto. Like rain falling on a ridge between valleys, we have to decide whether to flow in the direction of life or death along an ‘ethical watershed’. Which way will our stream help the river of society to flow?

We therefore have to let ourselves be disillusioned. But we also have to strengthen our values frameworks so that our consciousness grows and transforms. As we do this we may come to see that climate change is actually the small question. The big question is about the human condition, and how the ‘burden of awareness’ of what is facing us can be transformed into a ‘precious burden’. Because this is about the evolution of conscious life on Earth.

3Cs and an S

I think there are four things we must work on – what my friend the mediator John Sturrock QC helped me to formulate as ‘3Cs and an S’.

- First, *carbon* emissions must be cut by doing all we can to use less coal, gas and oil both by saving and reducing the carbon-intensity of production.
- Second, *consumption* must be scaled back from excess to sufficiency, challenging profligate consumerism.
- Third, *conception*, so that every child that comes into the world is not only wanted for its own sake, but has parents supported to give time and love that far outlasts the fleeting substitute of consumerism.

- And fourth, *spirituality*, because the only hope is to gradually deepen consciousness into what Abraham Maslow called "the further reaches of human nature".

In simple terms: $E_i = P \times C$

That's to say, *Environmental impact equals Population times Consumption*. However, since the 1970s many international agencies for development or environment have treated population as taboo. The ground had become captured by the powerful and politically right, with memories of Sanjay Gandhi using the Indian police to carry out compulsory sterilisations on the poor – many of them Muslims. Because population concern was used for victim blaming, it became discredited. Development workers rightly pointed out that tackling the profligacy of the rich makes more difference than trying to restrain the child-bearing of the poor. After all, the diminishing marginal utility of wealth implies that to take one unit of wealth off the rich won't cause much pain, but will generate much 'utility' amongst the poor.

These are good arguments, but they're no longer good enough. The consumer expectations of the poor are also now escalating. It is rich and poor alike (and especially the rich) who need to be encouraged not to have children who are not truly wanted; and to have only children that will be loved in their own primal integrity.

Such a voluntary but culturally supported ethos rests on foundations that are fundamentally anti-authoritarian because fertility falls when women's education and opportunities rise, when there is security in old age, and when there are good health services including family planning. Those services should include the most effective array of 'natural' approaches for couples so motivated. Religion need not be a hurdle. Consider these figures: UN fertility rate projections for 2005-10 range from war-torn patriarchal Afghanistan with 7.07 births per woman, to the modern Muslim nation of Turkey (2.14), Catholic Ireland (1.96), Mongolia (1.87), UK (1.82), China (1.73), Cuba (1.49), Italy (1.38), Russia (1.34), very Catholic Poland (1.23) and Hong Kong (0.97).¹³

And consider those last few numbers. What most cuts future carbon footprints? Buying a Toyota Prius hybrid car, or creating social conditions in which there is opportunity, gender freedom and welfare to encourage small families? It's not that the Prius isn't a great achievement. It's simply that hard technology needs to be complemented by refining our human software, and with it, our sense of whether we should not just fill the Earth, but transgress divine mandate and *overflow* it.

Towards God-given human potential

More than that ... C for 'conception' in 3Cs and an S must be child-centred. It must be about loving our children; all children held in whole communities. This means considering not just whether to conceive children, but more important, *how we all conceive of children*. In *HHW* I devote a lot of space to exploring violence and the damage it does to a child's primal integrity. Healthy children in a healthy world



Very few crofters still grow corn on the Isle of Lewis. But as this scene from Bragar in 2009 shows, practices that could yet strengthen local food security are still hanging on.

Photo: Alastair McIntosh

need to be relatively free of the psychic injury that is 'trauma'. Raise a child in a war zone and you raise a warrior. Raise a child in a trashed planet and you raise landfill.

I am struck by the fact that Hilary Clinton in her speeches repeatedly refers to honouring the "God-given potential"¹⁴ of children – so much so that journalists now use the shorthand, GGP. Whatever our wider take on Hilary, she's right that a child honoured in itself – not indulged, but taught empathy – will be less likely to be self-centred, and more likely to become a centred-self: a future adult better able to resist the blandishments of consumerism, more able to heal the Earth.

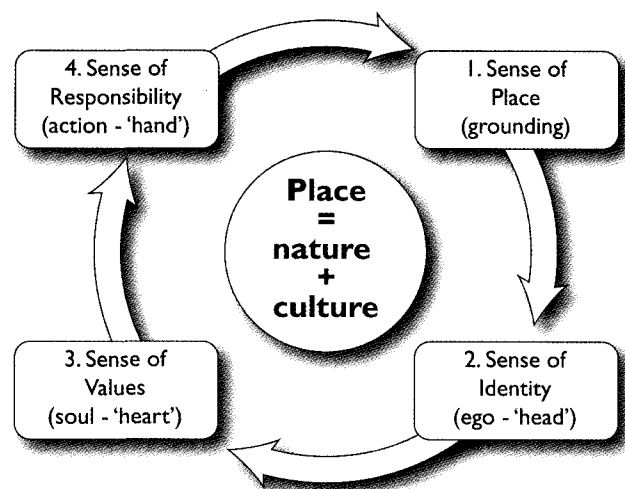
Nature – wild and human

Finally, where does that leave us as people who are variously involved in the nitty gritty practicalities of nature conservation?

To face come-what-may in the come-to-pass with dignity, wisdom and love, we must be humble. Assuming that the science is broadly correct, we have only been walking this planet in our evolved state as *Homo Sapiens* ("wise or knowing humankind") for some 200,000 years. We are planetary infants, and the travail we currently experience, the upset we're currently causing, could be seen (albeit at grave risk to the Mother) as evolutionary birth pangs. Our challenge now is to grow up fast. In this I believe that nature, and not just human culture, is our teacher.¹⁵ For conservation work in the widest sense I think this means:

- **Connect the science of nature** – the properties of matter and of biology - with the full beauty and emotional engagement of human nature. I recommend studying the management of psychological depth in undertaking this.¹⁶
- **Teach children elemental literacy** of fire, air, earth and water including exposure to carefully managed danger. I recommend Roszak's book, *Ecopsychology*, and also Meredith Sabini's remarkable anthology of Jung on nature, *The Earth has a Soul*.
- **Reveal community as soil, soul and society**, and with it deepen the Cycle of Belonging. I explore this in both HHW and, expanded, in Rekindling Community.

The Cycle of Belonging



- **Teach the value of ecosystem services** such as the replenishment of aquifers, carbon sequestration in bogs, and photosynthesis bubbling oxygen up through a pond to sustain the atmosphere. And teach such science as David Orr suggests, in a spirit of wonder, gratitude, and even reverence.
- **Cherish nature reserves as ecological islands.** Given climate change, work to reconnect them with wildlife corridors. And bugger the excessive health and safety that would have kids putting on rubber gloves to pick things up outdoors!
- **Through the arts and direct encounter, encourage 'animal spirits'** to touch human consciousness perhaps as understood by totemic cultures. And if that's a problem for a certain sort of Christian, invite them to deliver a sermon on the Eagle of St John, or the Lion of St Mark, or chapter 12 of the Book of Job which says, "But ask now the beasts, and they shall teach thee; and the fowls of the air, and they shall tell thee; or speak to the Earth, and it shall teach thee..."

...because this is about the sacred work of our times. And it will only succeed if the science, and the hard work, are grounded in that nothing less than ... [I'm sorry if this seems a bit too full on] ... the muddiness of the pond and the fire of love. For these are the things that give life, and in that I carry little optimism for what often feels like doing planetary hospice work, but constant hope.

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Local tradition bearers such as Fionnlagh MacLeòid / Dr Finlay MacLeod of Shawbost, and author of the Corn Mills book reviewed here, both care for places like St Bridgit's Well here on the Isle of Lewis and carry stories that encode the principles of community resilience. - see review of his corn mills book in this edition.

Photo: Alastair McIntosh

**Strike May
Paralyse
Islands**

**"No Petrol"
Notice Greets
Motorists**

ONLY DOCTORS, NURSES, ETC.
ALLOWED SUPPLIES

The Stornoway Gazette on the Seamen's Strike, 1966

(These graphics didn't get used in the ECOS print version due to its low quality, but they gives a graphic sense of the strike's effect)

From about the 18th century, a new breed of landowners built their own large-scale mills and auctioned off the right to extract payment of "multure" on the milling. Men were sent round to smash village millstones to force compliance. These shattered stones can still be seen in the many lovely glens for which "Dr Finlay" gives map references and brief descriptions - in the same manner as his earlier books on the healing wells and ancient chapels of the Western Isles.

A study like this shows the sheer ingenuity with which resilient communities can sustain local food security when hefted to their place. The same comes through in the rich compilation from the Shetland Breeders' group about their beloved Shetland cow, complete with a foreword by that great friend of Scottish crofting, Prince Charles.

Just as the Norse mills were a keystone to Hebridean agriculture, so was the entire system of human ecology that revolved around Shetland cattle. In both English and glorious Shetland dialect and with stunning photographs a selection of island voices tell us about this rare breed - so small in stature and appetite, but big in milking generosity and versatility. We learn of the crofters' social interactions, music and art, traditional housing with its integral cow's byre, and related crop production including turnips, oats, kail and bere - the ancient barley. For these Shetlanders, their "coo" is not just the past but also for the future as oil prices rise and local self-reliance may become imperative once more.

I remember in 2007 talking to a crofter in Durness, the most northerly village of mainland Scotland, and asking where he got his oat seeds from.

**THE NORSE MILLS OF
LEWIS/Muilnean Beaga Leòdhais**
Fionnlagh MacLeòid / Finlay MacLeod
Acair Ltd, Stornoway, 2009, 120 pages
Hbk, £15, ISBN 978 086152 3627
Available from: www.MillsArchiveTrust.org

**A PICTORIAL 'DAADER
TROWE' SHETLAND'S
CROFTING CULTURE**
**Illustrating the role of the
Shetland Coo - A Breed from the
Past with a Place in the Future**
Shetland Cattle from Shetland
Breeders' Group, 2009, 232 pages
Hbk £20, ISBN 978 095637 0105
Available from: Anderson & Co, 60-62
Commercial St, Lerwick, 01595 693 714

This most loving crafted book available in both Gaelic and English editions and beautifully illustrated by John Love will become the definitive work on the old "Norse" corn mills of the Isle of Lewis. A technical account of how these run-of-stream mills worked, it is above all a complete study in human ecology, showing how family mills were central to village life, the cycle of the agricultural year, and to the customs and folklore of an indigenous peoples, the oldest of whom have remained with us to the present generation.

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He said he didn't want new-fangled strains from the south. To be sure of growing in his locality required seed sent down from the Northern Isles. "The seed must move from north to south," he told me, and both books reviewed here suggest such reciprocity also to be cultural.

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Alastair McIntosh

FROM P. 98

A NEW CLIMATE FOR THEOLOGY

Sallie McFague

Fortress Press, 2009, 198 pages

Pbk, £12.99, ISBN 13:978-0-8006-4

**DOWN TO THE WIRE:
CONFRONTING CLIMATE COLLAPSE**

David W. Orr

Oxford University Press, 2009, 261 pages

Hbk, £19.95 ISBN 978-0-19-539353-8

**SUSTAINABLE ENERGY
WITHOUT THE HOT AIR**

David J.C. MacKay

UIT, Cambridge, 373 pages

Pbk, £19.95, ISBN 978-0-9544529-3-3

I have always loved Sally McFague's emphasis that biblical language should be understood less literally and more metaphorically, and that God is our deepest lover. So far, so good. But for me, her take on climate change theology is new wine in old skins. She displays a weary deference to Derrida's wordy postmodernism but little of the fire of spiritual essentialism. This might be a good book for middle class intellectuals new to eco-theology, but for me I'll thank her for her earlier work and leave it there.

In contrast, David Orr's *Down to the Wire* is a deep and inspirational work, albeit a book very focussed on America. In facing up to "the long emergency" environmentalists are in a quandary, he argues, because we "lack both deep explanation for what ails us and a larger cosmology or spirituality rendered into a coherent and plausible alternative story of our ecological maladjustments."

Our burning need is education for "transformative leadership" that redefines public consciousness. Such is the work of "applied grace", for only with eye of spiritual insight open can we "foster the traits necessary to a higher order of human behaviour, among which I include gratitude, openness, compassion, generosity, good-heartedness, mercy, tolerance, empathy, humour, courage, and attachment to nature."

Like most "green" contributions on climate change, both these books showed weaknesses in matching "zero carbon" adjectives – as applied, for example, to the greening of universities – to the bottom-line arithmetical nouns of thermodynamic possibility. This is where Cambridge physicist David MacKay's study of the possibilities and delusions of sustainable energy is a timely work of outstanding importance. He says:

"I'm concerned about cutting UK emissions of twaddle – twaddle about sustainable energy. Everyone says getting off fossil fuels is important, and we're all encouraged to 'make a difference', but many of the things that allegedly make a difference don't add up."

I include *Sustainable Energy Without the Hot Air* in this theological round-up because we need good science to serve theology, and vice versa. MacKay's lucidity, relevance and touching generosity of teaching technique are Godsend. Amen!

Alastair McIntosh