

"All that is necessary
for the triumph of
evil is that good
men do nothing . . ."
— EDMUND BURKE.



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HAS A 'NEW POLITICAL DAY' DAWNED IN FEDERAL POLITICS?

Liberal Democrat in the 'new era' Senate

We may not agree with all Mr. Leyonhjelm's politics, but it will be good to see a politician basing his decisions on some sense of loyalty to the people of his state of New South Wales rather than just toeing 'the party line' to serve their global masters.

David Leyonhjelm, *OnLine Opinion*, 30 June 2014:

The first of July 2014 will be my first day as a Senator, representing NSW and the Liberal Democratic Party. I hope history will say it was the day we got to work putting Godzilla back in its cage. Godzilla is that blundering monster that our governments have become, with their hands in our pocket and noses in every room of our house. I am the first politician elected to an Australian parliament on a purely libertarian platform, with a mission to lower taxes, remove regulation, and put an end to the nanny state.

To see the challenge I face, you only need to stand at Canberra's War Memorial and look down Anzac Parade. From there you can look towards the modest building that was once our Parliament House and on to new Parliament House. At the first sitting in Canberra's old Parliament House in 1927, taxation was less than 10 per cent of GDP, with most of this directed to core government functions like defence, and only the Speaker of the House, the President of the Senate, the Prime Minister, the Leader of the Government in the Senate and Ministers had their own offices.

These days, taxation is around 30 per cent of GDP, most directed to social security, health and education, and on sitting days there are 5,000 people in new Parliament House in more than 4,500 rooms. They are not there to produce anything; they are there to make legislation, tell others to make legislation or more likely, tell someone to do something entirely unrelated. Others are busy spending your money to let you know what a great job they are doing or what a bad job the people down the corridor are doing.



But of course, Parliament House is only the nerve centre of the monster. According to the latest figures, Australia has 1.9 million public servants – as many people as there are men, women and children living in Perth. Their salaries alone amount to \$134 billion, or more than \$100 dollars a week from each person in Australia. Much of this could be more prudently spent by individual Australians for their own purposes. It never seems to matter how much money is taken from us, it is never enough to satisfy the beast or those who believe they are entitled to it. Public servants are mostly dedicated, well-meaning employees who spend their days in busyness. But the public service also tends to attract people who think they know what's good for us, and are intent on delivering it whether we need it or not.

When there are so many people being busy on our behalf, they start to encroach on our lives; drafting laws we don't need, spending money on things we can do for ourselves, spending money telling us what to do, and finding new ways to collect the money so they can do it all over again.

But if you corner any one of them at a barbecue, stories soon emerge about waste and mismanagement, the entanglement of bureaucracy, and how people in their organisation are cavalier with your money. They might tell you why the Department of Industry spent \$75,000 on coffee machines and a further \$45,000 on a contract to service them; why Centrelink spent \$4.6 million on a new logo; and why the Government committed \$16 million to help a profitable corporation upgrade a chocolate factory in Hobart.

And these are just small examples that do not begin to explain the \$10 billion we pay for government spending on corporate welfare or the tens of billions taken from us and then redistributed as welfare handouts to middle class people who don't need it.

How does this happen? It is simply, as the economist Milton Friedman put it, what happens when people are allowed to spend money in the worst possible way – by spending someone else's money on somebody else.

(Continued on page 2)

In my term in Parliament, I want to convince Australians to reconsider whether handing their money over to the government is better than keeping it themselves. I want them to understand that disapproving of something does not justify it being prohibited or heavily regulated. I want them to understand the connection between the liberties they care about and the liberty of others, and to understand that individual freedom is universal, precious and must be fiercely protected.

We need more people in the Senate intent on putting Godzilla back in its cage, but in the meantime I will bring argument, reason, pleading and occasionally, blackmail, to the fight.

This article was first published in the *Australian Financial Review*.

David Leyonhjelm is the Liberal Democrats senator for NSW.

The Economics of Social Credit and Catholic Social Teaching

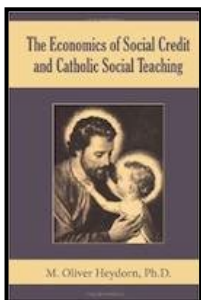
by M. Oliver Heydorn, Ph.D.

During his Catholic period, the early ecclesiastical writer Tertullian had once asked derisively: "What indeed has Athens to do with Jerusalem?" To put it more plainly, what possible positive connection could philosophy have with the true religion? Thankfully, such a negative attitude towards philosophy was subsequently condemned by the Church as heretical. In spite of the official rejection of fideism*, many Catholics might still be tempted to ask today, after the pattern of Tertullian's metonymy, what has Farnborough to do with Rome? In other words, what does Social Credit have to do with Catholicism?

In "The Economics of Social Credit and Catholic Social Teaching", Dr. Oliver Heydorn shows that if the Church's social doctrine successfully encapsulates the seed, or the basic blueprint, of a healthy social order, then the financial analysis and remedial proposals of C.H. Douglas, often referred to under the name of 'Social Credit', are of the greatest practical import. Social Credit promises to provide an effective policy and a set of appropriate mechanisms by means of which the Christian vision of society can finally be brought to a spectacular fruition on the economic plane.

* fideism (philosophy) -- Encyclopaedia Britannica.
www.britannica.com/EBchecked/topic/206100/fideism

Fideism, a philosophical view extolling theological faith by making it the ultimate criterion of truth and minimizing the power of reason to know religious truths.



"The Economics of Social Credit and Catholic Social Teaching"
- Oliver Heydorn Ph.D -

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MINISTERS FOR FORMER PREMIER WILL NOT STAND TRIAL

By Tony Moore *brisbanetimes.com.au* senior reporter
According to Tony Moore of the *Brisbane Times* 2 July 2014: "No Heiner Trial For Goss Ministers"

Ministers for former premier Wayne Goss will not stand trial to explain why they allowed industrial dispute evidence – sought by an Ipswich lawyer 24 years ago - to be shredded. That lawyer was Ian Berry, now the LNP's Ipswich MP and the chair of its Legal Affairs committee.

The decision not to bring the former ministers to trial spells the end of what became known as the Heiner Affair.

The Office of the Director of Public Prosecutions has ruled there was no likely prospect of a conviction of the ministers, despite new chief justice Tim Carmody last year finding that there were "prima facie" grounds for a trial. The evidence was gathered by retired magistrate Noel Heiner during a 1989 inquiry into the John Oxley Youth Detention Centre at Wacol and shredded by the incoming Labor Goss Government in March 1990.

The search for the reason why the documents were allowed to be shredded has taken more than two decades to be resolved. The Heiner Affair was debated at several Senate Inquiries before it was investigated by Mr Carmody last year. Mr Carmody investigated the Heiner Inquiry allegations as a secondary part of his inquiry into child protection services in Queensland.

While Mr Carmody found no evidence of sexual abuse at the John Oxley Youth Detention Centre, he found sufficient evidence to refer Goss Government cabinet ministers to the Office of the Director of Public Prosecutions on allegations they ordered the documents be shredded, despite knowing they were being sought by a lawyer. Mr Carmody referred the allegations to the Office of the Department of Public Prosecutions on July 1, last year.

"The available evidence is legally sufficient, as it stands, for a jury to find that in resolving to hand the Heiner documents over to the state archivist for destruction, the premier and each participating cabinet minister meant to ensure that they could not be used in evidence if required in an anticipated judicial proceeding," he wrote.

He asked the Office of the DPP to investigate whether there was a likelihood of a successful prosecution.

Then on Wednesday afternoon Attorney-General Jarrod Bleijie decided not to investigate further.

"The Office of the Director of Public Prosecutions (ODPP) has advised the Attorney-General that there are no reasonable prospects of success on a prosecution of any former Goss Cabinet Minister and it would not be in the overall public interest to pursue a prosecution in relation to the shredding of the 'Heiner Documents'," a statement reads.

A Queens Counsel investigated the issues and advised the Office of the Department of Public Prosecutions there was "no reasonable prospects" of successfully prosecuting former cabinet ministers. The QC ruled that it was no longer in the public interest to pursue a conviction. "In light of this advice, the Attorney-General does not intend to refer this matter to the Queensland Police Service or issue an ex-officio indictment in relation to it."

Read more:

<http://www.brisbanetimes.com.au/queensland/no-heiner-trial-for-goss-ministers-bleijie-20140702-zstrm.html#ixzz36MiN84Ta>

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PUBLIC OPINION AND DEMOCRACY

By Max Atkinson, *OnLine Opinion*, 3 July 2014

Max Atkinson is a former senior lecturer of the Law School, University of Tasmania, with interests in legal and moral philosophy, especially issues to do with rights, values, justice and punishment. He is an occasional contributor to the *Tasmanian Times*.



Richard Cooke, writing in the June edition of *The Monthly*, condemns politicians for ignoring public opinion. His thoughtful and informative essay on the causes of the present discontent looks to the demise of two-party politics to restore substance to democratic ideals; but is there any basis for this optimism other than that it might restore integrity to political debate by challenging doctrines of party unity? His account of the problem, persuasive as it is, arguably ends where the debate begins.

The failure by most parties to distinguish issues of principle from ordinary, everyday matters of party policy - where unity is justified - means most politicians give up conscientious judgments of controversial issues; instead they defer to party opinion, a form of moral self-subordination which is difficult to defend. Hence the apology, where Liberal views changed as soon as Howard was replaced; no less egregious was the refusal by members of major parties to examine the evidence alleged to justify the Iraq War.

This misplaced loyalty on important matters of principle conditions members to defer to party leaders - themselves vulnerable to hubris, focus groups and media advisers - and ignore their primary duty to the public, the source of their salaries and offices. But if party unity is more important than acting in conscience on an informed judgment - and doing so for the public good - no one should be surprised at the loss of trust and debasement of public debate when these members are forced to dissemble.

By contrast, Edmund Burke's theory of political duty insists members are representatives, not delegates - their duty is to serve the interests of constituents not do their bidding. This means acting on a conscientious judgment of what best serves these interests, not deferring to the opinions of electors, or indeed anyone else. The challenge Burke poses to contemporary politics is how far this theory of a non-delegable duty can be ignored in a modern party system.

Although Cooke cites Burke with approval, his assertion that the theory meant candidates 'reflected the wishes of their constituents' misreads the passage he cites from the famous Bristol speech. Perhaps this is why he misses what is intuitive but arguably of unique importance in Burke's political philosophy - his sense that acting in good conscience is, in the end, the only way to take community values seriously.

But the problem goes deeper: the description of this theory as a 'sentiment' shows the inadequacy of a sociological approach to problems of political philosophy, including the duty of elected members. Theories of duty may well reflect sentiments but they are at heart interpretations of a responsibility - which no-one seriously denies - to serve the public. To contribute one must argue for the best interpretation of this duty; but this means a commitment to the enterprise and the values which give it meaning viz. fairness, human dignity, freedom, honesty, etc. Political theory is no more a spectator sport than politics itself.

This engagement also permits a clearer understanding of what democratic theory means: in its most defensible form it means that representatives of the majority have a stronger right to make the rules than any other person or group - but it says nothing about the wisdom or morality of the rules they make or

the policies they support. These are justified by showing they are required by, or are in accord with, community values - not popular opinion; how else could we argue that this opinion is wrong? The difficulty many protagonists have with this distinction is well brought out in the author's reference to David Marr.

But this logic of argument must undermine Cooke's own conclusion that '... if the political class is determined to change Australia's social contract, it has to do so with some semblance of consent. It will need to put the popular will on par with powerful interests' (note the disengaged 'if'). But the 'popular will' - if this means majority opinion and not something from the world of German Transcendentalism - is no more relevant as a justification than the interests of Cooke's powerful groups. The real question is why we should treat either as a substitute for argument from shared values, including an ideal of fairness which insists government treat all citizens as having equal value.

If this makes sense the problem is not that politicians disdain public opinion, but that they ignore community values, which tell us whether and why this opinion counts. It is, for example, conclusive in deciding who should make the rules because this is the least unfair method, but it counts for nothing on matters of law and justice because these determine our rights, and rights are anti-majoritarian claims - they trump popular opinion just as they trump majority preference and interests. The fact that we have legal and political rights shows democracy does not give moral authority to a majority - if it did, those in power would be free to outlaw opposition parties and punish dissenters at will.

Although Liberals continue to pay homage to Burke as the father of conservative political philosophy, they join with other parties (and most journalists) in ignoring his idea of political duty and the role of conscience in defending community values and the rights they support - rights which define the line between mob rule and any democracy worth defending; this is a high price for the public to pay for party unity.

Why do politicians treat the values which ornament their speeches as less important than the views of party leaders? Is it because they see them as matters of choice, useful to sell policies but not to justify them? This idea that values are not obligatory would explain Cooke's own disengaged stance and instrumentalist approach. His advice to 'the political class' to give more authority to public opinion makes sense if ordinary, everyday values have no intrinsic relevance - if there is no duty to take them seriously.

The idea that we are free to pick and choose our values, in part because it fits a culture wary of religious claims and intellectual pretention, and in part because it is easy to misread as an affirmation of tolerance and respect for others, is very much in fashion. One could ask almost any first year university class if they think we all have different values and find confident assent. But if we ask what would be the point of argument if each side can only insult the other by insisting their values are superior, we are likely to be met with blank stares.

Reflection suggests that argument on social and political issues makes sense because it is rarely, if ever, a confrontation between different moral systems, but a dispute over competing interpretations of values which, at a certain level of abstraction,

(Continued on page 4)

(Continued from page 3)

we see ourselves as sharing; this is why, in real life disputes, we argue over the meaning and requirement of ideals of fairness not their validity - we also believe opinions may be right or wrong, not just sincere or disingenuous, self-seeking or altruistic.

The idea that one interpretation is better presupposes criteria for the purpose, and this is found in the institutional practice of the community - in the history of interpretation of the same values which are still justified by these standards. The integrity of argument rests on its overall moral coherence in this fashion. This brief and crude sketch, provocative as it is, suggests why, despite the never-ending appeal of sceptical theories, it will always make sense to question popular opinion - along with legal rules, policies, social practices and public institutions - in light of community values.

Some philosophical critics find this conception of a social moral practice problematical: how can one interpretation be better if there is no way to 'prove' the claim - no agreed way to demonstrate or verify that it is, indeed, the best interpretation? This objection, which expresses a conventional, 'positivist' approach to what constitutes knowledge in the social sciences is, however, itself under fire: it must defend this assumption against the arguments which support an interpretive approach.

There is now a rich philosophical literature on interpretivist theories; the Wikipedia entry under 'interpretivism' considers it as a theory of law which has been both influential and controversial for nearly half a century. This is largely true of the Stanford Encyclopaedia of Philosophy entry; both are daunting for ordinary readers unfamiliar with the terminology and dense manner of treatment.

Interpretivist theories of morality are comparatively recent and likely to be much more controversial; they rest on the same interconnected ideas and arguments which underlie this contemporary jurisprudence. Both are largely the work of the

late Ronald Dworkin, whose views are set out in *Justice for Hedgehogs*, Harvard, 2013. Reviews suggest it is likely to be close to the cutting edge of both moral and legal philosophy for some time to come.

To return to the theme of this paper, suppose we were to assess the doctrine of unity by asking how the budget might look if members were asked to give priority to community values by acting, as Burke would have them act, on their own judgment and conscience. Suppose members of the Liberal Caucus were each given copies of the Audit Commission Report, asked to go home and read it together with whatever data, analysis and criticism they considered relevant, and come back with a detailed response in thirty days, but without consulting colleagues or knowing the views of party leaders.

Suppose (to make the exercise even more of a fantasy) they were asked to treat all citizens with equal concern and equal respect; this would rule out assumptions that people are poor because they lack character or a sense of responsibility or some other virtue. In light of this egalitarian principle members would need to inform themselves of the impact on those most disadvantaged by spending another thirty days listening to relevant groups - all reports would be confidential and anonymous.

Could we doubt that, if members were to act on this view of their duty to the community, the present budget would be different to that which, because of the doctrine of unity, insists members give priority to the views of party leaders? There would at least be a better understanding that, if equal concern is to mean anything, the *budget has to increase revenue by taxing the wealthy not cut spending on those in need."

Comment: *What a shame this chap doesn't grasp that 'money' in a modern economy is merely 'figures' in a ledger or 'blips' on a computer. In the modern economy it is simply a sophisticated accounting system. After reading the two books advertised here - he should go to "The Nature and Origin of Money" to get his thinking clear. ■

Source: <http://www.onlineopinion.com.au/view.asp?article=16457>

(Continued from page 8)

mycorrhizal fungi are essential for maximising the ability of crop plants to obtain water, nitrogen, phosphorus, potassium, sulphur, calcium, magnesium and a wide variety of trace elements such as zinc, copper, boron, manganese and molybdenum. Many of these elements are essential for resistance to pests and diseases and resilience to climatic extremes such as drought and frost.

The application of large quantities of water-soluble P, such as found in superphosphate, MAP, DAP etc inhibits strigolactone production by plant roots. That is, the use of these products will reduce root extension, root hair development and colonisation by mycorrhizal fungi.

The long-term result is destabilisation of soil aggregates, loss of porosity, reduced aeration, increased soil compaction and mineral-deficient plants. In addition to having adverse effects on soil structure, the application of inorganic phosphorus is highly inefficient. Around 80% adsorbs to aluminium and iron oxides and/or forms calcium, aluminium or iron phosphates, which, in the absence of microbial activity, are not plant available (Czarnecki et al 2013). Only 10–15% of fertiliser P is taken up by crops in the year of application. In old and deeply weathered soils, biological processes are more important than chemical processes when it comes to making nutrients available to plants.

Source: [http://www.amazingcarbon.com/PDF/JONES-NewFrontiersInAg\(Sept13\).pdf](http://www.amazingcarbon.com/PDF/JONES-NewFrontiersInAg(Sept13).pdf)

Visit Christine Jones' *Amazing Carbon* website – even home gardeners could learn from it.

OUR POLICY

- To promote service to the Christian revelation of God, loyalty to the Australian Constitutional Monarchy, and maximum co-operation between subjects of the Crown Commonwealth of Nations.
- To defend the free Society and its institutions — private property, consumer control of production through genuine competitive enterprise, and limited decentralised government.
- To promote financial policies, which will reduce taxation, eliminate debt, and make possible material security for all with greater leisure time for cultural activities.
- To oppose all forms of monopoly, either described as public or private.
- To encourage all electors always to record a responsible vote in all elections.
- To support all policies genuinely concerned with conserving and protecting natural resources, including the soil and environment reflecting natural (God's) laws, against policies of rape and waste.
- To oppose all policies eroding national sovereignty, and to promote a closer relationship between the peoples of the Crown Commonwealth and those of the United States of America, who share a common heritage.

PESTICIDES LINKED TO MASS BEE DEATHS

Pesticides linked to mass bee deaths also affect other friendly organisms including birds and fish. "Study's findings are in stark contrast to the UK Government's stance on neonicotinoids" writes Steve Connor, Science Editor, *The Independent*, 24 June 2014

A class of pesticides linked to the decline of honeybees is also affecting a wide variety of other beneficial organisms such as earthworms and butterflies, according to a major study that directly contradicts the Government's relaxed stance on the use of neonicotinoids. A group of 29 scientists from four continents found unequivocal evidence from hundreds of published studies to claim that "neonics" – the most widely used pesticides in the world – are having a dramatic impact on the ecosystems that support food production and wildlife.

The independent researchers, who are also advisers to the International Union for Conservation of Nature (IUCN), have concluded that the "systemic" pesticides such as the neonicotinoids pose as great a risk to the environment as the banned pesticide DDT, and other persistent organophosphates.



The findings of the Task Force on Systemic Pesticides, published today, are in stark contrast to the UK Government's stance on neonicotinoids, which is that there is not enough evidence to ban their use or to support the EU's proposed moratorium in Europe.

The taskforce, set up four years ago, analysed 800 peer-reviewed scientific reports on neonicotinoids and fipronil, another type of systemic pesticide, a group of pesticides that are absorbed by all parts of a plant, including roots, leaves, flowers, fruit and even nectar and pollen.

One of the lead authors of the report, Jean-Marc Bonmartin of the National Centre for Scientific Research in France, said that the published evidence of the link between neonics and damage to wildlife and the environment was now clear. "We are witnessing a threat to the productivity of our natural and farmed environment equivalent to that posed by organophosphates and DDT," Dr Bonmartin said.

"Far from protecting food production, the use of neonics is threatening the very infrastructure which enables it, imperilling the pollinators, habitat engineers and natural pest controllers at the heart of a functioning ecosystem," he said.

Worldwide Integrated Assessment

The report, called the Worldwide Integrated Assessment, found that neonics posed a risk not just to honeybees but to a variety of other animals, such as soil-conditioning earthworms, aquatic invertebrates and even birds and fish. Key findings from the assessment found that neonics accumulate in the soil and persist for months and in some cases for years. The breakdown products are often as toxic – or more toxic – than the pesticide's active ingredients, which are designed to work as poisonous nerve agents. "If you use them every year they accumulate, they get into the soil water and hence into streams. So essentially we are contaminating the global environment with highly toxic, highly persistent

chemicals," said David Goulson, professor of biology at Sussex University and one of the report's authors.

"The focus to date has been on honeybees but it's clear that the impacts of neonics are more profound than that. The story goes far beyond bees. It goes to all wildlife that lives on farmland," Professor Goulson said.



Neonicotinoids affects all parts of a plant, including pollen and flowers (AP)

Maarten Bijleveld van Lexmond, who chaired the research, said: "The findings of the [assessment] are gravely worrying. We can

now clearly see that neonics and fipronil pose a risk to ecosystem functioning and services which go far beyond concerns about one species and which really must warrant government and regulatory attention."

Contrary to Government assertions, the scientists found published evidence to suggest that relatively low levels of neonics, similar to concentrations found in the field, can affect bee navigation, learning, food collection, longevity, resistance to disease and fertility. An assessment of neonics last year by the Department for the Environment, Food and Rural Affairs concluded that under normal circumstances there are no effects on bees, although it is not possible to rule out "rare effects".

Defra scientists also found that laboratory-based studies showing sub-lethal effects on bees from neonics do not represent realistic exposure levels and conditions in the open air. "Consequently... the risk to bee populations from neonicotinoids, as they are currently used, is low," they said.

Neonicotinoids: What's affected?

The study by the *Task Force on Systemic Pesticides* is a meta-analysis of about 800 published scientific papers on the "systemic" pesticides known as neonicotinoids and fipronil. This class of agro-chemicals are designed to permeate the entire crop plant, from roots to leaves and flowers, to ward off insect pests. However the task force has identified potential problems with a number of other animals:

Bees and other insect pollinators

Neonics are nerve poisons and can impair the sense of smell or memory that are essential for navigation in bees and other insect pollinators, such as butterflies.

Terrestrial invertebrates

Earthworms are critical for the health of soil yet they can also be affected by neonics, according to the study. Research shows that the pesticides can alter the tunnelling behaviour of earthworms.

Aquatic invertebrates Neonics can be found in soil moisture and so can be washed into streams and rivers. The most affected group in the aquatic environment were freshwater snails and water fleas. ■

UKIP GET OUT PETITION – TIME FOR AUSSIE POLITICAL PARTY TO DO THE SAME?

Example - Sign A Petition To Save Our Bees Wednesday, 25 June 2014

◆ <https://ukipnorthcornwall.blogspot.com.au/2014/06/sign-petition-to-save-our-bees.html>

Our bees are in danger again! On Tuesday, David Cameron and his cabinet are going to decide whether to allow banned bee killing pesticides to be used on fields across the UK. Unbelievably, a mega pesticide company called Syngenta has just made an emergency appeal after their product was banned across Europe last year due to the risk it poses to our bees. We've not got long to act. But if enough of us make a huge fuss right now, we could persuade David Cameron to throw out Syngenta's request and uphold the ban. Can you sign a petition to David Cameron right now demanding that he protects our bees? <https://secure.38degrees.org.uk/a-ban-is-a-ban>
The powerful pesticides that Europe banned last year are called neonicotinoids - and they pose a huge risk to bees. Even though there is a Europe-wide ban on these pesticides, David Cameron could override it - but only in emergency circumstances. Bees

pollinate apples, cucumbers, strawberries, tomatoes, cauliflowers, onions, cabbages, broccoli, carrots and many many more of our fruit and veg. Without bees, we wouldn't last very long!

Now Syngenta are trying to wriggle out of the ban, even though yesterday, scientists from across the world said there's 'conclusive' evidence that Syngenta's products are killing our bees. And just last week, Barack Obama called for a wholesale review of the pesticides.

Matt Shardlow, chief executive of bee-friendly charity Buglife said: "If the government approves Syngenta's kneejerk and cynical application then the public are bound to question whether ministers are too close to the agrochemical companies and too distant from the ecology that feeds us." ■

A good example of People Power - Please can you demand that David Cameron puts our bees before Syngenta's profits?
<https://secure.38degrees.org.uk/a-ban-is-a-ban>

LOOK WHAT HAPPENS IN DROUGHT CONDITIONS TO 'UNANCHORED' SOIL

1930s Dust Bowl Drought in America - Dust Bowl - Wikipedia

The Dust Bowl, also known as the Dirty Thirties, was a period of severe dust storms that greatly damaged the ecology and agriculture of the US and Canadian prairies during the 1930s; severe drought and a failure to apply dry-land farming methods to prevent wind erosion (the Aeolian processes) caused the phenomenon. Extensive deep ploughing of the virgin topsoil of the Great Plains during the previous decade had displaced the native, deep-rooted grasses that normally trapped soil and moisture even during periods of drought and high winds. Rapid mechanisation of farm implements, especially small gasoline tractors and widespread use of the combine harvester, significantly impacted decisions to convert arid grassland (much of which received no more than 10 inches (250 mm) of precipitation per year) to cultivated cropland.

During the drought of the 1930s, the unanchored soil turned to dust that the prevailing winds blew away in clouds that sometimes blackened the sky. These choking billows of dust – named "black blizzards" or "black rollers" – reached such East Coast cities as New York City and Washington, D.C. and often reduced visibility to a metre (about a yard) or less...

The Dust Bowl forced tens of thousands of families to abandon their farms. Many of these families, who were often known as "Okies" because so many of them came from Oklahoma, migrated to California and other states to find that the Great Depression had rendered economic conditions there little better than those they had left. Author John Steinbeck wrote "The Grapes of Wrath" and "Of Mice and Men" about such people.



A farmer and his two sons during a dust storm in Cimarron County, Oklahoma, 1936, Photo: Arthur Rothstein



Another stark Oklahoma 1936 scene

Dust storm - Melbourne - February 1983

Late on the morning of 8 February 1983 a strong, but dry, cold front began crossing Victoria, preceded

by hot, gusty northerly winds. The loose topsoil in the Mallee and Wimmera was quickly picked up by the wind, and as the front moved east, the soil collected into a large cloud oriented along the line of a cool change. At Horsham, in western Victoria, raised dust could be seen by 11.00 am; by noon it had obscured the sky. In Melbourne, the temperature rose quickly as the north wind strengthened, and by 2.25 pm it had reached 43.2oC, a record February maximum. A short time later, a spectacular reddish-brown cloud could be seen advancing on the city, reaching Melbourne just before 3.00 pm. It was accompanied by a rapid temperature drop, and a squally wind-change strong enough to uproot trees and unroof about 50 houses. Visibility plunged to 100 metres. The worst of the dust storm was over by 4.00 pm, when the wind speed dropped rapidly. At its height, the dust storm extended across the entire width of Victoria. The dust cloud was up to 320 metres deep when it struck Melbourne, but in other areas extended thousands of metres into the atmosphere. It was estimated that about 50,000 tonnes of topsoil were stripped from the Mallee - about a fifth was dumped on the city - leaving the ground bare, and exacerbating the effects of the drought.

Open water channels in the north-west were clogged with sand and dirt.

Melbourne February 1983



FROM LIGHT TO LIFE: RESTORING FARMLAND SOILS

Source: Christine Jones, Ph.D. Founder, Amazing Carbon



Every summer, around 22 million hectares of wheatbelt soils lie bare across eastern, southern and western Australia.

Herbicides are commonly used to maintain the soil in a plant-free state. Bare ground and low

levels of biological activity result in declining structure, reduced infiltration, poor moisture retention, inadequately buffered pH and an open invitation to weeds.

Solar isn't just for rooftops. It builds soil too!

It may come as a surprise to many to find that in healthy soil there is a poor relationship between plant productivity and the amount of applied nitrogen (N) or phosphorus (P). Recent research undertaken by Dr David Johnson and his team at New Mexico State University (NMSU) found there are other factors of much greater importance. What are these factors? And what can farmers do to optimise them?

Putting it all together

- Changing fertiliser practice alone is not sufficient to improve soil health. Unless biology-friendly fertilisers are used in combination with diverse year-round living cover the essential microbes won't be there to be supported.
 - For the same reasons, the presence of summer groundcover alone is not sufficient—indeed it may prove detrimental. There will be a tie-up of N and a yield penalty in the follow-on crop unless key functional groups, particularly the associative diazotrophs and mycorrhizal fungi, are working together. This simply cannot happen if large amounts of inorganic N or water-soluble P are applied.
 - Strategic grazing of summer groundcover helps cycle nutrients tied up in plant material. Aim to graze no more than 30–50% and trample the remainder onto the soil surface. If grazing is not an option, cover crops can be rolled while still green.
 - There is no need for either synthetic N or P in your 'summer cocktail' provided a good range of broadleaved plants, including legumes, are present.
 - Remember to wean off N slowly in the follow-on crop. Cut back to 80% in the first year, 50% in the second year and 20% in the third year, then maintain levels at 1 kg/ha/yr. If you feel you must, also apply 1 kg/ha/yr of inorganic P and 1kg/ha/yr of S—but no more!
 - Improved weed management is one of the many benefits of integrated land management. Most crop and pasture weeds are stimulated by nitrate. The current farming model is essentially creating the problem. Weeds become less of an issue under biological forms of cover cropping. This is partly to do with groundcover but more usually the result of closing the nitrogen loop.
 - Above all, the capacity of the soil to absorb and hold water is critical for dryland crop and pasture production. Although it may seem counter-intuitive, the most effective method for improving soil structure and increasing water-holding capacity is to maintain active year-round plant cover, which increases soil carbon, supports microbial activity and improves the ratio of fungi to bacteria.
- 'Weeds become less of an issue under biological forms of cover cropping. This is partly to do with groundcover but more usually the result of closing the nitrogen loop...'

From light to life

Diverse summer cover crops sown with biology-friendly fertilisers are the fastest way to restore soil function in wheatbelt soils.

These principles also apply to dairy, beef, lamb, wool and horticultural enterprises in the winter rainfall zone. Sunlight intercepted by bare earth is converted to heat energy, driving evaporation and soil loss. Sunlight intercepted by green leaves is converted to biochemical energy, fuelling soil life, enhancing soil structure, improving nutrient cycling and increasing water-holding capacity.

Why not turn 'light' into 'life' on your farm? Perhaps just try one paddock to begin? Your soil will love you—and you will love your soil.

Plant growth highly correlated with how much and what kind of life in the soil

The NMSU researchers discovered that plant growth is highly correlated with how much life—and what kind of life—is in the soil. In fact, microbial community structure, particularly the ratio of fungi to bacteria, had significantly more influence on yield than the concentration of inorganic N or P (Johnson et al 2012).

Given that flourishing communities of beneficial soil microbes are the 'key' to plant production, what is the secret to ensuring the right microbes are present in the right amounts?

Plants. That's right. The most important factor for promoting abundant plant growth is to have green plants growing in the soil all year round.

The plant–microbe–soil connection.

You may have heard that 'plants take from the soil'. Nothing could be further from the truth. Observe what happens in bare soil. It dies. Then it blows or washes away.

If you could 'see' what happens around the roots of actively growing plants you would want to have as many green plants in your soil for as much of the year as possible.

The NMSU researchers found that planting diverse cover crops between cash crops resulted in better yields than the use of synthetic fertilisers. And that wasn't all. Soil tests showed that the availability of essential minerals and trace elements increased. How does it work? Carbon inputs from living plants support the microbial activity required to improve soil structure, increase macro- and micronutrient availabilities and enhance soil water-holding capacity. In turn, these factors improve plant productivity.

It's a positive feedback loop.

The NMSU research team found that as cover crop density increased, the effect became quadratic, due to the synergies between living plants and soil microbial communities.

That is, $1 + 1 = 4$. It all starts with photosynthesis.

The energy needed to maintain flourishing soil ecosystems begins as light. This energy must cross two bridges in order to recharge the soil battery. First, the photosynthetic bridge. In the miracle of photosynthesis, light and CO₂ are transformed to biochemical energy (carbon compounds) in the leaves of green plants. Second, the microbial bridge. In the presence of beneficial bacteria and fungi photosynthetic rate increases and carbon 'flows' from plant roots into soil microbial intermediaries. If one of these bridges has been blown (e.g. no green plants or compromised microbial communities), soil health declines.

Take a step back in time...

Most of the temperate regions currently used for crop and pasture production supported vigorous, diverse groundcover at the time of European settlement. Summers in the southern half of the Australian continent have been hot and dry for thousands of years, yet there were more summer-active than winter-active plants in the original vegetation. This is an important point. It is

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not 'natural' for the soil to be bare over summer (or winter, for that matter).

Despite successive months of summer temperatures above 100° Fahrenheit (37°C) and little or no rain, observers of the original groundcover reported it to remain remarkably green (Presland 1977). Active growth was possible during hot dry periods because soil had high water-holding capacity. After many decades of bare ground over summer—every summer—the water-holding capacity of our agricultural soils has significantly declined.

The original groundcover contained more broadleaved plants (forbs) than grasses (Lunt et al 1998). Nutritious summer-active native legumes within genera such as Lotus, Hardenbergia, Kennedia, Cullen (formerly Psoralea), Glycine and Desmodium were once abundant in their respective endemic areas, as were many food plants used by indigenous people, including yam daisies (Microseris). As a general rule, broadleaved plants are more important than grasses for microbial diversity and nutrient cycling. Not surprisingly, the most palatable and mineral dense summer-active plants quickly disappeared from the original groundcover due to unmanaged grazing.

Restoring soil function

The more closely we can mimic the structure and function of year-round species-rich groundcover, the more productive and 'problem-free' our agricultural enterprises will be. If there is sufficient moisture to support summer weeds there is sufficient moisture to support a summer cover crop. Furthermore, it is generally cheaper to sow a summer cocktail than to spray weeds. The purpose of a multi-species cover crop is to restore below-ground diversity which will in turn restore biological soil function (natural N-fixation and P-solubilisation) and plant productivity. The nutrient sourcing and moisture retention benefits of diverse cover crops will continue to build in successive years as soil health improves.

Summer cocktails

Examples of broad-leaved plants that can be used in multi-species summer cover crops (cocktail crops) include sunflowers, buckwheat, chick pea, sunn hemp, amaranth, cowpeas, soybean, safflower, camelina, sugar beet, squash and lab-lab. These can be combined with a range of plants from the grass family, including pearl and proso millet, sudan grass, forage sorghum, maize etc. Aim for at least 10 species or varieties in your mix, with more broadleaved plants than grasses. The greater the diversity of plants the more checks and balances for pests and diseases and the more extensive the range of microhabitats for the soil organisms involved in nutrient acquisition, nutrient cycling and soil building (Taheri 2012).

Will there be a yield penalty?

Yield penalties may be observed in crops following summer groundcover if: i) the summer groundcover did not include a diversity of broadleaved plants (aim for more non-grasses than grasses); and/or ii) high rates of inorganic N (e.g. urea) or P (e.g. MAP, DAP) were applied to either the cover crop or the follow-on crop, damaging the 'microbial bridge'.

Note: If inorganic N has been applied previously, for several years in succession, N use must be reduced slowly, as populations of free-living N-fixing bacteria will initially be very low.

What's N got to do with it?

Aside from water, nitrogen is frequently the most limiting factor to crop and pasture production. Nitrogen is nitrogen, irrespective of the source, but the same nitrogen compounds can have opposite effects, depending on the way they enter the soil and the form in which they exist in plants. This paradox has created much confusion.

It is neither natural nor healthy for crop and pasture plants to contain high levels of inorganic nitrogen (nitrite, nitrate etc). Nitrogen is much safer and more productive when in an organic form.

Closing the nitrogen loop

The efficiency of use of applied N is generally less than 50% due to losses from leaching, volatilisation and denitrification (Kennedy et al 2004). These inefficiencies cost farmers a great deal of money as well as contributing to environmental pollution. Fortunately, biological N fixation is a spontaneous process when adequate carbon is available under actively growing plants, provided large amounts of synthetic N have not been applied. In biologically active soils, sugars and other carbon compounds exuded by plant roots support vast colonies of beneficial fungi and bacteria, which in turn produce sticky substances that glue soil particles together and enhance soil structure.

Once aggregates (small lumps) start to form, free-living nitrogen-fixing bacteria, which require a low partial pressure of oxygen, can begin their work of fixing atmospheric nitrogen. These bacteria are called associative diazotrophs—'associative' because they are only found inside aggregates attached to living plant roots or connected to plants via the hyphae of mycorrhizal fungi—and 'diazotrophs' because of their ability to use nitrogenase enzymes to fix atmospheric nitrogen (N₂).

The nitrogen fixed by associative diazotrophs does much more than support plant growth. It also makes a significant contribution to the soil foodweb and is essential to the formation of stable forms of soil carbon, such as humus. In addition to associative diazotrophs, mycorrhizal fungi are indispensable for closing the nitrogen loop. Their ability to transfer organic N from the soil foodweb into plant roots, circumvents the need for nitrogen to be present in an inorganic form (Leake et al 2004, Leigh et al 2009). The activities of mycorrhizal fungi also contribute to the rapid sequestration of soil carbon.

But here's the rub.

The application of large quantities of inorganic N—such as found in urea, MAP, DAP etc—inhibits the activities of both associative diazotrophs and mycorrhizal fungi. Long-term use of these products results in a decline in soil structure, decline in soil carbon—and ironically, a decline in soil nitrogen (Khan et al 2007, Mulvaney et al 2009).

Reducing N dependence

Where diverse summer cover crops are being grown to support soil microbial communities, it is advisable to reduce N use, but this must be done slowly, to provide time for free-living N-fixing bacteria to re-establish. There is no need for synthetic N in the cover crop provided a variety of broadleaved plants, including legumes, are present. Nitrogen inputs in follow-on crops can be reduced to 80% in the first year, 50% in the second year and 20% in the third year. In fourth and subsequent years, the application of a very small amount of N (around 1 kg/ha) will help to prime the natural nitrogen-fixing processes in soil.

Remember, associative diazotrophs (the most important of the free-living N-fixing bacteria) and mycorrhizal fungi (needed for N transfer to plants) have only one energy source—liquid carbon from an actively growing green plant. At the same time as you are weaning your soil off synthetic N you must also be maintaining as much diverse year-round living groundcover as possible.

Will I need to add P?

Plant roots produce hormones called strigolactones that control root extension, lateral root development and the production of root hairs. The presence of strigolactones in soil also stimulates root colonisation by mycorrhizal fungi (Czarnecki et al 2013). Vigorous root systems and symbiotic relationships with

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