CRAFT

Community Resilience through Action for Future Transitions

Issue 1 - Biochar

December 2011

CRAFT - Community Resilience through Action for Future Transitions

Presented by the Kalgrove Institute and the Brisbane Hot Futures Group

eZine ISBN: 978-1-875603-17-6. Registered 10/09/2011.

Originators

Paul Wildman - paul@kalgrove.com

Jim Prentice - jimprentice@optusnet.com.au

Typesetter

Peter Murphy - peterkmurphy@gmail.com - http://www.pkmurphy.com.au/

This document is typeset using the Didact Gothic font.

Table of Contents

About CRAFT - Community Resilience through Action for Future Transitions

Welcome to CRAFT - an online magazine where crafters of materials turn to crafting deeds and words. We hope you enjoy the experience! CRAFT is an eZine where we can all can publish and edit for our friends, family and community. If you wish, you can contribute a topic or theme for a given issue.

CRAFT is designed as a Peer 2 Peer mentored and reviewed publishing platform. Please let us have your thoughts and ideas and suggestions for future editions.

Our Vision

Primarily our vision is one of a 'practical hope' through helping us as spectators, readers and/or digerati learn towards an embodied, thoughtful, critical, practical, empowered, interpersonal and experimental attitude. As such, this is the opposite of the illusionary and environmentally destructive stance we see even in our own back yards today with our dependent consumerism.

CRAFT's **mission** is to publish work that is primarily visual and can provide practical hope, is innovative and developed within practice that is grounded. The **focus** of such critical practice is to include a significant 'hands on' component and include reprise and reflections thereon. Generally such praxis is based on a completed (exemplar) project. Each publication will have a **theme**[1] around this focus potentially drawing on a range of engagement with CRAFT.

Our Aims

a) CRAFTing Futures Nature can live with – through CRAFT – Community Resilience through Action for Future Transitions

b) This e-zine/e-magazine seeks to link the humanities/social sciences with hard sciences through, 'hands on' projects and associated learning that demonstrate practically today that a better world is possible tomorrow for our children with planet

c) To listen to and give a site for the silenced voices and invisible practices in a praxis of hope that can help our culture be sustainable

d) Our principal aim is for readers/surfers/authors who are learned in the school of life/hard knocks/unschooled in the conventional sense so to speak yet deeply learned and practical yet with few if any degrees or training diplomas.

e) Crafters connecting in a circle of practice and learning – a community of praxis.

[1]CRAFTwork viz. CRAFT'ing, CRAFT'er, and others: CRAFT'y vignettes, CRAFTy'learning, artyCRAFTy, CRAFT'work, CRAFT'techne, CRAFTe'Books, CRAFTy'life, greenCRAFT, handCRAFT, CRAFT'animation, CRAFTy'potlatch, sauvage'CRAFT'ing, bricoleur'CRAFT'er, airCRAFT, permaCRAFT, landCRAFT, seaCRAFT, musiCRAFT, bushCRAFT, volkCRAFTwerker, CRAFTartificer, museCRAFT, CRAFT(h)activism, physioCRAFT, bioCRAFT, memeoCRAFT, futureCRAFT, hyperCRAFT, CRAFTfutures, post-apocalypseCRAFT, CRAFTy'nomics and CRAFTzEine etc.

f) To link with initiatives such as Transition Towns, PowerDown, Permaculture, Zero Emissions Living Economies etc.

NB: The magazine is a PF & NFP – Public Domain and Not For Profit exercise

Our Costs

CRAFT is free to all with special offers to subscribers. It is paid for in federal dollars and local currency (LETS) by the founders Paul Wildman and Jim Prentice, with in kind web work by Peter Murphy. We ask in return that you respect the authorship of the article and eZine and, like a good pizza, pass on the recommendation. From time to time there may be 'appropriate' advertising which could generate some income.

CRAFT is looking to sponsorship from those able to help without expectation of favoritism. We expect to make any supporters public unless compelling reasons prevail. We will invite your comment and the voting rights gained by contribution should such cases arise.

Our History

The CRAFT 'idea' has been about 20 years in the making for Paul Wildman and has gone through various permutations and combinations before landing on CRAFT. Essentially all of these p&cs are about anchoring text inc. visually, in P2P experience not the other way round in a way that is intellectually rigorous and replicable – a community of practice so to speak from our 'co-authoring' readers.

For Jim Prentice, CRAFT is a chance to join the headlands of the urban centres to the heartslands of the suburban backblocks. He took the opportunity to join Paul and modestly refashion and develop his ideas for an Ezine about the hand, about materials and about techniques that deal with them both. Chiro or hand practice is no stranger to an ex Naturopath!

For both Paul and Jim, CRAFT is head, heart and hand. If two so different people can find agreement, we think it's not so impossible with other contributors - hopefully including you!. For this reason, we are building an online prototype that will get reality tested. The goal is a human and nature centred future.

Our Future

Our intent is to commit for a setup period of 3 months then a proof of concept period of three years. If CRAFT should prove successful then within this longer period we intend to set up a CRAFTy vignette series, provide avenues to promote industrial and other forms of CRAFT art, and provide a (a)venue for those interested in publishing eBooks etc. in the genre of CRAFT (please see footnote under 'Our Vision').

CRAFT Tank

CRAFT is a "think and do" tank of people and processes that can provide policy and strategic suggestions. We could assist you to rethink and redo an issue so that it can be addressed through CRAFT.

Publications: CRAFT anticipates, should it be successful, encouraging and supporting a plethora of publications formats styles and genres from music to art to craft to hand work to volk philosophy etc.

Speaking: The founding editors are available for interviews, workshops and speaker engagements. Please contact us if you have such a proposal.

Workshops, Learning Circles, Exemplar Projects and Sauvage craft: We can also design and deliver generic and also tailored workshops etc.

Learning Design: Pre-Primary-Secondary-Adult Education: CRAFT is deeply committed to the re-integration and re-membering of CRAFT as a vital part of the above education streams. We believe our learning systems locate between education and training and we are happy to help you design, develop and implement them. Such a 'third path' is, we believe, vital for assisting many of us as students gain deeper understanding of the systems we are studying as well as achieving our potential within an efficacious resilient and locally responsive economy.

What is Biochar?

"The Planet is our canvass"

Dolph Cooke dolph@biochar.org

Biochar is charcoal produced by heating organic material at a high temperature in limited oxygen. It is a stable product, very rich in carbon, which is used to lock carbon into the soil.

Anyone can make charcoal – just burn some wood – but at high temperatures you get a more pure product with additional beneficial qualities.

Of these positive properties, the one we are focusing on is its ability to rejuvenate the planet and its soil.[2]

Biochar

Biochar has been described as:

> *...the single most important initiative for humanity's environmental future ... it allows us to address food security, the fuel crisis, and the climate problem, all in an immensely practical manner.*
>
> Prof Tim Flannery, Australian of the Year 2007.

What are the benefits of Biochar?

Incorporating biochar into the soil has been shown to bring about many beneficial and long-term positive effects on soil. It can:

- Increase the water holding capacity of the soil
- Increase crop production
- Increase soil carbon levels

[2] Picture taken from http://Biocharproject.org/. Used with permission.

- Increase soil pH
- Positively change the microbiology of the soil
- Decrease soil emissions of the greenhouse gases CO_2, N_2O and CH_4
- Improve soil conditions for earthworm populations
- Improve fertiliser use efficiency

The effects of bochar will vary with soil type and the qualities of the biochar used. Studies so far have shown that the greatest positive effects of biochar applications have been in highly degraded, acidic or nutrient-depleted soils.

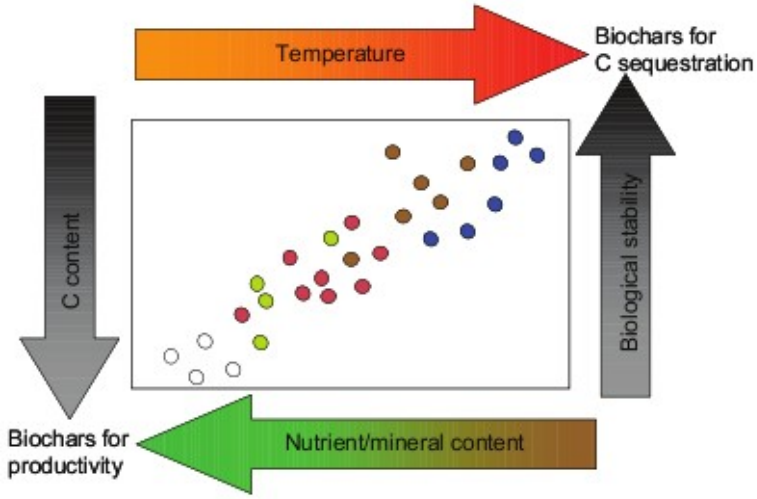
In Australia, both the CSIRO and NSW Department of Primary Industry are conducting field trials on biochar.

The author explaining a biochar retort

How is Biochar made?

Biochar can be produced from any organic material such as household green waste, paper waste or agricultural waste. It is made in a specially constructed retort that heats the organic material in the absence of oxygen at temperatures above 430°C. The process, called pyrolysis, efficiently decomposes the biomass, producing the biochar solid, volatile gases and bio-oils. The gases and bio-oil can be used to generate heat or electricity or transport or fuel. The Biochar process is carbon negative when the biochar is incorporated into the soil.

The figure below shows where biochar locates in relation to its key components. (NB: There are several views about these matters.)



Taken from (Krull, 2000).

How does Biochar help with climate change?

Burning trees and agricultural waste contributes a large amount of carbon dioxide (CO_2) to the atmosphere, and is a significant factor in global warming. The production and use of Biochar breaks into the CO2 cycle, drawing carbon from the atmosphere to hold it in the soil.

Biochar - community

To counterbalance globalisation and our lack of control, influence and understanding of our local community, communities need to be empowered to act - say in relation to biochar with - for instance community biochar kilns. Learning Circles for instance seek to address this need by offering a way to understand and act that develops people's capabilities in biochar in a sustainable manner. And, thereby help provides for ourselves and our children as well as assisting other communities do the same.

Biochar - policy

Biochar fits alongside other tools and instruments for sustainability, such as the Carbon Farming Initiative, Carbon Tax and particularly NGO initiatives such as a Biochar Trust and Carbon Sequestration NGO's as well as State based Biochar policy in areas such as taxation, investment, regional development, public infrastructure such as transport and communication, and training. So Biochar is only 'part' of 'the answer' not the 'whole' answer.

For urban communities hard hit by 'downsizing', or, rural and developing communities impacted by 'free trade', or intentional communities and networks of eco-villages seeking to design-in, rather than retro-fit existing communities, sustainable community economy, we believe that Biochar can make big difference, in particular for the people involved and their children.

Reference

Krull, E. (2010). *Biochar for Agronomic Improvement and Greenhouse Gas Mitigation*. CSIRO Sustainable Agriculture Flagship: 6pgs. Found on http://www.csiro.au/resources/Biochar-agronomic-improvement .

Australian law and Biochar: *Clean Energy Act 2011*

Jim Prentice

Introduction

We see in this, our first issue, what a valuable process Biochar is for reducing carbon pollution. Biochar will be a part of an international strategy of global reduction of greenhouse emissions. Just very recently its place in Australian legislation became legal fact. Yet Biochar processes will change with this general recognition of its environmental role, the new legal regulation and subsequently by investment in it. Practitioners face changes. These changes are driven firstly by broad environmental, economic, political and social institutions and secondly, by the consequences of the legislation contained in the *Clean Energy Act 2011*. Therefore we need to put Biochar in a bigger picture now. We shouldn't ignore international factors nor local ones shaping Biochar practice nor ones important to farmers, commercial interests, educationalists and governments.

Not surprisingly, conflicts of interest and opinion will exist, but so too ways to resolve some of them. As investment and regulation increase so too conflict. Yet, we shouldn't forget this is a good news story. These are not 'pie-in –the-sky' reforms. It's for those with their feet on the ground but with an eye to the sky (the common good) and for practitioners their own purse is at stake.

What's that all mean for Biochar practitioners? I argue practitioners will not only require their own self regulation but also need to respond to regulation by government through lobbying. Peak bodies or representative processes for Biochar practitioners will follow. These need to deal with the other interested parties. Mentioned here are only a few - commercial interests, governments and especially farmers: all of whom have peak representative bodies. As the government and economy orient to the environment in projects,[3] the Biochar practitioner bodies will face pressure for changes to processes of production and application of Biochar. Of course they may try to adapt on a one- to- one basis and negotiate with individual farmers and individually with governments. More likely grass roots actions and collective action by practitioners will follow, but the changing environment encourages any organisation very strongly. The formation of representative bodies may be grass roots or more top heavy - that's up to them - but at times they will need to speak decisively with one voice –now more than ever before.

All aspects of Biochar face greater outside assessment and examination. Biochar will find a place in international and national trade in carbon credits. Practitioners will have to broaden their horizons to include science, economy, foreign affairs and trade.

---

[3] Contemporary governments before the recent and ongoing financial crisis saw themselves as, at best, regulators –which they failed at in regard to the crisis. Now direct government investment seems back on the political agenda to put it mildly – ("you can bail out the banks how about anything else?"). And so, too, tighter regulation will be on the political agenda.

Biochar practitioners: Beware, organise and celebrate!

The Legislation

The Federal Australian Government's involvement in the proposed clean energy future is apparent in the legislation. More broadly, the Federal Government will be regulators of a great many commercial environmental activities. Biochar techniques and practices gain specific attention from the regulations connected to legislation for the reduction of greenhouse gases in the *Clean Energy Act 2011*[4]. Further, the regulations (the legislative 'small print' if you like) will evolve to meet many unresolved and inevitably real-world complexities not included in the legislation. That is not unusual but it will be especially evident in this legislation due to its breadth, making Biochar and other abatement programs almost continually 'politicised' or contended.

If this is not enough, the Acts (18 in all associated with the *Clean Energy Act 2011*) are preludes to an Emission Trading Scheme (E.T.S.). Its introduction in 2015 will emphasise further the importance of some of the issues discussed here. My comments concern the broader economic, environmental, scientific and regulatory frameworks for Biochar, subsequent to this Act's passing.

We should not assume the Act's preparatory and insignificant status ahead on an Emissions Trading Scheme. Britain's Climate Change architect Byrony Worthington[5] describes the Australian *Clean Energy Act 2011* as state-of-the art. By fixing the price of carbon, it resolves many of the European problems of the very low value the market has placed on carbon there (low valuation is also a problem here with what were called RECS[6]. (Low price means less incentive to act.) Yet we, too, should see this as experimental endeavour and 'needing tweeking' to say the least. Input from interested parties will be intense. However as the natural environment really enters into all economic and government calculations with this Act we can expect a huge upsurge in interest in processes like Biochar including large scale investment and application.

Further it does not begin in 2012, but has begun already. Call this legislation inadequate, a milestone, or the random product of political wheelin' and dealin', its legal uptake will be in 2012, yet its effects begin immediately - in planning for corporations and for farmers. It heralds ever more sweeping changes in 2015 and later I will indicate this has real potential to remain mostly in intact for the ETS.

The framers of the Act benefitted from hindsight, learning from earlier schemes such as those of New Zealand's and Europe's and there is evidence of this in the Australian *Clean Energy Act 2011*. It is preparatory to something like this by 2015: something existing already in New Zealand.[7]

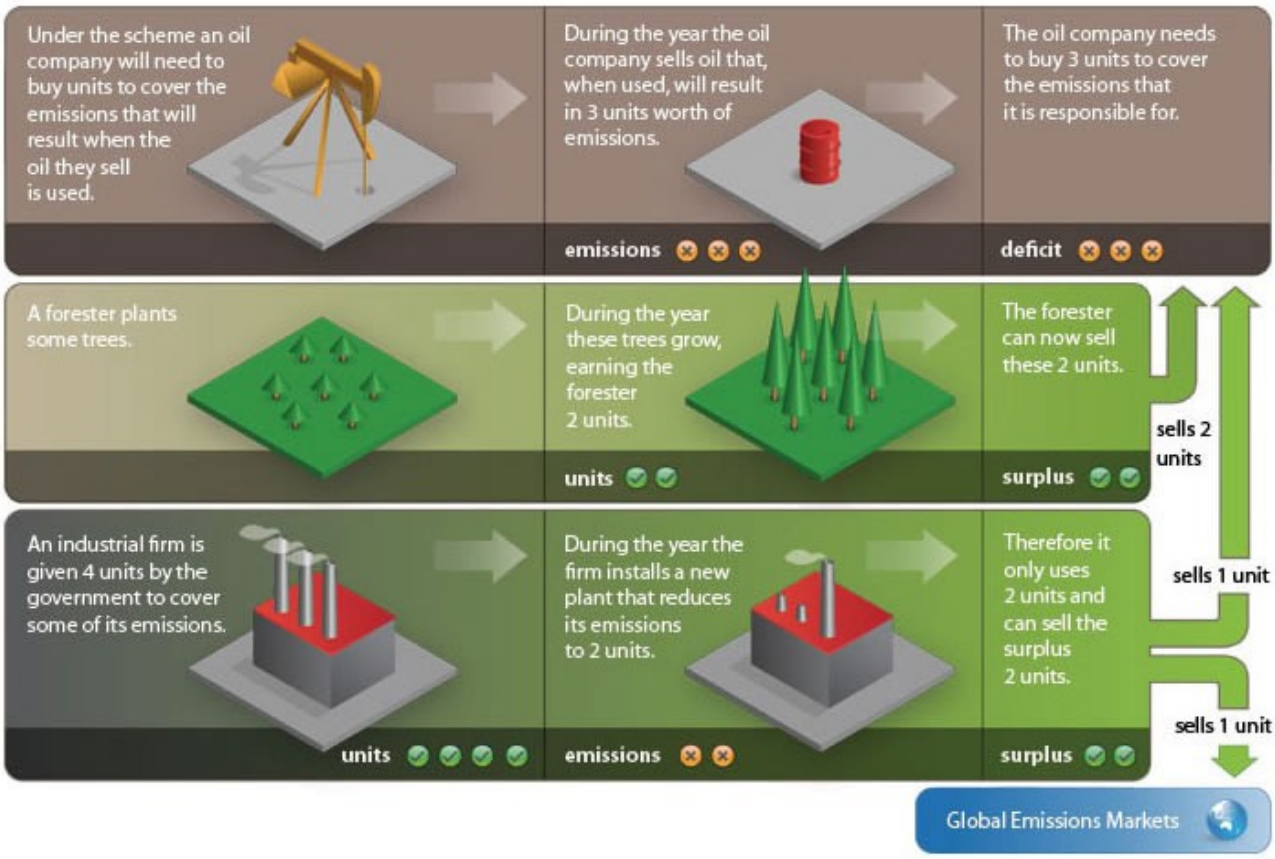
---

4 In legislation in 2009 passing through the South Australian Parliament biochar is mentioned but only in passing www.sa.gov.au/.../climate_change/documents/Act_Reporting/Legislative_Report_2009.pdf - 2011-04-21

5 http://www.guardian.co.uk/commentisfree/2011/oct/12/carbon-tax-australia?newsfeed=true

6 http://www.greenmarkets.com.au/market.html

7 http://www.climatechange.govt.nz/emissions-trading-scheme/about/ets-diagram.html



New Zealand's Emissions Trading Scheme (ETS)

Responsible boards and individuals will have to work on the assumption the legislation is a 'done-deal' and so too an ETS. It will have long term effects even if, as discussed in the final paragraphs of this article, its opponents try to remove it. Biochar may be one touchstone of its value and success and the inability to others to 'wind the legislation back' as it addresses issues of food production just as our 7 billionth citizen is born.

The Carbon Framing Initiative[8] and Biochar

The associated 18 individual Acts in the Australian *Clean Energy Act 2011*[9] necessarily mesh with a great deal of existing legislation on anything from fuel excise (import tax) to farm income taxation. However it is farmer's income that I concentrate on because of the Biochar possibilities on farm. The *Carbon Farming Initiative Act 2011* mentions projects to remove greenhouse gases from the atmosphere.

The Carbon Farming Initiative (CFI) is an Australian Government scheme to help farmers, forest growers and landholders earn income from reducing emissions like nitrous oxide and methane through changes to agricultural and land management practices. The initiative will achieve this by:

---

[8] http://www.comlaw.gov.au/Series/C2011A00101/AmendmentsCarbon%20Farming%20Initiative

[9] http://climatechange.gov.au/about/legislation.aspx

- Establishing a carbon crediting scheme
- Developing methodologies for offset projects
- Providing information and tools to help farmers and landholders benefit from carbon markets
- Investing in a Biochar Capacity Building Program[10]

In a section awkwardly named "Additionality", the draft regulations associated with the Carbon Farming Initiative provide information about what schemes will attract carbon credit. This implies a list of activities deemed so worthy. It provides therefore tradable rewards of a monetary type through reducing pollution. Carbon pollution or equivalent is costed initially at $23 and slowly rises before trading begins. The Act will allow credit for schemes dating from 2007 when the Australian Labor Party was first elected with a mandate for carbon abatement.

Of course, to indicate the necessity of regulations (since I suspect there are always a few doubters here!) simple exclusions get listed as non-compliant, for example, activities such as propagating noxious weeds or plantations specifically designed for taxation reduction purposes. In the new national legislation, large scale Biochar techniques can be applied beneficially to urban and industrial waste so we must think beyond agricultural applications which nevertheless are mainly those discussed here.

Competing Investments and Synergies or Complements

Biochar will compete with many initiatives for attracting investment so it will need to prove particularly cost effective, as against the traded value of carbon and other technologies (say tree plantations). Then too, it must be widely desired by farmers. Of course, its capacity to enhance soil is a highly positive characteristic but in the trading model this is not considered other than saying that soil should be Biochar's destination. It therefore may be those wanting the dual effects of Biochar (on soil and sky) that choose to gain credits in this way.

By itself, Biochar may not be the cheapest way of gaining carbon credits (or it may be). However, those who see the Biochar will help their agricultural production will consider both its carbon reduction reward and its benefits for that agricultural production. Yet, many of these other activities stated in the Carbon Farming Act will have this double edge. *So Biochar practitioners will have to demonstrate a very complex benefit to farmers as will these other competitors for farming investment.* Of course, it may be desirable to mix several strategies, so 'competition, isn't really the right word.

The Act lists other strategies than Biochar in this regard. The following processes qualify for the carbon reduction rewards of $23 per ton according to the Act. The draft regulations[11] to come into force now the Act has passed, state these competitive or complementary possibilities as:

(a) Establishment of permanent environmental plantings after 1 July 2007, on land that is

[10] http://www.daff.gov.au/climatechange/cfi

[11] http://www.climatechange.gov.au/cfi

not conservation land;

(b) Establishment of permanent environmental plantings under the Commonwealth Government's Greenhouse friendly(tm) initiative;

(c) Establishment of permanent mallee plantings after 1 July 2007;

(d) Re-establishment of native vegetation, on land that is not conservation land, from residual seed sources through:

i. exclusion of stock; or

ii. management of the timing and the extent of grazing; or

iii. management of feral animals; or

iv. management of plants that are not native to the project area; or

v. cessation of mechanical or chemical destruction, or suppression, of regrowth;

(e) Restoration, on land that is not conservation land, of wetlands that had been drained;

(f) Application of Biochar to soil;

(g) Capture and combustion of methane from waste deposited in a landfill facility before 1 July 2012;

(h) Capture and combustion of methane from livestock manure;

(i) Dry season burning of savannah areas greater than 1 km^2;

(j) Management of feral camels on land that is not conservation land;

(k) Use of tannins as a feed supplement for ruminants;

(l) Incorporation of Eremophila species into feed for ruminants;

(m) Manipulation of gut flora in ruminants;

(n) Application of urea inhibitors to livestock manure;

(o) Application of urea inhibitors to fertiliser;

(p) Diversion of putrescible waste that would otherwise have entered a landfill facility to an alternative waste treatment facility before 1 July 2012.[12]

Quite clearly this legislation adds considerable complexity to the opportunities for Biochar practice. Necessarily, a scientific valuation of the carbon credit value that fits with each technique of carbon farming will eventually exist. Therefore conflict is almost inevitable in the rating and crediting of all these processes including Biochar, and scientists will determine such outcomes to some extent. It requires strategic assessment of economic processes and agricultural benefits as well as scientific determination of the calculations.

These then become part of the Biochar wider connection - of its evaluation, accreditation and economic assessment – its new operating environment in the wider world.

---

[12] http://www.climatechange.gov.au/cfi

Other Considerations

A specific Biochar Capacity Building Project[13] is included in the Carbon Farming Initiative 2011. Scientific and educational investments and opportunities will emerge. While CSIRO[14] has research on Biochar that is extensive, the New Zealand investment will be repeated here.[15] Further in the political sense the legislation in general may lead us to closer ties with New Zealand and Europe. These again are likely wider operating environments.

Will the legislation survive?

Overall the legislation is politically powerful because it establishes a precedent that despite opposition will not be changed easily. Biochar educators and practitioners are just two of many groups who want certainty and these include much more economically powerful players.

Further influences flow from international considerations. Australia has often taken an international role in matters. Australia has a vital interest in making carbon abatement work against its largest- in- world, per- capita, carbon and other greenhouse pollution rates[16] and the importance to some of its global good citizenship credentials. This strategy has international sanction if lacking articles of agreement. Its connection to the Kyoto Protocol is obvious: it is doing at least something of our part as Australian government representatives discussed in Japan, all that time ago![17] The sanction of such bodies as the U.N. through 'Kyoto' is a weighty reminder to those seeking to undo these changes and an omen of future recognition of Biochar in a world of 7 billion people.

For this legislation to be overturned and replaced in the peculiar circumstances of the Australian Parliament, it needs to pass through the Australian Senate. This is in the event of this incumbent government losing the elections due November 2013 (currently looking likely), and a repeal issued from a newly elected government. However, in the Senate (Australia's Upper

---

[13] The Biochar Capacity Building Program website can be found at http://www.daff.gov.au/climatechange/cfi . A further $2 million through the CFI is being provided for a Biochar Capacity Building Program, which will provide farmers and land managers with a better understanding of biochar and its role in mitigating greenhouse gas emissions. The Biochar Capacity Building Program will support research, on–ground demonstration of biochar and the development of offset methodologies to provide additional options for landholders to contribute to reducing Australia's carbon pollution. Biochar is a soil amendment that is produced by the burning of organic matter such as wood or crop waste in a low oxygen environment. Biochar has the potential to mitigate Australia's greenhouse gas emissions while benefiting agricultural production. The Biochar Capacity Building Program is in addition to the $1.4 million already being invested in the National Biochar Initiative as part of the Climate Change Research Program (http://www.daff.gov.au/climatechange/australias-farming-future/climate-change-and-productivity-research). The National Biochar Initiative is led by the CSIRO and the areas of research include:

- Cataloguing the properties of different types of biochars and developing suggested applications and usages for specific types of biochars;
- Understanding the interaction of biochar with Australian soils; and,
- Greenhouse gas life cycle assessment of biochar use in Australia.

Further information on National Biochar Initiative is available at CSIRO (http://www.csiro.au/science/Biochar-Overview).

[14] http://www.csiro.au/resources/Biochar-Factsheet.html

[15] The New Zealand Government has set up two Biochar Professorships at Massey University: http://www.maf.govt.nz/news-resources/news/maf-pleased-by-appointment-of-nz-biochar-centre-co (one particularly on production; the other on soil application).

[16] http://www.abc.net.au/news/2009-09-11/australians-the-worlds-worst-polluters/1425986

[17] http://unfccc.int/kyoto_protocol/items/2830.php

House), the Greens are still likely to hold the balance as only half the Senate faces re-election. Of course, what the current Leader of the Opposition means by 'spilling blood' on this would be to force a double dissolution. Australians are not only familiar but also wary of this course of action - based on a more generalised distrust of politics. Such double dissolutions have elongated and often unsatisfactory political outcome. Since too, the Act gives out property as carbon credits, changing the legislation means withdrawing this –a legally doubtful possibility.

The Australian Constitution, Section 57 fails to say what is 'blocking' (by the Senate which is however unconstitutional), although central legislation like this will give a new hostile government adequate 'legs' or legitimacy for a double dissolution. The Bill must be twice rejected in the Senate after a three month gap. The first step after dissolution would be a new election with the possibility that the election leaves the issue politically undecided or with ever more Greens in the Senate (5 will hold their seats for the next parliament as the Senators has 6 year terms). A Joint Sitting is the next step where it is conceivable the new government would still win as Lower House numbers are greater by a ratio of 2:1. Yet all that is a lot of political instability for a Leader of the Opposition on record as supporting some sort of Carbon Tax. Perhaps, politically, 'a bridge too far' at a point where times will have changed, the fear of the green ogre diminished, and an ETS–the next step – just around the corner. Of course a crystal ball is an element in these assertions.

Some Australians now say they got what they voted for, although they are entitled to say it was not a Carbon tax they wanted as the scheme discussed is called, (because the price is fixed by the government), but rather an ETS. Such matters are politically complex and value laden – a theory of mandate verses a theory of strict adherence to promises.

There are rewards rather than empty pockets and wishful thoughts –sustainability must include its practitioners. The Act shows a Prime Minister and those with greenish intentions in a "wheelin'- dealin'" style, reaching compromises –those with reforming intentions can be much sillier than this. Yet the deals might come back to bite –even should. However it is clean in another sense - for a cleaner environment.

Beyond optimism there is room for critique. Is this the whole answer? No. For this writer on the far urban fringe of an Australian capital city, with acquaintances with significant acreage, Carbon Farming is a great point of discussion about change. It creates the possibilities of new plans and their delivery. Are resources besides the air and fresh water still threatened? Yes. And still these too. Is species extinction to continue at its shattering rates? Yes of course. Are we out of (or rather into the woods) now? No. Olympic Dam[18] in Australia will mine more than a kilometre into the ground –open cut: just approved in the same parliament as the Clean Energy Act is passed the Lower House. Imagine the costs to the environment in that, whatever you think about nuclear fuel. Will individuals think more deeply about their carbon footprint? Probably some! But is it a step forward? Yes, on balance and with optimism.

The Biochar practitioner or his/her organisation now needs representation, broader education, diplomatic skills in many dimensions, commercial expertise and technical innovation.

---

[18] http://www.adelaidenow.com.au/business/premier-mike-rann-to-announce-state-government-response-to-olympic-dam-mine-proposal/story-e6frede3-1226162722337

Reference List Note

I have not included a reference list as the links in text contain all the material that is important while the reflections on government process come from years of teaching Australian Politics. There are many worthwhile texts on this e.g. *Government, Politics, Power and Policy in Australia* by A.Parkin G.Summers and D.Woodward. The latest edition coming soon covers this legislation.

All web links were accessed on the 15th of December, 2011.

Jim Prentice

Jim may be contacted via email: at jimprentice@optusnet.com.au .

How can biochar production have a future in Australia?

By: Nick Tsaktsiras, Jim Crosthwaite, Kerry Stott, Chris Opie, Sally Dwyer and Jack Schmidt for the Safe Climate Economics Group.

Victoria, a southern State of Australia, potentially has a significant carbon sequestration opportunity by capturing CO_2 in soil through the application of Biochar.

Biochar is a product of a process called pyrolysis, i.e. the heating of organic materials in an oxygen-limited environment. Pyrolysis produces a mixture of char residues (Biochar), synthesis gas (syn-gas) and bio-oil. Biochar is a potentially valuable soil amendment as it stores nutrients and water and creates a favourable environment for soil microbes, in addition to storing carbon in a stable form. The gas and oil can be used to produce heat and power.

In 2008, the Safe Climate Economics Group conducted a preliminary economic and financial analysis of Biochar. In this analysis, the group examined the conditions under which a large-scale pyrolysis plant processing 100,000 tonnes of crop stubble per annum and producing Biochar and electricity is potentially a good investment under Victorian agricultural conditions. We employed an economic analysis (profitability) using a standard discounted cash flow budget and financial (affordability) analysis, modelled on the approach of Malcolm *et al.* (2005).

We modelled the availability of different feedstocks in the agricultural sector and the application of a pyrolysis heat treatment process, closely following the approach of McCarl *et al.* (2009). The plant costing $40m is a slow pyrolysis plant yielding 35% Biochar and 0.8MWh energy per tonne of feedstock.

In Victoria, total crop residues could amount to 3,331kt in any one year (given reasonable seasonal conditions). From this feedstock alone, annual Biochar production could amount to 1,170 kt, and the amount of carbon sequestered in agricultural soils to over 880 kt. With 1 tonne of carbon equivalent to 3.67 tonnes of CO_2, this is equivalent to sequestering 3,210 kt of CO_2.

This biomass is, however, widely distributed adding to harvesting and transport costs. Availability also varies significantly with seasonal conditions, so investors in Biochar plants in cropping regions would no doubt seek multiple types of feedstock.

Leaving aside availability of feedstock, Biochar producers are unlikely to match prices paid for stubble in other uses. Currently (as at 2008) cereal straw sells for about $130/t (ex. farm), which includes the cost of collection from the field (about $50/t) and an allowance for nutrient loss from stubble removal (about $64/t).

For the economic analysis, we first tested how feedstock cost, labour cost and Biochar price had to each change for annual income to exceed annual costs – a steady state analysis that excludes capital costs. This gave an indication of what level to set these variables in the full discounted cash flow (DCF) analysis. The DCF analysis was followed by a financial analysis to identify break-even year and peak debt.

For a 100,000-tonne facility to be profitable (i.e. for the net present value to exceed zero), the delivered cost of the feedstock needs to be below about $40/t (delivered) *ceteris paribus* – *other variables being constant*. This low input cost is achievable for a plant located close to a cheap waste stream, to use as input, such as chicken litter or peach stones from canning operations.

Failing a low feedstock price, profitability requires a Biochar price over $300/t *ceteris paribus*. The Biochar producer will be a price-taker for the electricity produced and Renewable Energy Certificates created. Determination of the price for Biochar will be more complex. It will depend on how broad-acre farmers, horticulturalists, gardeners and others value Biochar in:

- Substituting for other agricultural inputs,
- Providing unique services related to soil health and water retention.

Consequently a Biochar price of $300/t may not be achievable on the basis of agronomic values alone, and a high carbon price will be required to ensure viability. If the value of Biochar as a soil additive is a low $100/t, then a carbon price of $70/t is required to boost combined returns (from Biochar and CO2e stored/sequestered) to the $300 level.[19] With Biochar priced at $300/t, Biochar sales contribute 60% of revenue. At this price, the large-scale pyrolysis plant optimised for Biochar production would be more profitable than one optimised for electricity production.

The Net Present Value (NPV) results are shown below for the base case and four other scenarios where each of five variables is changed, one at a time (capital cost, annual operating cost, feedstock cost, biochar price, and electricity price). The scenarios involve changing key variables, one at a time, up or down by 25% or 50% (so in the first column, each row indicates a 0.5, 0.25, 0, 1.25 or 1.5 change relative to the base case). The base case is $40m capital cost, $0.8m annual operating cost, $80/tonne feedstock cost, $300/tonne biochar price, and $50/MWh electricity price. Using a 12% nominal discount rate means that a result with a NPV of zero has a 12% rate of return.

[19]Note: the CO_2 equivalent price is calculated assuming 1 tonne of Biochar contains 0.75 tonne of carbon which is equivalent to 2.75 tonne (0.75 * 3.67) of CO_2.

Expected NPV for base case scenario and variations ($'000)

	Capital costs	Operating costs	Feedstock cost ($/t delivered)	Biochar price ($/t)	Electricity price (MWh)
0.5	$14,372 (+462%)	$10,894 (+374%)	$26,939 (+779%)	-$46,775 (-1,078%)	-$20,126 (-407%)
0.75	$5,623	$3,462	$12,187	-$25,175	-$12,048
Base	-$3,970	-$3,970	-$3,970	-$3,970	-$3,970
1.25	-$13,564	-$11,402	-$20,127	$17,119	$4,108
1.5	-$23,157 (-483%)	-$18,835 (-374%)	-$36,285 (-814%)	$35,667 (+998%)	$19,927 (+602%)

The base base scenario is $80/tonne feedstock and $300/tonne Biochar price. The figures in brackets are percentage changes from base case.

The order of importance for effect on expected NPV is: Biochar price, feedstock cost, electricity price, capital cost and operating cost.

New technological advances that reduce capital costs, reduce operating costs or increase plant efficiency per tonne of feedstock processed will improve profitability. Greater operating efficiencies are more readily achieved if the operators had access to a feedstock with minimal water content and high calorific value. The plant is expected to become very profitable if the output per tonne of feedstock increases from 35% to 40% for Biochar and from 0.8MWh to 1.0MWh for energy. Expected profitability weakens considerably by changing from a slow to high pyrolysis process and producing more electricity and less Biochar.

The results of our financial analysis show that break-even for our hypothetical plant occurs well beyond the payback period required by industry informants, several of whom indicated that they were looking to a four year payback. As well as the many uncertainties in the industry, financing difficulties may partly explain the slow emergence of a Biochar industry in Australia.

Can Biochar deliver?

The answer appears to depend on the future price of Biochar, electricity and carbon, as well as three other variables that directly influence the profitability and environmental impact of Biochar: (1) the cost and availability of feedstock, (2) government regulation, and (3) pyrolysis technology. All of these are still in flux and undefined to a certain degree, therefore an

investment today is a bet on how these interrelated factors will evolve.

The agronomic benefits, cost, and carbon efficiency of various Biochars are already quite different, and new technologies could make them even more so. Decisions about where to produce and how to apply Biochar could have dramatic implications on the economic feasibility of Biochar production.

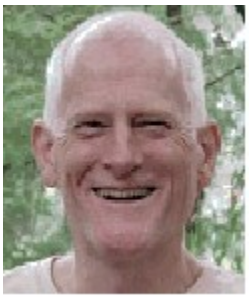
So it is important therefore, to frame any future discussion of Biochar's feasibility in relation to the many uncertainties about the science, technology, and lack of commercial framework surrounding Biochar production and application. These uncertainties surrounding Biochar will undoubtedly play themselves out in the form of barriers to the adoption of Biochar application by farmers and investment in pyrolysis plants.

It is the judgement of the authors that a Biochar industry will almost certainly develop in Australia and in particular in Victoria as one of many responses to the new economic signals that will arise because of climate change and societal responses to it. The pathways through which an industry might emerge in Victorian cropping areas cannot be easily forecast. In the early stages, possibilities include:

- Small start-ups with experimental plants
- Plants purchased off the shelf and matched to the source and use of the inputs and outputs
- Plants drawing on multiple sources of feedstock
- Mobile plants moving from farm to farm
- Bioenergy companies moving into Biochar production when and if carbon pricing makes it profitable
- Community facilities such as a community kiln or distributed small scale domestic production.

While there are likely to be some economies of scale with larger plants, the profitability of smaller scale operations have not been investigated for this project.

Nick Tsaktsiras



Jim Crosthwaite

References

McCarl, B, Peacocke, C, Chrisman, R, Kung, CC & Sand, R 2009),'Economics of Biochar production, utilisation and emissions', In Lehmann, J & Joseph, S (eds.) *Biochar for Environmental Management: Science and Technology*, Earthscan, London.

Malcolm, LR, Makeham, JP & Wright, V 2005, *The farming game*, Cambridge

University Press, Cambridge.

This report was prepared for the Department of Primary Industries (DPI). The report is available from jimxwaite@pacific.net.au, a member of the Safe Climate Economics Group, which is a public interest group working to achieve a safe climate by undertaking independent and critical economic research on climate-positive initiatives.

Global Futures Praxis

Work In Progress Report on the relevance of Biochar Action Learning Circles as a means to address several of the Millennium Project's Global Challenges

Paul Wildman

In order to look and act forward to a solution to today's problems we must first look back to its origins.

Paul Taylor (2010:3)

The goal of futures is not to predict the future but to improve it.

Edward Cornish (2004:65) quoted in Dick and Wildman (2011:9)

Introduction

This "action research work in progress" report involves drawing insights from my field notes and learning circle experience made over a four year period. During this time, I worked along several bush mechanics involved in Biochar development, and trialed a Hydroponics/Biochar experiment.

By Biochar I mean the *production, distribution and application of 'agricultural charcoal' primarily made with low temperature pyrolysis, in and for the domestic* (household or Oikonomia) sector.

Work In Progress

Now to detail some aspects of the Works In Progress within this overall Biochar Action Research Project:

A) Working alongside the originator of the initiative, now called Australian Biochar Industries a not for profit social venture, Dolph Cooke and getting before, during and after views.

B) An ongoing Exemplar Project is the Biochar Project site at Kunghur in Northern New South Wales, Australia which seeks to synergise Bush mechanicing and Biochar in the Hill Of Abundance[20]. To my knowledge, this is an Australian first.

C) In terms of the learning circles I have developed the Action Learning Circles referred to in this report, in co-operation with Learning Circles Australia. This involved applying my experience in developing Action Learning Circles for Community Economic Development (Wildman and Schwencke, 2003) to this current project (Wildman, 2011). As of November, there have been a full cycle of six action learning circle meetings with action and reading in the fortnight between each meeting. All up this comes to about 50hrs per

[20] See http://biocharproject.org/charmasters-log/hill-of-abundance-update/ for more information.

participant.[21]

Final field results from this WIP should be known in early 2012. Early field results are hopeful, practical and most reassuring; some are presented in the brief below. Such outcomes are possible because the period between circle meetings permitted experiments in kiln and retort fabrication and field trial plantings to occur, as indeed they have. For instance, the following picture is of a plot of one of the ALC participants, taken one month after planting. The three rows nearer the camera are those with Biochar. The remaining four rows away from the camera are the control group with normal local soil without Biochar[22].

Location: Border Ranges - inland Northern NSW @ 09-2011.
Photo: P. Wildman

D) The overall project has detailed the links between the Biochar Action Learning Circles and the Millennium Project's 15 Global Challenges (see Appendix A[23] where they are listed GC1 to GC15). Particular Global Challenges of relevance are sustainability (GC1) whereby Biochar can act as a coral reef in one's garden attracting all the 'best bugs' to its billions of microspores for nutrition of surrounding micro-organisms; clean water (GC2), whereby Biochar has been used as a grey water filter that can then be used in the garden; and sustainable energy (GC13) whereby the gases from the burn off can provide heat and even the capability to drive motors. For example, this was the case in the Great Depression when cars and even tractors were powered by Biochar-gas. The last Global challenge of relevance is ethical markets (GC7) whereby Biochar can be used

[21] (Dr. Mark Brophy http://studycircles.net.au/), industry expert and author; Dr Paul Taylor (2010) (http://biochar-books.com/TBRDetails), Biochar entrepreneur; and CharMaster Dolph Cooke (http://biocharproject.org/).

[22] For further information on these Action Learning Circles please see http://biocharproject.org/education-2/biochar-action-learning-circle/ and http://biocharproject.org/community/biochar-learning-circles/ . Most encouragingly in October, on the basis of these results and the way the Learning Circles sought to address several of the Millennium Project Global Challenges the group received a Millennium Project Node Award, see http://biocharproject.org/biochar-in-the-news/united-nations-millenium-award-biochar/ .

[23] Backgrounding The Millennium Project: www.stateofthefuture.org .

in a pilot sense to help provide part of the 'green' economic base for several 'right livelihood' small businesses/social ventures. Here 'black' is the new 'green'.

E) My intent, early in 2011, Brisbane Australia, was to see if it would be possible to set up a gardening system that could feed a couple that was: No dig, No weeds, No Watering, No bugs, No bending, No electricity, No pumps, No room and most importantly No weeds. Sound impossible? Would this be possible and would it work? Yes and here are the results to prove it.

Basically it's an Autopot system with gravity feed nutrients (Ionic Grow) set up outside under shadecloth (32% up to 40% will work, 30% absolute minimum) on Bunning's tables hung over the railing on my deck in Northside suburban Brisbane (30mts north from the City Centre).

These are the results[24] from the 3 month field trial: What I have found is that the:

1. Overall Hydrochar experiment results were very positive.
2. Growth was about twice the control pots + of course hydroponics growth rates, with this system, are about twice in ground growth rates so we are looking at a growth rate four times that for ground plants.
3. Root system in the Hydrochar pots was 3-4 times more substantial than that in the control pots (first picture below cp. the second picture)
4. Root system as closely matted and had retained all the smaller granulated Biochar almost as if it was feeding off, and with, the Bio-char rather than as per normal, and feeding exclusively off the Hydroponic nutrient.
5. Hydrochar lettuce were still producing feed leaves, at the completion of the test period whereas those in the hydroponic control pots had all run to seed.

NB: Dear Readers: I in no way claim to be an agronomist. Rather I am, at best, a hobby hydroponicist – this experiment is more by way of exploring the issue – can Biochar be used efficaciously in Hydroponics? Further field trials are needed.

F) Key further outcomes of the past decade spent in the Action Research project have been the focusing through the **revamping of the Biochar** and **Bush Mechanic**

[24] I used an Australian Autopot system of six pots. Two of these had a 50/50mix of perlite and activated Bio-char – the Bio-char was itself a 50/50 mix of small chunks mixed with a granulated powered type + two were control pots with 100% Perlite and the same plants at the same time as the Hydrochar experiment - using principles from Paul Taylor's 2010 book *The Biochar Revolution*.

websites as well as the **development of this eZine** to reflect the transition from text to screen, with the inclusion of social networking technologies (see icons on the top right hand side of our Adult Learning website), the completion of eBook2 on Chiro-learning, and as Work In Progress a small migration to Social Networking Technology with a uTube channel and a Weebly Blog as the locus of authenticity in our post textual age shifts from text to screen. See http://www.kalgrove.com/adultlearning/ .

G) This Chiro-learning path of Low Tech - High Ingenuity is a form of Critical Futures Praxis and represents a third path of Learning that may also contribute to the potential for braiding Action Learning, Learning Circles and Sustainability and possibly the emergence of KALGROVE as a functioning pedagogical institute. A path that is not 'top down education' as in schools and universities, nor is it 'competency conditioning training' as in TAFES and Vocational Education, rather it is 'bottom up learning' through informal structured methods such as 'learning circles'.

Such that, in conjunction with the Dick and Wildman (2011) article, to appear in a later issue, this short piece has sought to present a concrete work in progress report demonstrating a particular interpretation of CRAFT. It is hoped that even to some small extent that this Work In Progress Report may elicit replication studies, which can in time become intrinsic to, and practically demonstrate the benefit of, the field(s) of Action Learning, Action Research, Bush Mechanics and perhaps most importantly Biochar.

Some broader reflections

I call this overall approach 'chiro', or hand oriented, Action Learning which, I argue offers the opportunity of developing a body of expertise that can stand us in good stead in any future emergency as we head to what many see as an onrushing post-apocalyptic world. I submit that in such a world, if we are to survive, will have to be in large part 'made by hand'. Kunstler (2008), McCarthy (2006). Today we see movements in response to this all around us such as Transition Towns, Permaculture, Powerdown, Zero Emissions, Sharehood, Bush Mechanic and so forth.[25]

Present indications are that our grandchildren will face this post-apocalyptic world. Even Wikipedia and US, UK and Aus. TV have programs on: *Apocalypse Man*, *Burning Man*, *Garbage Warrior*, *Escape from Experiment Island* and *Junkyard Wars*. Indeed few of these above future threatening issues and NGO responses were in the public domain when this research project was commenced four years ago. And for an extended period the public saw little, if any, relevance was seen in this 'off grid' work however now, if I may say, the world is rapidly 'warming' to the concept. The grid is the darling of history – however this is about to change and Biochar is part of the reason why.

In Australia there is a term for someone *who links thinking and doing, and uses their hands to act forward wisely by crafting projects that solve problems with what is available while*

[25] Transition Towns (http://transitiontownsaustralia.blogspot.com/), Permaculture (http://permaculture.com.au/online/), Powerdown, Zero Emissions (http://beyondzeroemissions.org/), Sharehood (www.sharehood.org), Bush Mechanic (http://www.kalgrove.com/adultlearning/) and so forth.

developing innovations in the field that respond to broader needs ~ a Bush mechanic. Wildman (2005:1).

So by 'bush mechanic' I mean 'chiro' *by which* I mean 'handmade' *by which* I mean the 'domestic sector' (as counterpointed with the 'corporate-industrial complex'), *by which* I mean Aristotles 'Oikonomia' or Home Economics from 2500BP (again as counterpointed with the financial economy or 'love of money' Chrematistics). The Bushy is often seen pejoratively, especially those bush mechanics in Indigenous Communities. I strongly submit that the Aussie Bush mechanic, though a dying breed, has not only a deep and ancient heritage but also a lot to offer our children's children. If our children can ever grab hold of their 'dignity of risk' and be permitted to leave their cotton wool cocoons and light a match, or pick up a spanner, fork or needle, and act. Batty (2001), WMA (2002).

This interface between Action Learning, Biochar and the Bushy I submit can now be part of our 'practical hope' for our children's positive future.

Paul Wildman is collecting exemplar projects. CRAFT'ers who would like their projects included and recognised through CRAFT are invited to contact him at paul@kalgrove.com and view progress in the research project on http://www.kal.net.au/ and in particular http://www.kalgrove.com/adultlearning/ as well as below.[26]

Appendix A: Explaining the Millennium Project

The MP, the only global futures watch project, was founded in 1996 in the US after a three-year feasibility study. Originally it was sponsored jointly by the United Nations University, Smithsonian Institution, UNDP, EPA, Futures Group International and the American Council for the UNU. It is now an independent non-profit global participatory futures research think tank of futurists, scholars, business planners, & policy makers who work for international organizations, governments, corporations, NGOs, & universities. The Millennium Project manages a methodical and cumulative process, participated in by over 3000 futurists and scholars and organisations from about 50 countries around the world. The Project then collects and assesses judgments from over these people and organisations since the beginning of the project selected by its 50 Nodes around the world. The work is distilled in its annual 'State of the Future', 'Futures Research Methodology' series, as well as special and sponsored studies and methodologies.

Phase 1 of the feasibility study began in 1992 with funding from U.S. EPA to identify and link futurists and scholars around the world to create the initial design of the Project and conduct a first test on population and environmental issues. In 1993/94 during Phase II, a series of reports were created on futures research methodology and long-range issues important to Africa, funded by UNDP. Phase III, conducted in 1994/95 under the auspices of the UNU/WIDER and funded by UNESCO concluded with the final feasibility study report. Today, the Project accomplishes its mandate by connecting individuals and institutions around the world to collaborate on research to address important global challenges (also please see the list

[26] http://biocharproject.org/news/ ; http://biocharproject.org/education-2/biochar-action-learning-circle/ and http://biocharproject.org/community/biochar-learning-circles/

below). Since 1996, about 3,000 futurists, scholars, decision makers, and business planners from over 50 countries contributed with their views to the Millennium Project research through a Delphi technique and indicate a non-prioritised list of critical some 15 Global Challenges that need to be addressed by 2045

The project is not a one-time study of the future, but provides an annual review through its on-going capacity as a geographically and institutionally dispersed think tank. It was selected among the 100 Best Practices by UN Habitat, among best 7 foresight organizations by US Office of Energy, eleven of the thirteen annual State of the Future reports were selected by Future Survey as among the year's best books on the future, and the international journal Technological Forecasting & Social Change dedicates several entire issues to the annual State of the Future Report. Glenn and Gordon (2010).

The challenges are aimed at Governmental and organisational decision makers so relevant actions are also included. [27]

GC 1: How can sustainable development be achieved for all?

GC 2: How can everyone have sufficient fresh water without conflict?

GC 3: How can global population and resources be brought into balance?

GC 4: How can genuine democracy emerge from authoritarian regimes?

GC 5: How can policy making be made more sensitive to global long-term perspectives?

GC 6: How can the global convergence of information and communications technologies work for everyone?

GC 7: How can ethical market economies be encouraged to help reduce the gap between rich and poor?

GC 8: How can the threat of new and re-emerging diseases and immune micro-organisms be reduced?

GC 9: How can the capacity to decide be improved as the nature of work and institutions change

GC 10: How can shared values and new security strategies reduce ethnic conflicts, terrorism, and the use of weapons of mass destruction

GC 11: How can the changing status of women help improve the human condition?

GC 12: How can trans-national organised crime networks be stopped from becoming more powerful and sophisticated global enterprises?

GC 13: How can energy demands be met safely and efficiently?

GC 14: How can scientific and technological breakthroughs be accelerated to improve the human condition?

GC 15: How can ethical considerations become more routinely incorporated into global decisions?

---

[27] See http://www.millennium-project.org/millennium/challeng.html and www.stateofthefuture.org

To cite this document:

Wildman, P. (2011). Global Futures Praxis: Work In Progress Report on the relevance of Biochar Action Learning Circles as a means to address several of the Millennium Project's Global Challenges. CRAFT. Brisbane. 7pgs.

Key Words: Millennium Project, Biochar, Artificer Learning, Action Learning Circle, Hydroponics

References

Web (all web addresses accessed 10-2011)

Pedagogical Institutes/Learning Enrichment Foundations that embrace 'chiro oriented pedagogy' seen in Kids and Adults Learning: http://www.21learn.org/ Canada; http://www.swaraj.org/whatisswaraj.htm India, and possibly eventually www.kal.net.au Australia click on 'Adult Learning' or go direct http://www.kalgrove.com/adultlearning/ .

http://www.bioneers.org/ bioneers – practical biomimicry.

http://www.bushmechanics.com/ Warlpiri Media Association media site [WMA. (2002)].

Text

Batty, D. (2001). Motorcar Ngutju, T*he Chase, Payback, the Rainmakers. Bush mechanics ~ the Series*. Australia: ABC Video. DVD 2hrs approx.

Dick, B. and P. Wildman. (2011). *Critical Futures Praxis: futures, action research and change.* Unpublished. 28pgs. Available from the authors.

Glenn, J. and T. Gordon (2010). *2010 State of the Future.* Washington, DC, World Federation of UN Associations (WFUNA). 100pgs with DVD.

Kunstler, H. (2008). *World Made by Hand*. New York: Grove Press. 320pgs.

McCarthy, C. (2006). *The Road*. New York: Picador. 300pgs.

Taylor, P., Ed. (2010). *The Biochar Revolution: Transforming Agriculture and Environment*. Victoria – Australia: Global Publishing Group. 364pgs. http://biochar-books.com/TBRDetails

Wildman, P. (2011). *BioChar Action Learning Circles: toward a future Nature can live with.* Action Learning Circles based on Paul Taylor's The BioChar Revolution book (2010). P. Wildman. Brisbane: The Kalgrove Institute. with Topic Guides - 40pgs. With six topics each of 5 pages.

Wildman, P. and H. Schwencke (2003). *Your Community Learning - action learning circles for learning and earning through community economic development.* Brisbane, Community Learning Initiatives and Prosperity Press: Multi Media CD Rom with explanatory booklet explaining action learning and including cross walk between community economy development questions and ALC topics integrated through Community Economy Development Actions. Brisbane: Prosperity Press and Life Long Learning Council of Qld. (then Community Learning Initiatives).

WMA. (2002), see Web section.

Biochar Flyers

The following flyers and information were produced in July 2011. Stick around for upcoming Biochar events in 2012!

Today we introduce Biochar as a serious option for carbon sequestration in Australia. Action Learning Circles for Transforming Agriculatuer and Evnrionment through the production, distribution and use of Biochar.

We have put our heads together and have seen that to help get the message out wide and clear we need a package with three integrated things to maximise the impact and reach of Biochar. In fact Tim Flannery sees Biocarbon as nothing less than a magic pudding

What does the Learning Circle kit include?

At this seminar we are pleased to announce the launch of our threefold Learning Circle package comprising:

1. An invitation to a series of practical DIY Learning Circles based on the book and aimed to help you action Biochar by Paul Wildman
2. An invitation to visit the Biochar Education Facility to see and feel Biochar at work by Dolph Cooke, here with your barista of black, you can make your own 'magic pudding'
3. Paul Taylor's text The Biochar Revolution – transforming agriculture and environment

What do you get in detail

We welcome and encourage participation in our offering, and through the Learning Circles process you can interface the text and the field and help yourself as well as friends and family learn while having some fun and getting your hands black!!

- With the learning circles you can gain from interactions with others working on the same project, facilitation assistance and of course mentoring from both Paul's both electronically and face to face. This is a great opportunity to help us co-author. Learning Circles are very well known in Europe and now more widely in Australia as a vital part of Adult Learning and Community Education.
- With the project at the Biochar Education Facility you can get a 'hands on' experience of making a retort and use this to make your own Biochar.
- With the book you get a substantial discount for the critically acclaimed basic reference text that is now selling widely across the world.

So won't you please join us now in working with Biochar to help make a better world for our children? They deserve nothing less.

This is an action learning process for us all so we can offer these three in a heavily discounted package for $75 or $50 for unwaged

Paul (Learning Circles are GO!) Wildman - paul@kalgrove.com

Dolph (your Charmaster) Cooke - dolph@biocharproject.org

Paul (Rocket Scientist) Taylor - potaylor@bigpond.com

These Learning circles are endorsed by:

~ **Study Circles Australia** ~ http://studycircles.net.au/

~ **The Millennium Project** ~ The Australian Node - Global Futures Studies & Research - www.StateOfTheFuture.org

~ **The Bush Mechanics and Artificers Guild of Australia** ~ http://thebushy.wordpress.com/
http://www.kalgrove.com/adultlearning/

Discover Biochar - the flyer

Turning old gas bottles into biochar stoves to help international development

Paul Wildman

One initiative I have become interested in over the past two years is community gardening, and I have subsequently experimented with hydroponics and Biochar. These have been published elsewhere in this eZine.

On Friday 7th November 2011, as a volunteer bus driver I took the Nundah Men's Shed[28] members to the Labrador Men's Shed[29] and spent the day being shown over the premises by their president, Frank Law. One initiative I noticed was the conversion of old LP gas bottles to a camping stove for use in developing nations such as Vanuatu. The project is under the general auspice of Peter Fearnside and several hundred have been taken over there and also to India and some other countries I forget.

LP Gas Bottle as Camping Stove

[28] http://goldenyearsmensshed.wordpress.com/

[29] http://mensshedlabrador.org.au/Mens_Shed_Labrador/Welcome.html

Dolph's Men Shed Demo

Subsequently in discussions I suggested to Peter the idea of a modification to enable the gas bottle stove to make Biochar. This was most warmly and practically embraced by Peter and subsequently basic plans were discussed and developed. Prior to this I had Skyped my Biochar colleague Dolph Cooke of the Aust Biochar Project in Northern NSW about the possibility of the modification. He said 'yes': he had designed one and had wanted to find a group to test this on. This modification would then allow the production of Biochar which can be put back into the soil and improve its fertility – thus, to an extent, closing the cycle. Plus with proper preparation one can get a second burn with the charcoal so that actual use of the bio-source-stock wood is reduced.

I then met with Frank Law and the gas-bottle-stove project leader Peter Fearnside and team Robert Decolle and Roger Wilcox, and the Biochar adviser Dolph Cooke and planned a 'proof of concept' stove. The Nundah Lions Club Meeting has allocated $250 for the proof of concept modification and its testing jointly with the Labrador Men's Shed and Australian Biochar Project[30].

[30] http://biocharproject.org/

Biochar stove - Peter's invention

Prototype #3

In short in co-operation with the Labrador Men's Shed, the Biochar Project and the Nundah Lions has resulted in the development of a village Biochar kiln for dual use of cooking + making Biochar which can then be used as a coral reef in one's garden (as it were) to increase soil fertility and thus help close the eco-loop in third world countries such as Vanuatu. This also has the knock-on advantage of helping to stop deforestation and kids falling into open fires – which many do and many end up with horrible deformities such as their chin stuck to their chest via skin burning.

Peter Fearnside loading for a burn in the prototype

The Proof Of Concept (POC) project stove test firing first occurred on the 28th of November, 2011 and with some further modifications the proof of concept stove should move to prototype bio-char stove finalisation by mid-January 2012. Plans are being discussed for basic training of the stove in the use of the stoves in the correct procedure to make Biochar, its use in home

agriculture and sale on the Internet.

The Biochar Stove Team (from left to right): Robert Decolle, Peter Fearnside, and Roger Wilcox

Overall this project can offer a small modicum of 'practical help' which can be used elsewhere, and does this by using traditional Australian bush ingenuity and practicality to help others. Importantly the Men's shed team formed an informal Learning Circle and have identified specific learning's from this process. I explained the link between Action Learning Circles (the action being the development of the prototype) and Adult Learning. This learning circle idea has been applied to Biochar as evident elsewhere in this eZine plus it has entered the 'sharehood' of sharing resources, know-how and tools[31].

Congratulations to the Labrador Men's Shed and in particular the gas-bottle stove team and thanks to The Biochar Project manager Dolph Cooke for technical advice.

**Further information: I am one of the two founders of the men's movement in Qld in the late 80's (BMG – Brisbane Men's Group 1988-1992). This in turned led to a number of initiatives such as Men's Help Line, Qld Men's Festival and the Men's shed movement as well as several other men's groups in South East Queensland, Australia. I was a single father of two primary aged children during this time and published about men's issues and single fathering – still rare today. Further the Biochar group I am on the board of has just received a UN Millennium award, more on this if you are interested see the relevant article in this eZine. I contributed to the Men's Shed Application for Nundah Senior Citizens Centre (of which I am on the board) and the application was successful.*

[31] http://www.thesharehood.org/sharing-stories/bush-mechanics-and-sharehood

Black is the new Green

"Wastes are only raw materials we are too stupid to use" - Arthur C. Clarke

Black is Green Pty Ltd is an Australian company which specialises in mobile, modular or re-locatable thermal treatment systems which can add value to biomass residues.

The BiGchar continuous carbonisation technology enables:

1. Upgrading of a wide variety of biomass materials to charcoal and other products in an efficient, safe and profitable manner
2. Generation of useful energy
3. Avoidance of the need to landfill or incinerate
4. Further value adding options such as activated carbon, or substitutes for fossil fuels (fuel charcoal or torrefied wood to replace coal and charcoal slurries to supplement heavy fuel oil)

A BiG mobile pyrolisis engine

Black is Green was developed by James Joyce and his father Stan Joyce from the ground up. This company can be contacted via:

- Email: contact@bigchar.com.au
- Postal: 74 Carlyle St, Mackay, QLD, 4740, Australia.

For more information, see their website: http://www.bigchar.com.au/[32]

[32] The source for the information (and picture) is http://www.bigchar.com.au/about.html .

Green waste to Eco-Carbon

An Overview of the Eco-Carbons Phenomenon

Paul Wildman

Today with the advent of the 'carbon tax' and black as the new green through carbon sequestration and carbon farming initiatives, both the Government and environmentalists are stressing the need to develop technologies which are environmentally friendly and less reliant on fossil fuels, deforestation and mining operations. Sustainable and replenishable projects are being vigorously sought and investments are increasing into this particular area.

The Greenhouse effect, salinity, and the high application of fertilisers and toxic chemicals have led to numerous restrictions beings imposed on manufacturers and the agricultural and horticultural industries. It therefore makes sense to establish a process which can utilise rejected waste materials (all being replenishable) and convert them into numerous and diverse industrial applications minus the high input of energy. This will also give considerable added value to producer's raw materials.

Eco-carbons Pty Ltd has a process which meets all the criteria mentioned. It is environmentally friendly, providing non-toxic products which are safe to handle and utilise for numerous industrial needs. These include carbon (charcoal) - an essential element which has a ready market demand in Australasia.

The raw materials are in plentiful supply and are readily accessible. These include waste/reject cereal grains, nuts and shells, dust and husks. The process entails producing beads to any size, shape and bulk density, and carbonising (burning) them in controlled conditions. The kiln used recycles the gases to generate energy to sustain the kiln's temperatures. The kiln becomes 70% self-sustaining![33]

Green Waste to charcoal a hot tip for our future: One Gold Coast company wants to take turning trash into treasure to a whole new level.

From the Gold Coast Sun Newspaper 25-11-2011 Turn This Town Around section

Bundall-based Eco Carbons is looking to turn plants and other green waste into environmental friendly fuel sources including barbecue beads and charcoal. Chief Executive Mike Neal said the process would help the environment and clear space at Gold Coast tips.

'There is 70000 tonnes of green waste just here on the Gold Coast each year and no one knows what to do with it. We can use wood waste, leaves sugar cane anything with is green we can carbonise it and we can even carbonise manure. At the moment it is in the 'to hard basket' (for the council) and I'm afraid and unfortunately there are no rules and regulations'.

Mr Neal said 'products made through the carbonisation process would also be cost

[33] Paraphrased from http://ecocarbons.com/.

competitive. For instance with fuel beads you now pay about $1.50 per kilogram- we could produce that at a quarter of the price using other raw materials' he said.

Mr Neal also indicated that the next step was convincing council to let the company set up a plant at one of the Gold Coast tips. 'We could set up at Sundown Tip or the new Reedy Creek site and put up carbonisation unit it here an treat the green waste'. This would reduce the volume of green waste at tips plus there would be less methane gas emissions'

Eco Carbon's CEO Mike Neal (left) and CTO Ron Davis have new ways to dispose of green waste

---

Career opportunities

Eco Carbons is instrumental in R&D on Eco-Carbons and other low cost D IY technologies which are proven – up to promote to the marketplace, simple to manufacture and promote. No specific skills are required just the desire to learn, some basic ingenuity and practicality can help earn attractive income.

The projects involve the safe conversion of organic green wastes into end-products readily identifiable in the market place.

Raw materials at little cost!

These are all readily available e.g. the production of eco-charcoals that have many applications (see below), are safe to handle, competitively priced and generate in their production the following associated products:

1. Solid fuels for heating and cooking
2. Gases for power generation inc. mobility cars powered by char-gas in the 1930's depression – Ford even had a factory fitted gas generator
3. Charcoal for food additive and Carbon filters for water, air purification and medicine
4. 'Ecocarbon' Non- toxic pesticide
5. Insulation and Fire retardants
6. Lightweight concrete aggregate – 'Ecocrete'

7. Soundproofing and insulation (which is also a natural fire retardant)
8. Charcoal for art work – great impact in Japan in art and sculpture for centuries
9. Oil spill absorbers
10. Soil improvers – it's like having a coral reef in your garden or as it's called in the fish world FAD – Fish Aggregating Device whereby the 'Ecochar' acts as a FAD for bacterial and microbes which find a home in the billions of pores in the carbon and thus provide nutrients for larger bugs and ultimately worms and plants – which we can then eat.

The materials are in abundance sustainable and replenishable - organic green wastes from home gardens, tree lopping and lawn mowing that until now had no value, most of which go to landfills polluting the environment. The end products (see list in read above) can command high added values from between $400 -- $4000 plus per tonne!

Here is an opportunity to become involved working full or part time - form a community based project with neighbours and schools and reap the awards all from wastes!! Please contact Ecocarbon if you wish to be involved.

Eco-carbon: http://ecocarbons.com/ . CEO: Mike Neal . Office address: 9th Floor Seabank Building, 12-14 Marine Parade, Southport Qld 4215, Australia. Postal address: LMB 12, Southport Qld 4215, Australia. Phone Nos: (9-5 hrs w/days). International: +61-7 55910351; National: 07-55910351. Mobile: 0414980402 - 24 hrs. Email:ecocarb@onthenet.com.au

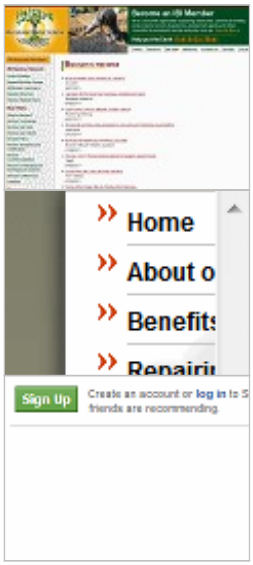
Biochar Links Around The World

Here is a list of biochar-related resources from all over the web.

[Biocharproject.org]
Biocharproject.org
http://biocharproject.org/

[National Geographic's Human Foot Print – Bread Consumption « Eco Preservation Society]
National Geographic's Human Foot Print – Bread Consumption « Eco Preservation Society
http://ecopreservationsociety.wordpress.com/

[Sustain Food - Glossary]
The sustain FOOD website has been developed, and will continue to evolve, as a place where the Northern Rivers community can learn more about growing our own food, supporting our regional growers and producers and sustaining our future food systems.
http://sustainfood.com.au/



[Biochar In The News - International Biochar Initiative]
Biochar In The News - International Biochar Initiative
http://www.biochar-international.org/

[2010-Aug More on biochar]
Soil FoodWeb International - soil rehab specialists since 1986
http://audi.websitewelcome.com/

[Amazonians' black magic has multiple benefits (Science Alert]
Biochar, similar to the charcoal used by Amazonian cultures to invigorate their crops, is receiving attention as a potential solution for sequestration of significant amounts of carbon. Employing it in agriculture may also increase crop production and reduce emissions of carbon dioxide and other potent greenhouse gases, such as nitrous oxide. So what is this stuff? Evelyn Krull reports.
http://www.sciencealert.com.au/

[An optimist on Copenhagen - Oliver Burkeman - China Dialogue]
From failed US presidential candidate to planetary crusader, Al Gore is a rock star of the climate debate. He talks to Oliver Burkeman about optimism, civil disobedience and Obama's next move.
http://www.chinadialogue.net/

[Australia and New Zealand Biochar Researchers Network]
Australia and New Zealand Biochar Researchers Network
http://www.anzbiochar.org/

[BiGchar recommended links]
Links around bigchar, biochar, charcoal and pyrolysis
http://www.bigchar.com.au/

[Biochar - Ecocho : You search. We grow trees.]
Ecocho has found 260,000 web results for biochar.
http://www.ecocho.com.au/

[Biochar - NSW Department of Primary Industries]
Biochar - NSW Department of Primary Industries
http://www.dpi.nsw.gov.au/

[Biochar - Sustainable Melbourne]
A communications hub for re-inventing Melbourne as ecologically, socially and culturally sustainable. A project of the Victorian Eco-Innovation Lab (VEIL). For the first time in history the majority of the world's population live in cities. How do we reduce the environmental demands of cities whilst maintaining and expanding the cultural and social vitality that can make life in the city so desirable and rewarding? In cities everywhere people are concerned about sustainability. Action is occurring at many levels and on many fronts. SustainableMelbourne.com is a network and communication system to deliver information, to connect people and projects, to accelerate the city's transformation.
http://www.sustainablemelbourne.com/

[Biochar Carbon Sequestration - Videos]
Is considered to be a strong link between the three Rio conventions as it simultaneously addresses climate change, desertification and biodiversity. Read more about the global carbon cycle, climate change, soil organic carbon and our options and prospects to mange this carbon pool by biochar carbon sequestration.
http://www.biochar.org/

[Biochar Solutions :: Biochar]
Biochar Solutions :: Biochar
http://www.biocharsolutions.com/

[Biochar]
Biochar
http://richmondlandcare.org/

[Bioenergy news]
Bioenergy trade, bio-energy, sustainable development, biofuels, biodiesel, ethanol
http://news.mongabay.com/

[Blog - Go Bluebird]
Blog - Go Bluebird
http://www.abc.net.au/

[BMSustainableFood - Reports]
BMSustainableFood - Reports
http://bmsustainablefood.wikispaces.com/

[Business Associations - Transfield Services]
Transfield Services delivers essential services to key industries in the Resources and Industrial, Infrastructure Services and Property and Facilities Management sectors.
http://www.transfieldservices.com/

[Carbon and Nutrient Cycling group - CSIRO Land and Water]
Our Aquatic Biogeochemistry and Ecology research stream develops leading methods for measuring and modelling environmental and ecological interactions in rivers and estuaries.
http://www.clw.csiro.au/

[Chaotech Pty Ltd - Biomass Pyrolysis]
Chaotech Pty Ltd - Biomass Pyrolysis
http://biogasworks.com/

[Flowforce Technologies™ - Biomass Energy Systems]
FlowForce Technologies is an Australian supplier of impact weighers, solids flow meters, belt weighers, bulk bagging systems, bin level indicators, samplers and biochar tecnnologies
http://www.flowforce.com.au/

[How to Make Organic Biochar Fertilizer For Your Vegetable Garden]
How to make and use organic biochar fertilizer for your vegetable garden
http://www.howtogardenadvice.com/

[Kelpie Wilson: Hacking the Future - Biochar 10-10-10 Global Work Party at All Power Labs]

It takes about 100 years for natural processes to remove CO2 from the atmosphere - we have to find ways to help nature along. Biochar is one of those ways.

http://www.huffingtonpost.com/

[Links]

Official Web Site of the Australian Cane Farmers Association Limited (ACFA

http://www.acfa.com.au/

[Links]

Links

http://www.agri.gov.il/

[Low-tech Magazine: Wood gas vehicles: firewood in the fuel tank]

During the Second World War, almost every motorised vehicle in continental Europe was converted to use firewood. Wood gas cars (also known as producer gas cars) are a not-so-elegant but surprisingly efficient and ecological alternative to their petrol (gasoline) cousins, whilst their range is comparable to that of electric cars. Rising fuel prices and global warming have caused renewed interest in this almost-forgotten technology: worldwide, dozens of handymen drive around in their home-made woodmobiles. - - Wood gasification is a proces whereby organic material is converted into a combustible...

http://www.lowtechmagazine.com/

[Microwave that locks carbon in charcoal may be our best weapon in the fight against global warming, say scientists - Environment - guardian.co.uk]

Giant microwave ovens that can 'cook' wood into charcoal for burial could become our best tool in the fight against global warming, according to a leading British climate scientist

http://www.guardian.co.uk/

[Natural Resources and Environment - Mesh]

Company category -Natural Resources and Environment

http://meshing.it/

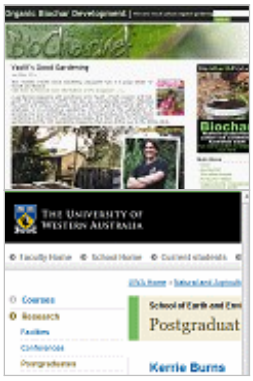
[Netikka.net]

Netikka.net

http://www.netikka.net/

[NewGenCoal - NewGen Roundtable blog]
The NewGenCoal blog looks at developments and news in climate change, carbon capture and storage, renewables and other ways to reduce greenhouse gas emissions.
http://www.newgencoal.com.au/

[Nitrogen Management and the Effects of Compost Tea on Organic Irish Potato and Sweet Corn - Biochar Discussion List Web Site]
Nitrogen Management and the Effects of Compost Tea on Organic Irish Potato and Sweet Corn - Biochar Discussion List Web Site
http://biochar.bioenergylists.org/



[Organic Biochar Development]
Using Biochar in an Organic Permaculture Garden
http://www.biochar.net/

[Postgraduates > School of Earth and Environment: The University of Western Australia]
Postgraduate Research Profiles at the School of Earth and Environment at the University of Western Australia
http://www.see.uwa.edu.au/

[Pre-Conference Symposium]
Pre-Conference Symposium
http://www.biorenew.iastate.edu/

[SOHOMINIUM: Power of Ten: Placemaking of Third Places]
SOHOMINIUM: Power of Ten: Placemaking of Third Places
http://sohominium.blogspot.com/

[Soil: Patrice Newell]
Soil: Patrice Newell
http://patricenewellgarlic.com.au/

[Telstra BigBlog]
BigBlog homepage
http://htmlmanack.bigblog.com.au/

[The Dirt on Climate Change - Miller-McCune]
Could soil engineered specifically to maximize carbon storage dampen some effects of climate change? Very possibly.
http://www.miller-mccune.com/

[UNSW leading on biochar research - News - UNSW - Science]
UNSW leading on biochar research January 29, 2009 Biochar is a fine-grained, highly porous charcoal that helps soils retain nutrients and water....
http://www.science.unsw.edu.au/

[Welcome to Wadzy's World]
One stop green shop
http://www.onestopgreenshop.com.au/

[Wordpress.com]
Wordpress.com
http://eclipsenow.wordpress.com/

[The Political Sword - The Turnbull ETS wild card]
The Political Sword - The Turnbull ETS wild card
http://www.thepoliticalsword.com/

[The soil carbon story - Dairy Australia]
The soil carbon story - Dairy Australia
http://www.dairyaustralia.com.au/

[Commercial Perennial Crops? « Biofortified]
Commercial Perennial Crops? « Biofortified
http://www.biofortified.org/

[Farming Forums & Farm pictures - FWispace from Farmers Weekly]
Participate in Farming forums and upload Farming photos. FWispace is the global online community for the whole farming industry.
http://www.fwi.co.uk/

[Legalectric » Blog Archive » Poop Power in the WSJ]
Legalectric » Blog Archive » Poop Power in the WSJ
http://legalectric.org/

[Biochar — Just More Hot Air? - Bifurcated Carrots]
Biochar seems to be the latest new craze in everything agriculture and biofuel related. It seems a term we are all going to be hearing a lot more of
http://www.patnsteph.net/

[Jennifer Marohasy » Store Carbon as Biochar]
Jennifer Marohasy - a forum for the discussion of issues concerning the natural environment
http://jennifermarohasy.com/

[Biocharnewsdaily.com]
Biocharnewsdaily.com
http://biocharnewsdaily.com/

[Greater Democracy » Blog Archive » Introduction to Biochar: Six Posters from IBI]
Greater Democracy » Blog Archive » Introduction to Biochar: Six Posters from IBI
http://www.greaterdemocracy.org/

[Hand painted terra cotta roof tile: terra world- >> -terra hyip]
Hand painted terra cotta roof tile. terra cotta big feet, gifted assessment terra nova, bella terra condominiums scottsdale az, fleetwood terra lx, chinese terra cotta warriors, terra cotta fire place, terra cotta pot holder, new jersey terra cotta, party pig terra toys.
http://oeuvrecreative.com.au/

[Tasmanian Times]
Tasmanian Times
http://tasmaniantimes.com/

[OZRURAL.COM.AU » Blog Archive » CHARCOAL FOR HEALTHIER PLANTS.ASK BIOCHAR...]
OZRURAL.COM.AU » Blog Archive » CHARCOAL FOR HEALTHIER PLANTS.ASK BIOCHAR...
http://www.ozrural.com.au/

[Energyfestival.org]
Energyfestival.org
http://energyfestival.org/

[Long-term soil carbon]
One area that generates extended discussion on LP climate change threads is the ability of biological processes - forests, particularly - to remove some of the...
http://larvatusprodeo.net/

[Forum: Are They ORGANIC?]
Are they ORGANIC?
http://www.daleysfruit.com.au/

[Biochar – a win win for jobs, agriculture and the environment - Webdiary - Founded and Inspired by Margo Kingston]
Interactive independent media site featuring comment on the events shaping our world
http://webdiary.com.au/

[The biochar debate (environmentalresearchweb blog) - environmentalresearchweb]
The biochar debate (environmentalresearchweb blog) - environmentalresearchweb
http://environmentalresearchweb.org/

[Biochar gives new meaning to charcoal - LEISA's Farm]
Posted by Mundie An old agricultural tradition is taking on new significance in an interesting initiative that is gaining momentum around the world: biochar. Producing biochar follows the same idea as charcoal - the heating of biomass (such as wood,...
http://familyfarming.typepad.com/

[Geneticmaize.com]
Geneticmaize.com
http://geneticmaize.com/

[LGF Pages - BBC News - Geoengineering 'not a solution' to sea-level rise]
Scientists led by John Moore from Beijing Normal University, China, write that to combat global warming, people need to concentrate on sharply curbing greenhouse gas emissions and not rely too much on proposed geoengineering methods.True, though I personally believe we ...
http://littlegreenfootballs.com/

[Backyard Aquaponics • View topic - Biofloc-uaponics?]
Aquaponics, growing fish and vegetables in your own backyard. Aquaponic systems, information, workshops and components
http://www.backyardaquaponics.com/

[Green Car Congress: DOE Providing Up To $7M for Research in Stabilizing Fast Pyrolysis Bio-Oils to Support Upgrading to Fuels]
Online news, features and analysis
http://www.greencarcongress.com/

[InnovatieNetwerk - The new green is black: Bioachar - the charcoal futre]
InnovatieNetwerk - The new green is black: Bioachar - the charcoal futre
http://www.innovatienetwerk.org/

[A black bears food web / Celebrity Blog]
A black bears food web / Celebrity Blog
http://chauvinfamily.com/

[Back to the Future: Terra Preta – Ancient Carbon Farming System for Earth Healing in the 21st Century Permaculture Research Institute]
Back to the Future: Terra Preta – Ancient Carbon Farming System for Earth Healing in the 21st Century Permaculture Research Institute
http://permaculture.org.au/

[Charcoal webresourecs - Ecological System Engineering]
Ecological System Engineering - Charcoal webresourecs
http://ecosyseng.wetpaint.com/

[Biochar: An answer to global warming or a menace? - Links International Journal of Socialist Renewal]
Biochar: An answer to global warming or a menace? - Links International Journal of Socialist Renewal
http://links.org.au/

[Biochar News - NOFA Organic Land Care]
NOFA Organic Land Care extends the vision and principles of organic agriculture to the care of the landscapes where people carry out their daily lives.
http://www.organiclandcare.net/

[UNE - Primary Industries Innovation Centre]
UNE - Primary Industries Innovation Centre
http://blog.une.edu.au/

[Colorado : weblog]
Colorado : weblog
http://www.usda.gov/

[Could barbecues help fight climate change? - Duncan Clark - Topix]
Could barbecues help fight climate change? - Duncan Clark - Topix
http://www.topix.com/

[More Carbon for Soils More Carbon for Crops - Carbon Negative Farming with Bio Char - Beyond Zero Emissions]
More Carbon for Soils More Carbon for Crops - Carbon Negative Farming with Bio Char - Beyond Zero Emissions
http://www.beyondzeroemissions.org/

[Research: Land management research to increase soil carbon sequestration - biochar]

Research: Land management research to increase soil carbon sequestration - biochar
http://www.landlearnnsw.org.au/

[Abandoning the polluter pays principle - Greens MPs]

Abandoning the polluter pays principle - Greens MPs
http://greensmps.org.au/

[Biochar Removes Phosphate from Water - Environment - WaterLink International]

Phosphate poses one of Florida's ongoing water-quality challenges. A process developed by University of Florida researchers using partially burned organic matter called biochar could provide an affordable solution, however. The process also ...
http://www.waterlink-international.com/

[Biochar: News, Blogs, Tweets and Multimedia - Liquida]

Biochar: News, Blogs, Tweets and Multimedia - Liquida
http://www.liquida.com/

[Les notes sur le Tag faim : blog blogSpirit]

Les dernières notes sur le tag : faim
http://starter.blogspirit.com/

[Wikiwix » Wikipedia - Oxygen stable]

Wikiwix » Wikipedia - Oxygen stable
http://www.wikiwix.com/

Introducing the founders

Paul Wildman

Paul Wildman

Paul has an extensive track record in the areas of: Learning Systems Development inc. Artificer Learning (Bush Mechanics), Bioneering, Anticipatory Action Learning, Adult and Community Education (ACE), Strategic Planning, Futures Studies, Business and Organisational Intentionality and Learning. From 2001 onwards, he has been working at Kalgrove[34], a company specialising in Child Care and Adult Learning. (The company is about Kids and Adults Learning, and it's based in a Grove of gum trees - hence the name.) Kalgrove's philosophy is that learning is an engaged process that comes from the lived life of the student, through a strong practical commitment to helping generate in children, students and communities a Life Long Love of Learning.

Paul is also a board member of Golden Years Senior's Care Centre[35], and of the National Federation of Parents, Families and Carers[36]. He and his wife are also long time members of th Nundah branch of Lions International.

From 1989-2001 he worked in the Adult and Vocational Educational area concentrating in Apprenticeships and Traineeships interfaced with TAFE Qld – ultimately ending up as Deputy Commissioner for Training and Director Employment Directorate. Before hand, he lectured in 1994-97 at Southern Cross University where he developed a Master's specialisation course in Futures Studies (FS) (then the only online version in the world).

He has published four CD-ROMs, contributed 10 chapters and some 45 articles in these and related areas. Interests include bike riding, boating, healthy diet, grandchildren minding and spending the past three years on building his own bush mechanic exemplar project in the marine services industry - as well as developing a theoretical and practical understanding of this specific type of advanced Anticipatory Action Learning called Artificer Learning which, in Australia is called Bush Mechanics, and publishing therein. Artificers are the step beyond

---

[34] http://www.kal.net.au/ This site also contains information about Artificer Learning/Bioneering and Bush Mechanics.

[35] http://www.goldenyears.org.au/

[36] http://www.civilsociety.org.au/federation/index.htm

Artisan and are expert generalists in a number of related fields. They bring a methodical and ingenuous approach to solving everyday dilemmas with an eye to assisting today the development of a better world tomorrow for our children.

He has overseas experience in management development and futures including in Tonga, India, Malaysia, Africa and Singapore and Papua New Guinea.

Paul can be contacted via email on paul@kalgrove.com .

Jim Prentice

Jim Prentice

Jim always sought social activism as a way of relating to the world, initiating his interest in anti-war actions, early environmental and community concerns within the urban landscape. He engaged such matters as freeway construction with its division of communities and ineffective and destructive technologies applied to urban transportation and likewise Indigenous issues, although his own cultural community often is the offender.

Most recently he helped his local media to revise its implicit racist mindset as applied to the problem of why young Indigenous children use railway tracks with calamitous consequences. A tragedy and its aftermath led to wider community reflection on transport policing. The Indigenous use them to walk to various places - not least because no one else does. In fact, the community learned in this campaign young people do this more widely due to fare costs and service limits. However, in the poorer and often prejudiced white community Jim lives in, this walking led to a calamity which proved just another avenue for denigration of the local Indigenous. Jim's faith in learning through action was vindicated, if the events deeply saddened and racism proved its vicious presence. Jim's doctorate is in local history.

Jim's interests in anti-war, environmental issues, women's and men's rights and duties took him back to university in later life after stints as taxi driver, Naturopath and Acupuncturist, Asian traveller and would be gardener: even mower of those great symbols of nature's subservience - the suburban lawn. Jim has also worked in Aged Care for 15 years. However, at University social movement theories, sociology and practices reignited his interest in ideas. He has taught

in Australian politics, identity and culture for the last 15 years at several universities while still engaged in Aged Care to a limited but significant degree, which gives him a unique perspective.

His hope for the eZine is that it allows others to engage in practice or doing good works (if not necessarily those or only those of Biblical sanction), reflecting on them, finding a forum for constructive criticism and dialogue and building local actions. Giving oneself practical hope and the world meaning, through resistive action and thought seems a worthwhile project given what is around. He hopes that this eZine project will become yours too.

Jim may be contacted via email: at jimprentice@optusnet.com.au .

Introducing the webmaster

Peter Murphy

Peter Murphy is a modest man, with much to be modest about. He started his working career as a software developer, using the power of C and C++ to bind computers to his will. However, after eight years of it, he decided to follow a woman he was seeing to Việt Nam. To pass the time, he took up ESL teaching. The relationship ended but the profession remained, because there was a great deal of demand for learning the English language over there. He met another woman while in the country, got married (as you do), and returned to Australia with her. He started a Dip Ed., then stopped, and did system analysis for some time.

Peter's dream job is to teach IT. If that's not available, he likes to put websites together. As far as he sees it, there's more potential viewers that desktop applications, you don't need to worry about what operating systems they're running, and informing people is just as simple as sending them an URL. He prefers the Django[37] web framework, but is not adverse to wrangling and wrestling with WordPress.

When not coding, Peter likes reading, listening to music (preferably live) and playing the bass guitar. He also likes writing, when he has the time. However, he hates writing about himself in the third person. Peter lives with his wife, An, in West End, but has no children. He does have one dog, Timpani, but due to Australia's quarantine restrictions, she remains in Sài Gòn with his father in law.

Peter Murphy can be contacted on peterkmurphy@gmail.com. He has his own website: http://www.pkmurphy.com.au/.

Note: Peter Murphy would like to acknowledge Dolph Cooke's role in setting up and initialising CRAFT's installation of WordPress.

[37] https://www.djangoproject.com/

Advisory editorial team

The following personnel are present on the advisory editorial team.

Irene Brown

Irene Brown

Irene Brown – Science-Art artist, community educator with her Castle on the Hill Adult Learning Centre Uki NSW - business woman – proprietor of Castle on the Hill B&B/wedding venue and art studio. Registered Nurse specialising in ICU Operating Theaters. Graduate of Robert Kyosaki's Business School for Entrepreneurs and Chris Howard's Entrepreneur Boot camp, community educator with her Castle on the Hill Adult Learning Centre Uki NSW - business woman – Castle on the Hill B&B – irene@castleonhill.com – http://www.castleonhill.com/

Bob Dick

Bob Dick

Associate Professor Bob Dick is an independent scholar, an occasional academic, and a consultant in the fields of community and organisational change. He uses action research and action learning to help others (and himself) improve their practice.

http://uqconnect.net/action_research/arhome.html

Independent scholar; bd@bigpond.net.au

Peter Gray

Peter Gray

Peter Gray is an independent filmmaker, and an award-winning director of photography, with a career spanning 40 years with international experience across four continents, Australia,

Asia, Europe and the USA. Graduate of the Australian Film and Television School (1975-1977). Has lived and worked in Brisbane and Sydney (Australia), Penang (Malaysia), Berlin (Germany), Amsterdam (The Netherlands), and Seoul and Pusan (Korea). Currently domicile in Los Angeles, California. <snowflaketrails@gmail.com>

(1). The Battle For Bowen Hills (21 minutes) http://vimeo.com/21222102

(2). The Stream (8′ 10') http://vimeo.com/20413299

(3). 1967 Qld Civil Liberties March (10′ 17')

http://vimeo.com/20105643 - http://www.library.uq.edu.au/v/95688

Susan Groff

Susan Goff is a participatory systems facilitator, co-designing and facilitating participatory forms of inquiry to support social and organisational change to redress significant threats to social and environmental sustainability. Since 1991, Susan has run her own consultancy, specialising in participatory action research, action learning and participatory evaluation in service to sustainability issues such as community safety, family violence prevention, Aboriginal and Torres Strait Islander self-determination, first world poverty, carbon reduction, and sustainability. Being a Social Ecologist (Masters App Sci) Dr Groff uses this framework in her theorising and practice. Working across domains she believes that participatory knowledge and praxis co-production is the principle means by which humanity can fundamentally save itself.

Susan has been a returning Visiting Fellow to the Social and Organisational Learning and Action Research Centre at the University of West England, has just stepped down from four years as President of the Action Learning and Action Research Association, and is currently serving as the Association's Managing Editor. Susan is committed to the two moral obligations of Aboriginal de-colonisation and surviving climate change as fundamental to socio-ecological sustainability in our times. Susan agrees with Lewin's claim, that there is nothing more practical than a good theory. Visit her website: www.cultureshift.com.au

Iona Miller

Iona Miller

Artificer, researcher and Author. USA iona_m@yahoo.com Hypnotherapist, Iona Miller is a researcher, filmmaker, and popular writer in future science, investigative science, intelligence and esoterics. She analyses the collective psyche and cultural effects of geopolitics, religion, science, art and psychology. She fuses wedging and culture jamming into documentary and art films. The 'spy-whisperer' has appeared in Nexus and Paranoia, authored several books and international publications. A futurist, analyst, and consultant, specialties of this 'Meta Hari' include social engineering, pop culture, pop physics and psychology, media ecology, psi research, esoteric espionage, New Age critique, cults, PSYOPS, mind control countermeasures, creativity, mind-body, well-being, and extraordinary human capacities. In an arena in which it is nearly impossible to unravel 'the truth,' rather than being interested in un-provable minutiae or untraceable connections, she analyses general trends visible to all with a startling, unique viewpoint.

Charles Mercieca

Charles Mercieca

President of the International Association of Educators for World Peace an NGO accredited by the UN. mercieca@knology.net

Michael Monterey

Pracademic researcher – USA – Custom green design, millennial sustainability, elegant livability, alternative education – ecotectura.mm@gmail.com www.facebook.com/album.php?id=1133926880&aid=67279

Cameron Neil

Consultant, and co-founder of Brisbane Hot Futures Group cameronneil@iypf.org , organiser and activist with particular focus on youth praxis and fair trade. Entrepreneur and strategist, interested in building (or tweaking) markets, institutions and networks to achieve more good for people and planet.

Daryl Taylor

With more than 20 years working in community and organisational development roles, integralevolution founder, Daryl Taylor, has had significant 'whole systems' coherent partnerships facilitation and complex project leadership experience. Daryl's participatory planning, anticipatory action research, and organisational and community development work has been formally acknowledged with seven state and national innovation and best practice awards and commendations. His practice features prominently in VicHealth's Local Government Good Practice Resource 'Leading the Way' taylor.daryl@yahoo.com.au

Paul Taylor

Dr Paul Taylor ~ former NASA scientist and author and business operator Bed and Breakfast – potaylor@bigpond.com – http://www.mtwarningretreat.com.au

See: Taylor, P., Ed. (2010). The Biochar Revolution: Transforming Agriculture and Environment. Victoria – Australia: Global Publishing Group. 364pgs.

David Wyatt

Dr. David Wyatt ~ Adjunct Professor in BioBusiness Faculty of Science, Queensland University of Technology. Email: novogenesis@bigpond.com

Word of the Issue

Each issue we aim to publish one word that has particular, though largely lost, relevance and meaning to rediscovering CRAFT in the flesh that is as a whole with all the fragments joined up.

So it is our intention to find where CRAFT is hiding today, in all the nooks and crannies and hidey holes. We want to join up all these fragments to show the re-joined up meaning of CRAFT as a whole. Many key words have, in years gone by, had another meaning one that we need to recover and apply to our present situation if we are ever going to grasp sustainability sustainably. As these meanings have lost out in use, so has CRAFT as a 'joined-up' practice also passed from our thinking and understanding. This is almost modernity's reconciliation with the archaic, where we need to recover these meanings so we can think and then act anew about our position.

This Issue's Word – Sauvage

Sauvage comes to us from the Old French today in English as Savage (red in tooth and claw – nature and evolution are brutal). Originally however it had two meanings this modern meaning and a more archaic one as in fully and directly engaged, wild, enthusiastic, experiential, mimetic, immediate expression of, uncomplicated by civilisation (even a tincture of Pagan) as in Sauvage or Prime'itive, so in re-inventing the west we can go back to the beginning as we go forward.

Including the sauvage crafts such as: bush crafts, ~ mechanic, ~ whacker, ~ hacker, ~ tracking, ~ lawyer, ~ philosopher, ~ music, ~ pilot, ~ track, ~ chef, ~ carpenter, ~ ranger, ~ dancer, ~ tucker, bodger, knaver, juggad, journeyman. Sauvage has an alternative meaning, now almost completely lost, that does not necessarily interpret as brute, rather it means as above a certain 'wisdom of the wild' esp. as we see in indigenous cultures. Sauvage as uncivilised does not mean uncultured.

We see a certain analogue for sauvage between bush (in the Australian context), volk (as in the German sense), indigenous and mythopoetic. This is a sort of linguistic hidey hole where the fragments of 'sauvage's' second meaning can still be found – Linguistic archaeology.

Green design

Sustainability 101

Michael Lucas Monterey

Don't go numb. Keep thinking, caring, and be crafty when it comes to your impact .

Five of the basic factors affecting the fate of civilizations were revealed in Dr. Jared Diamond's best-selling book, Collapse: How Societies Choose to Fail or Succeed. Those five crucial choices are:

1. Environmental impact
2. Climate change
3. Neighbouring allies and enemies
4. Loss and gain of trading partners
5. Society's responses to all the above

All the choices, causes, and effects are interactive. All the factors relate to use of our brains, for better or worse. The failed empires of the past shared terminal defects, misconceptions, and misunderstandings in common, misuse of inner and outer resources and too many missed opportunities.

My practice and research over the past decade has revealed two prerequisites* that foster all other determinants of cultural health and longevity. Here are seven essentials of sustainable success:

1. * A viable paradigm, for a sane, life sustaining set of values and basic ideas and ideals
2. * Loving respect for nature and humanity, sustaining commitment to the joy and wellness of children, elders, great spiritual leaders and wise guardians
3. Green awareness and empathy, compassionate sensitivity to environmental conditions, fostering the best possible quality of life for all generations
4. Consciousness of climate change, with active commitment to eliminating or reducing its severity and rapidity
5. Sustainable peace, positive relations with neighbours, allies and enemies alike, fostering Win-Win strategies and dialogue
6. Thriving with ongoing upgrading of policies, laws, institutions, and enterprises that foster healthy innovation, resilience, and diversity, supporting positive dialogue and interaction with allies and competitors, minimizing hostility and harm
7. Positive responses to whatever challenges sustainably healthy success

We, the people, decide to rise or fall. With healthy values and abiding commitment to a lively culture and general well-being, success can grow out of near disaster. Without sane basic

values and attitudes, how can we sustain effective concern for the wellness of children, elders, and humanity as a whole? Success depends on wise choices that depend on good values and good ideas. Is the global Consumer Society choosing to succeed?

The Chinese will double the area of their built environment by 2030, about 18 building seasons from now. With population and economic growth rates of India close to China's and the rest of the "Third World" catching up fast, that means doubling the amount of human habitat built over the last 5,000 years in just over 200 months! That could double or triple the use of bricks, concrete, and pavement. That means doubling or tripling the amount of carbon released in the production and use of bricks, cement, concrete, and pavement. Bricks and mortar account for over 80 billion pounds of CO_2 annually, while the carbon dioxide (CO_2) released by production of concrete equals from 1 to 10 times the weight of concrete itself. That means from 81.6 billion to more than 96 billion pounds of extra CO_2 pollution, yearly. Related processes and construction operations produce billions of tons of other greenhouse gases (GHG), many at dangerous levels in the food chain already.

The methane frozen under the ocean floor and virtually locked in millions of square miles of melting arctic tundra can be unleashed by more global warming. Methane (over 22 times more potent than CO_2) can start runaway global super-heating, killing most ocean life with excess acidity, plus acid-rain strong enough to wipe out most land animals and plants for a million years.

Tar sand and oil shale mining and conversion (to low grade fuel oil and gasoline) are neither affordable nor green. They pollute the air, waters, and soil. Increased burning of fuel for transportation and power would release huge amounts of CO_2 and GHGs. The melting Arctic ice-cap, protects 30% of Earth's oil, but not for long.

Superior green concrete and unfired masonry alternatives to bricks — with only a tiny fraction of the negative impact of ungreen concrete and bricks — have existed for nearly 10,000 years. The best green design and new materials are better, but virtually suppressed while bioneer inventors go begging or broke.

With full scale energy efficiency upgrades, solar panels over rooftops and parking lots will produce more than enough electricity for all our future needs. Optimal design, ultragreen building materials, and new construction systems can radically reduce GHG emissions over the next 18 years, but the 7 billion of us will become 9 billion hungry, energy junkies.

So, Biochar, the focus of this issue of CRAFT, and all the other relatively clean ways to keep carbon out of the sky are critically important now. Some new materials are perfect for green buildings that can stand for 10,000 years or more, but replacing all, or even most, of our anti-green materials will take time. This is a race against time, and it may be later then we think. Not changing our ways and not preparing for the future would be disastrous. We need to demand the greenest materials available to maximize our sustainability, and Biochar is here now. You can use Biochar in many ways – make it, sell it, use it in the garden, to purify water, absorb smells and much more, all the while sequestering carbon, reducing your impact and enhancing the future quality of life.

Our most important choice is a classic no-brainer, but many politicians, business owners, and stock holders are failing Sustainability 101. Careless insanity will create worst case results. Sanity and the best green design will produce the best results, the healthiest, happiest, brightest future for all generations.

Michael Lucas Monterey

Michael Lucas Monterey, is an ecotect, green designer, multidisciplinary scientist, artist and writer. Monterey's training in the fine arts and design began in 1952, at age four. In the mid-70s he studied the works of Paolo Soleri. Monterey then began research and development of ecotecture, neo-primitive design-build techniques, as well as new green technologies, sustainable community planning, and evolutionary social theory. Michael started experiments with his Ultradobe and Ultracrete building materials in 2003, and then, in 2005, invented a natural, nontoxic, fire-proof, foam insulation. In response to the ongoing destruction of the building industry, the economy, and culture, Monterey began work on a sustainability solutions resource text. The Greenbook provides green policy directives embodying the essence of his accumulated knowledge, planning strategy, ways and means for greening the world. He is also working to co-found new alliances and institutions for implementing a real solution for sustainable culture. Michael Monterey lives in Seattle, Washington, providing green design, planning, consulting and innovative solutions for personal and global sustainability. He may be reached by phone at 760 500 6171 or email: michael.monterey@mdcinet.com or www.EcotectureNOW.wordpress.com

***Editors Note**: Readers Michael will be contributing to our regular Green Design column reflecting on some of the deeper design issues of our particular volume themes. He welcomes your contact.*

Featured Link of the Issue: Post Pressed

Post Pressed Logo

Every issue of CRAFT will have a featured link – an URL to a site we think is worthy of publicity — and we have chosen Post Pressed (http://www.postpressed.com.au/) as first off the block.

> Post Pressed is a quality small-scale publisher now operating from the sylvan surrounds of the slopes of Mount Gravatt, to the south of Brisbane.
>
> John Knight, the manager of Post Pressed, is a retired academic and long-standing poetry, short story and literary review editor of the journal Social Alternatives, and co-editor of the Australian haiku journal, Paper Wasp. He brings to publishing a unique understanding of literary authors, their needs and the challenges of the marketplace.
>
> With the use of current technology, Post Pressed can produce runs of books which are not feasible for most large commercial publishers. From 50 to 500 or more copies can be produced with modest substantial difference in unit costs, whilst subsequent runs cost less due to no further setup costs. It is therefore particularly attractive to authors of specialist works or those with intrinsic worth but for which the market is limited.

Post Pressed handles both "Literary" and "Academic" titles, with the latter dealing in areas such as Education and Indigenous Issues. For example, it has published many of the books in the Contesting Colonialism: Indigenous Knowledge and Indigenous Research[38] series.

[38] See http://www.postpressed.com.au/images/Contesting_Colonialism.pdf for order form.

Contesting Colonialism

There are several reasons we chose Post Pressed as CRAFT's Inaugural Featured Link. Running a small business is never the easiest job, so anyone doing so is worthy of respect. John Knight is a top bloke, as both Paul Wildman and Peter Murphy would attest. Both arguments would be good enough to give it the gong, but we want to add another reason at the end.

Without Post Pressed, it is possible that *there would be no CRAFT at all* – or merely CRAFT delayed by months or years. Paul had been friends with John since the late 1970's, while Peter had been managing the Post Pressed website, but both Paul and Peter were complete strangers to each other until October of this year. Paul had been envisioning CRAFT for years, but was stumped at finding a website developer. Fortunately, John Knight knew someone that was good at this website business. He could make introductions. He could distribute email addresses. So he did.

It would be a cheap false cliche to finish with "And so CRAFT was born", because CRAFT has been 20 years in the making[39]. "And so CRAFT was *implemented*" may be closer to the truth... especially in time for Christmas.

[39] See "About Craft" on page 4 of this document.

All praise to John Knight and the business he runs: **Post Pressed**[40].

[40] The link (just in case you missed it) is http://www.postpressed.com.au/ .

A Word from the Webmaster

Biochar is a very good thing

As Webmaster of CRAFT, it is my pleasure and my honour to introduce the reader to this eZine. As it says on the cover, CRAFT is a publication "where crafters of materials turn to crafting deeds and words". Each issue has a theme, and the theme here is biochar.

Now some of you may be thinking: "Isn't biochar like... just *glorified charcoal*? What's the point of making a whole issue of a magazine about that?" They're good questions – **painful** questions to hear, but they need to be answered.

Biochar is not the same as charcoal. Both are formed where wood (or other organic matter) are heated without oxygen. However, biochar is cooked at a lot lower temperature than charcoal, so as to preserve the structure of the wood and all its little cavities and oil. That's all the better for organisms to harvest in when buried in the soil, which increases the fertility makes it more suitable for growing plants, which makes it easier to *absorb* carbon dioxide out of the air. That's a virtuous cycle, my friends.

By contrast, charcoal is formed at higher temperatures, and the goal is to produce a substance for heat. Cavities may remain, but the oil vaporises off, and you get something close to pure carbon. And to get heat out of charcoal, one adds a lot of oxygen. This *produces* carbon dioxide. Not the same as biochar **at all**.

Okay, you still might be thinking "Biochar is not the same as charcoal, but a whole issue... *sheesh*." And what can I say? Let me put it this way...

Australia got gypped in the decent soil stakes. Australia got gypped *real good*. Take an island like Java, which is not too far away, globally speaking. It may be small at 128,297 square kilometres, or half the size of Victoria, but it's 500 deciVictorias of volcanic goodness – enough to support 135 million people. While the closest part of Oz to it is a place like the Shire of East Pilbara, with an even larger area of 380,000 sq km, yet an almost infinitesimally smaller population of 8,000 people. Okay, that area's desert, but even the rest of Australia comes out to 22 million top. And why is our population so small, relatively speaking?

It's not the water. Water has a lot to do with it, but even sparsely inhabited places like the Kimberleys get the monsoons. It's that most of our soils are no good. There are some areas that have barely adequate soil, but very few have world class ground – "throw a twig in it and it will form a bush in a week", what have you. Geologically, we're an old continent, and most potential nutrients got blown out or washed out to sea millions of years ago. Our volcanoes are few, we don't have the tectonic upwelling of the Himalayas or the Andes, and even glacial action (another source of soil) is lacking. No wonder most of us live close to the sea – that's where most of the good stuff it.

The worst thing is that with the recent advent of – ahem – "Western" agriculture, we've made a poor situation even poorer. People cut down trees to plant wheat, and discover that the trees

are the only thing keeping down a very salty watertable indeed, with soil erosion thrown in. As for fertilizers – pah to that, unless you like your rivers running blue and green with toxic cyanobacteria. Plus we're running out of places to get phosphates.

The trick in the tail is that Australia may be overpopulated beyond its carrying capacity while being one of the sparsest countries in the world. (To answer your question: we're third in sparseness - behind Namibia and Mongolia). Tim Flannery, who has had a lot of good things to say about biochar, is still worried that there may be too many people here. After studying a lot of estimates from various people, he writes[41]:

> Given the desire of Australians to reserve some potentially arable land for purposes other than agriculture, particularly national parks and forests, and given the enormous challenge presented by soil degradation, a more realistic maximum population for Australia may be 20-30 million. A population of this size would also give Australians a chance to earn some money from food exports.

That doesn't sound so bad, except when you read ahead.

> Virtually all hunter-gatherer societies seem to possess a 'golden rule' of population. This is, that in 'normal' times, the human population of a given area rarely exceeds 20-30% of the carrying capacity of the land (Sahlins 1968). This occurs because people are long-lived and usually reproduce slowly... Australia's high rainfall variability and fragile natural environment mean that special care should be taken. It would appear to make good sense to observe the 'golden rule' of population in determining Australia's 'carrying capacity'.

Flannery doesn't spell it out, but putting paragraph A and paragraph B together comes to the 'golden rule' population for Australia as between 4 million and 12 million. And what are we again? 22 million. Oh Bugger.

So what can we do about it? We being individuals, families, groups, what have you. What can we as people do about Australia's shortage of good soil? If we can't do big things of merit, perhaps we can do small things of goodness. Planting biochar in your gardens might be a good start.

---

41 http://www.science.org.au/events/sats/sats1994/Population2040-section4.pdf.

About CRAFT's Format and Editorial Guidelines

Mission, Focus and Theme

CRAFT's **mission** is ***'practical hope'.*** This is achieved through publishing work that is primarily visual, can provide practical hope, is innovative, and developed within grounded practice in order to facilitate our reconciliation with Gaia. The **focus** of such critical practice is to include a significant 'hands on' component, as well as reprising and reflections thereon. In general, such praxis is based on a completed (exemplar) project – which actively seeks to demonstrate today that a better world is possible tomorrow for our children and planet. Each publication will have a **theme** around this focus.

Style guide and format guidelines

- **Referencing:** All documents need references! Readers need to know where you got your information; they might want to follow it up themselves! There are no rules for this: just be consistent, and accessible to the reader. However, there are two preferred referencing styles.
    - **Use footnotes**. For each piece of information you want to reference, add a footnote, where you can state the source. This is recommended for shorter articles less than 2000 words. If you wish then to lead into a longer article by all means continue to use the footnote system therein
    - **Use the Harvard style**. Longer articles are recommended to use the Harvard system. For example: "Wildman (1996:26)" means page 26 of an article written by Wildman written in 1996. This is an example of a longer Harvard reference.
    - **However**, it is acceptable if you use your own consistent system.. You don't have to change your referencing system for us.
- **Fonts**: All fonts should be chosen so that any reviewer can read documents. Common fonts like "Arial" and "Times New Roman" are acceptable. "Humorous" fonts like Comic Sans are not. Documents should use a minimum of 12 px. Consistency is also good. Otherwise, it doesn't make much difference what font you use. Both the website and the eBook have their own customary font to represent your text.
- **Styles**: Use styles such as "Heading 1" and "Heading 2" for headings. These styles aid you by making text more consistent, and thus making readers' lives easier.
- **Paragraphs**: Leave a blank line between paragraphs (but not two!) Use 1.5 spacing between lines.
- **Images**: The standard picture types for websites are JPG, GIF and PNG. All are acceptable. BMP (Microsoft's default) is not acceptable for several reasons, such as being too big in file size.
- **File format:** Microsoft Word. We are fine with earlier ".doc" or later ".docx" formats.

Please don't use ".rtf".

- **Spell-check:** if possible, print the document and read the hard copy yourself. Afterwards, get someone else who doesn't know the topic to read it in order for you then to make relevant readability changes.
- **Readability**: After the last step, put your article through spell-check and grammar-check. (You may have to do it more than once). Please check your document's readability via the **Flesch-Kincaid** readability stats and please aim for a grade score of 10-12. This will be explained how to do it below – see below for further explanation. If you do know how to do it, just imagine that you are writing for Readers Digest or your local paper.[42]

But wait - there's more!

- **Punctuation is good:** Here are some punctuation rules to help you.
  - Use only one or two spaces after each period, colon, or semi-colon.
  - When doing '...' -- you should use only 3 dots minimum and maximum.
  - When using dashes, use two in a row, i.e., '--'.
  - There is never a space before a period or before a comma.
  - Please don't use running capitals in section headings: Just capitalise the first word.
  - Don't end headings with colons.
- **Avoid unnecessary abbreviations:** Write "25th of November, 2011", not "25-11-2011". It looks better.

Editorial guidelines

To be qualified for our site, your article:

Will need to be

a) **An original article that you wrote:** If you work for an author as an employee or contractor and are submitting the article, please ensure you have permission to do so and submit the article as was from the original author including his or her email address and name.

b) **Informative, practical and share your unique expertise:** Include tips, strategies, techniques, case-studies, analysis, opinions and commentary in your articles. We do not accept articles that contain more than 5 lines of quoted or sourced material.

[42] Readability implies simplicity, but not banality. Think Ernest Hemingway or John Steinbeck (or possibly William S. Burroughs) – but not Dan Brown.

c) **Written in proper English:** Use the spelling, grammar, punctuation, capitalization and sentence structure of the language. While we know there is a variation in what is considered 'proper English,' we ask that you at least be consistent within your article. Your article must also be proofed and double checked for accuracy. If English is your second language, we strongly suggest that you have it proofed by someone who has English as their native tongue before submitting your articles to us.

d) **Written in Basic English for practical people:** We suggest a vocab of 1000 with short sentences. If you intend to submit an academic article please do so and indicate same. Realise it will not be include in the main body of the eZine. We suggest a **Flesch-Kincaid** grade score of 10-12 with a maximum of 14. An F-K score of 8 means that an eighth grader could understand the document. Interestingly, this is equivalent to US school grade levels of around 15-17 years old[43].

Must not be

a) **An article you ripped-off from the public domain bought or paid someone to write.** Do not waste your time or ours by buying article packs that have non-exclusive licenses as we reject those articles. Why do we do this? (1) It makes you look like a fraud because you're putting your name on someone else's works that already may have hundreds or thousands of other authors who already put their name on the exact same works and, (2) we do not want to clog up the system with more than one copy of any article in the system.

b) **A press release,** advertisement, sales letter, promotional copy, or blatant and excessive self-promotion or hype.

c) **Pornographic** or contain adult material, hate or violence-oriented, suggest racial intolerance, advocate against any individual or group, have insulting, obscene, degrading tone, or contain profanity.

d) **Encouraging of hacking** etc. cracking passwords.

e) **Encouraging of terrorism**, bomb creation, support for terrorism/ radicalism/ religious fanaticism, illicit drugs or drug paraphernalia, steroid use or advocacy,

---

[43] Later versions of Word support Flesch-Kincaid.
To see it, click the Microsoft Office button (or the "File" menu), and then click Word Options. Next, click "Proofing". Make sure "Check grammar with spelling" is selected. Under "When correcting grammar in Word", select the "Show readability statistics" check box. So when you have finished checking the spelling and grammar, you can choose to display information about the reading level of the document at the same time. The F-K output on your selected text appears as follows:

Sentences per paragraph
Words per Sentence
Passive sentences %
Flesch Reading Ease
Flesch-Kincaid Grade level

See http://en.wikipedia.org/wiki/Flesch-Kincaid_readability_test for more information.
For me (Paul Wildman) my F-K score is often around 17.

weapon use or the promotion of hard alcohol/tobacco-related products inc. prescription drugs.

f) **Promotional of** yourself or particular products or services etc.

g) **Written to** contain any content that is a violation of any law, be considered defamatory, libellous, or infringes on the legal rights of others.

h) **A parallel submission** of the exact same article as one that you already submitted to us. Some authors have submitted the same article multiple times with only a few words changed in the body -- we reject these and ban authors who engage in this practice.

i) **A reply to a personal email**, letter or other correspondence.

j) **Excessive and/or bolded keywords/CAPITALISED phrases**. Bolding is limited to headings and subheadings.

Review process

Please note CRAFT is 'Post-academic' and NOT an academic publication, so authors will NOT get ANY kudos from any academic research program such as the Education Research Australia, the Research Quality Framework, or the Tertiary Education Quality and Standards Agency (TEQSA)[44].

CRAFT believes this laudable process has become completely derailed to the point where such research 'brownie point' systems now work against innovation, change and alternative views by simply reinscribing the status quo. In particular, such systems react against practitioner reflections being considered as 'research' and thus they act against initiatives such as 'local knowledge' local history, 'grounded theory', 'local theory', 'artificer learning' and so forth.

So while there is an 'editorial board'-- for want of a better term -- it is not there to vet your work, or help you earn academic brownie points. Rather, it is there to mentor you as a practitioner and author. While it may take several iterations with the nominated member of the editorial board for your work to get published – just don't give up. CRAFT is a voice for, and from, your practice and you will be heard.

Text to Screen

Remember, CRAFT also hopes to respect the transition from text to screen. Please include wherever possible visual representations of your work such as a few photos per article would be appreciated. Finally, a paragraph and contact details and photo of you will also be required.

Sustainability Issues

CRAFT is, from its very initiation – Virtual, Visual and we hope Visionary in terms of humble

[44] http://www.deewr.gov.au/HigherEducation/Policy/teqsa/Pages/Overview.aspx

practical hope. No trees will be killed in its production. The eZine however has the capacity to produce its contents in eBook format for use in - say - areas of the South developing in the North as well as Africa and other countries with unreliable internet connections. For us we prefer the concept of 'creactive evolvablity' or 'CRAFT' to sustainability. Both Jim and I have taken our own personal steps in this direction. I ride a pushbike where-ever I can, we have solar panels, a tank and I grow some of my own veges with hydroponics and Biochar.

Legal Status of your published work

Please note CRAFT is Not For Profit, Public Domain and Global Commons so that, once published, you and others may use your work elsewhere as you/they see fit – your gift to the global commons as it were. This means others will be free to use your work so long as they give you bibliographic credit therefore. CRAFT is NOT about setting you up as an author as per Google ranking or expert nor is it designed to establish any propriety knowledge or practice. Rather it is here to help Gaia. This is the new paradigm one which we both commit to. However we are only a part of a bigger picture of activists seeking to move beyond the status quo - yet respect what is wise therein as we fumble and even stumble towards a better world for our children and our planet.

Publisher

The organiser and publisher of the eZine is ourselves in good faith and a demonstration of our good will, through Prosperity Press and its allocated ISBN's – we accept responsibility for the strengths and weaknesses of our production. With your help it can be improved.

Acknowledgements

CRAFT seeks to ensure acknowledgement is given wherever relevant. If you have not been recognised, or if there is a mistake in same, please let us know and will immediately request the relevant author to do so in the next volume.

Questions, suggestions & contributions

Any questions please direct to the convenors of CRAFT: Paul Wildman paul@kalgrove.com and/or Jim Prentice jimprentice@optusnet.com.au

NB: this section was developed by PW and JP with input from Peter Murphy and draws from http://ezinearticles.com/editorial-guidelines.html

CRAFT Copyright, Disclaimer and Acknowledgment

Copyright A: eZine copyright. Creative Commons Licence, © 2011

Copyright A explicated - © 2011 Creative Commons Copyright exercised through the above web-links and publisher Kalgrove Institute. Q4 2011. This Creative Commons licence covers:

a) General use: Individual or multiple copying and use of these materials for study, research, practical projects, running learning circles or project planning is encouraged. However, please respect the authors' intellectual property and the publisher by acknowledging this and this publication when using or doing so. Such acknowledgement should be written on each section of the material used. In addition, please inform the author or the publisher when using parts of this document, as well as noting the quoted material. Please direct any feedback you may have to the publisher in the first instance.

b) Disclaimer: The materials contained within and forming part of this publication are offered to the public and to individual facilitators in good faith on a not for profit basis. This in no way constitutes an acceptance of responsibility for the ultimate use to which this material may be put, or to any acts or omissions arising from its use in the hands of a third party.

c) Acknowledgement: Every effort is made, in good faith, to encourage contributing authors to acknowledge sources. Clearly this will not prove 100% effective in all instances. Please bring any instances of absent of incorrect ascription to our knowledge and we will address this in the next volume.

Copyright B: Author's Copyright

All authors retain copyright for all work they have created.

Copyright B explicated - The eZine is simply a Peer2Peer collective/aggregating publishing tool. In general authors ask for their work to be published. On this basis CRAFT does not seek to obtain copyright, and by submitting their document the authors agree to their article's publication in CRAFT. The authors remain responsible for the content of their articles -- including references. CRAFT's editorial process seeks to ensure attribution is undertaken; however from time to time mistakes and omissions will occur. These remain the prime responsibility of the author. Once such mistakes and omissions are brought to our attention will be addressed post haste by the article's author and noted in a future issue of the eZine. We prefer collaborative intention to adversarial contention. The principals emphasise CRAFT is Not 4 Profit and a collaboration for CRAFT based social change for a future our planet can live with.

Endorsements

Sustainability Research Institute
Dudley Legget - Chairman
http://www.sustainability-research.org/

Science-Art Research Centre
Robert Pope and Irene Brown
http://www.science-art.com.au/

Bush Mechanics and Artificers Guild
Iona Miller
http://thebushy.wordpress.com/

The Kalgrove Institute – Kids & Adults Learning
Annette Cunado
annette@kal.net.au
http://www.kalgrove.com/adultlearning/

Post Pressed
John Knight – Director
http://www.postpressed.com.au/

Australian Study Circles Network
Mark Brophy
http://studycircles.net.au/

Australian Biochar Industries
Dolph Cooke
dolph@Biocharproject.org
http://Biocharproject.org/

Millennium Project – Australian Node
Global Futures Studies and Research
Anita Kellehur
designerfutures@iinet.net.au
http://www.millennium-project.org/