



MANNA matters

Newsletter of MANNA GUM.

This edition:

UNDERSTANDING THE TIMES

Heeding the Call: Repentance, renewal and agriculture

Jonathan Cornford (p.2)

EVERYDAY PEOPLE

Beating the Big Dry: Fighting drought by reviving ancient landscapes

Johannes Meier(p.6)

BIBLE AND ECONOMY

The church as a response to poverty

Dave Fagg (p.13)

News from Long Gully

With the fires and drought in NSW and Queensland, the urgency of our climate and ecological situation presses upon any with eyes to see. It is appropriate that, in this edition of *Manna Matters*, we give some extended attention to the role colonisation and agriculture have played in the ecological transformation of this continent, but also to the very hopeful role that agriculture might play in responding to the challenges of our times.

Here in Long Gully, I am rushing to finish off a bushfire sprinkler system for our property. We have already been caught flat-footed by one Code Red day before summer even started – that is the sort of thing we can no longer afford to do. The bushland adjacent to our house burnt in the Black Saturday fires of 2009, so, while cherishing



As well as lots of Bible study, discussion, prayer and song, an important part of the A Different Way week is doing some physical work, here building a new garden bed.

its beauty, we are very conscious of the clear and present danger it represents.

In November, we had our *A Different Way* week, Manna Gum's learning intensive, and were joined by people from three states. As usual, it was a fun, stimulating and tiring week. Many thanks to the Seeds Community, who host the week and make it all possible.

Speaking of the Seeds Community, we are currently looking for an 'angel investor' who can support our local mission work with an investment-for-purpose property, i.e. a house! See the back page for details. Also, the Year of Plenty opportunity to explore faith on the land is open again for 2020. So much happening! See back page also.



Heeding the Call

Repentance, Renewal and Agriculture

by Jonathan Cornford

In 1836, a large convoy of wagons, boats, bullocks, horses, sheep and twenty-five heavily armed men lumbered through the western region of Dja Dja Wurrung country (where I live), what is now central and western Victoria. The heavily laden wagons sank into soft, spongy topsoil more than a metre deep as they crossed vast lush grasslands and open woodlands. They passed through an ocean of grass – tall, rich, diverse and magically nutritious for the sheep – that seemed to go on and on, punctuated with frequent, clear-running, shallow, grassy creeks. The leader of this expedition, Major Thomas Mitchell – a man of the swelling self-importance so common to nineteenth century British “adventurers” – wrote rapturously of a landscape that seemed to have been providentially designed for a race of people who were subduing the globe with spectacular speed:

... a land so inviting, and still without inhabitants! As I stood, the first European intruder on the sublime solitude of these verdant plains, as yet untouched by flocks or herds; I felt conscious of being the harbinger of mighty changes; and that our steps would soon be followed by the men and the animals for which it seemed to be prepared.

Of course, the landscape had been *designed* and, although we shouldn't leave providence out of the picture, much of what Mitchell was praising was the result of careful tending and shaping by countless generations of the First Peoples of this continent, a fact that Mitchell seemed almost willfully blind to. We do not know what the Dja Dja Wurrung people, who must have witnessed this strange convoy, thought. Did they guess that it was indeed a harbinger of mighty changes? In this present era of dangerous climate change, when so many of us are becoming anxious about the fate of the planet, we must not forget that we live in the presence of people who have seen the end of the world and yet still are here.

Driving through western Victoria today, you wouldn't guess that it is the same landscape that Mitchell wrote about so rapturously. Topsoil? The ground is an unforgiving, hard substrate that more properly deserves to be called dirt. “Creeks” are deep erosion gullies with no water, except briefly and torridly after heavy rain. It is a landscape that radiates heat and dryness. And where there is grass, it is a sparse stubble. Many of the landscapes that we have for so long simply assumed to be typically “Australian” are in fact the product of a comparatively recent transformation whose speed and scale has been breathtaking. Yet, in another sense, what we see today are indeed typically “Australian” landscapes, if we remember that “Australia” is, by definition, the product of European conquest and colonisation.

What is now becoming evident is that the unravelling of a once bountiful landscape happened with alarming rapidity. When, in 1840, Scotsman John Robertson laid claim to a sheep run west of present-day Hamilton, he was occupying an open, well-watered, easy-to-traverse, grassy landscape with deep soil. His flocks of sheep flourished like nothing he had ever experienced before. By

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A 'harbinger of mighty changes': Mitchell's expedition passed through a verdant and well-watered land. Paintings by Eliza Tree, 2010.

the time he sold up and returned home an affluent man, only fourteen years later, the ground was hard, cracked and becoming salty, the nutritious grasses were all gone and the landscape was riven by constant erosion gullies that created an almost impenetrable obstacle to a man on horseback.

After diseases and guns had wrought their first cataclysmic impact on the original cultivators and custodians of the land, it was the sheep who effected the rest of the revolution. Contrary to the standard story, however, it wasn't so much their hooves that did the damage as their mouths. Left to graze the native pastures at leisure, sheep ate all of the sweet, deep-rooted perennial grasses that held the soft, ancient topsoil together, stored water, and held back the salt, leaving only shallow-rooted annuals of little value for pasture. And as the landscape hardened, dried, eroded and toughened, so too, perhaps, did the souls of the conquerors.

It is common to point out that Europeans simply did not understand the strange landscape, ecology and climate of the continent they had taken over. They didn't understand how fragile were the ancient soils, how prone to salinisation, or how fickle was the ENSO (El Nino – Southern Oscillation) climate system. They didn't know that European methods of agriculture would not work in the same way here. This is all true, but what is not adequately remembered is that when the post-1820 'great land grab' began in earnest in Australia (perhaps the fastest land grab in human history), the British squatters who claimed land treated it in ways that they *never* treated land back home. They knowingly broke all the principles of good land management which had so revolutionised British agriculture in the preceding 150 years.

These were not 'farmers', people rooted in a country, in a community, in a tradition, in a history; they were the opposite. They were uprooted people who were literally on the other side of the planet from everything they loved and that provided boundaries of law, culture and relationship. Here, no matter how they rationalised their actions, they were fully conscious that they came as invaders, so it is not

surprising that they experienced the land as not only alien, but *hostile*. Historian, Cameron Muir, has commented:

There is a dimension of 'war' about the way settler Australians have approached their land – understanding it as a 'mongrel country' rather than a functioning ecosystem [...] The same society that executed massacres caused ecological degradation on the nineteenth century grasslands.

Moreover, the European colonisation of Australia differed in important ways from the concurrent colonisation of North America. There, the westward expansion was driven in large part by smallholders looking to farm and establish semi-subsistent farming communities – they were seeking a permanent home. In Australia, the first land rush was driven by men of capital looking to exploit a cheap and plentiful resource (the land) to produce a commodity (wool) that was, from the outset, destined for the international trading economy. Many had borrowed heavily and were therefore looking for a quick return. Although they were known as 'pastoralists', in these early years they had little interest in stewarding pasture. Rather, they were more akin to *miners*: they were mining the soil of its nutrient to export it overseas. Pastoralism began in Australia as an extractive industry selling into a internationalised capitalist economy.

Since that first rush for land, the history of agriculture has gone through a number of phases: the move to cropping and dairy; experiments with closer settlements of smallholder farmers; the development of large-scale irrigation and water diversion; the rise of mechanised, industrial agriculture with all its fertilisers, herbicides and pesticides; the growing role of international investors; and the recent development of genetically modified crops with their suite of new chemical applications.

Of course, on a continent this big, the experience of agriculture over the last 200 years has been complex and diverse. As with all history, there are always heroes and villains. Nevertheless, I do not think it is inaccurate to say that, on the whole, European agriculture in this continent has been an ecological catastrophe of unimaginable



proportions. It has been a story characterised consistently by destruction of habitat, loss of topsoil, compaction, salinization, erosion and invasive weeds and pests. The result is that, in our own time, we live in a rapidly drying continent with collapsing river systems and the highest extinction rate on the planet; a continent where agriculture and rural communities are facing an existential threat from drought and bushfire.

Facing up to this reality is deeply confronting. It brings out the moral skeleton that is in the cupboard of all settler colonial societies – that the very existence of our nations stems from actions and choices that cannot be morally defended – and links it to present crises. We are confronted with an unresolved past and an uncertain future. To evoke an ancient prophet, we have come to a crossroads and, unless we recognise this moment of choosing, a chance to change direction, we will plunge headlong into judgement (Jer 6:16).

Repentance and Hope

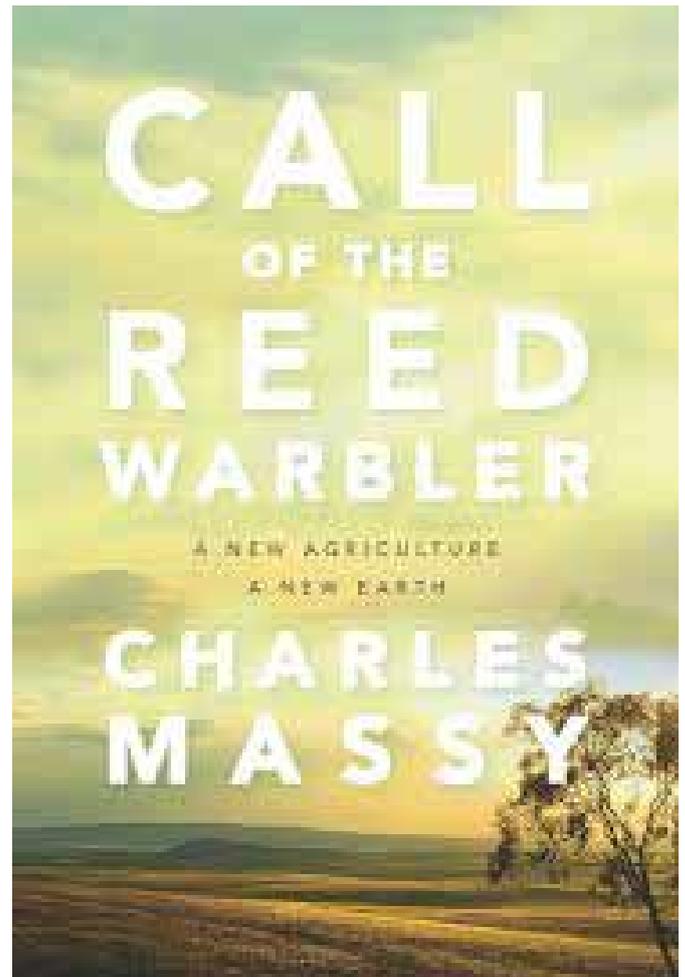
All three synoptic gospels record Jesus' ministry of proclaiming the kingdom as beginning with the call to "Repent!". This is not a call to whip ourselves into a frenzy of guilt – the Greek word used here (*metanoia*) means literally to change your mind. It has the connotation of seeing things in a new way, such that we begin to walk in a new direction.

The way of Jesus is predicated upon facing up to reality. In the Beatitudes, Jesus describes the Kingdom of Heaven – a new possibility where all things are in right relationship – as being opened up by the admission of spiritual impoverishment (Matt 5:3). Contrary to the common perception of the Christian message as pie-in-the-sky-when-you-die, the consistent Biblical message is that there is no hope unless we attend to what is real.

It should not come as a surprise to Christians, then, that one of the books that most clearly rings the alarm bell on the state of agriculture and ecology in this continent is also one of the most hopeful books you could read.

Charles Massy's *Call of the Reed Warbler* might well be one of those rare books that is a game-changer. It is a manifesto for a new form of agriculture that can be part of the solution to restoring ecological health while also shoring up human health, broadly conceived. It is also a profoundly religious book. To my knowledge, Massy is not a professing Christian, yet his book could almost pass as a case study in the ecological worldview of the Bible. If we take seriously the idea that 'the gospel' is not merely some private assertion of faith but rather something that uncovers the fabric of reality, then it should not surprise us that people who are closely and humbly attentive to reality tend to come close to kingdom principles.

Massy is clear-sighted about the scale of the damage that has been done and he does not shy away from locating the causes with the violence of European conquest, the greed of our society and the reductionism and spiritual blindness of the Western scientific worldview. And yet Massy is



hopeful, because he has *seen* a different possibility. He has been to productive and commercially viable farms where the land is being *healed* – not just improved for agriculture, but restored as a healthy habitat that supports ecological diversity.

Call of the Reed Warbler tells the stories of a series of Australian pioneers of what is broadly called 'regenerative agriculture'. Massy, a farmer himself, takes us to visit farms in NSW, WA, Victoria, Queensland and the NT, where soil is being built, not washed away, where creeks and waterways are beginning to flow again, where native grasses, birds and mammals are beginning to return. What really impressed me about this book is how quickly regeneration can happen. The Soil Association used to say that it takes a thousand years to build soil; it turns out that, with the right management, it only takes about 3-4 years. Within a decade, striking transformations are possible. Within a couple of decades, wonders can be achieved.

What is called 'regenerative agriculture' in this book is not one thing; all the farmers whose stories are related in the book are doing different things, however they are all converging on the same core principles. And the *first* principle is that all have acknowledged that something was deeply wrong and that radical change was needed. Strikingly, for many of them (including Massy) this realisation came about in the form of a personal crisis during the long drought of the 1980s. Again and again,

farmers related how, although they had done ‘everything right’ by the best lights of conventional agriculture, the drought exposed the lie in the promises that had been made to them. They had come to the end of the line. They realised that business-as-usual was a path to destruction and, if there was any hope, it had to lie elsewhere. In a moment of spiritual impoverishment, they became open to a new possibility. In other words, one of the central movements at the heart of *Call of the Reed Warbler*, is the movement of repentance.

Massy is quite clear that common to all of these farmers was not just a ‘conversion’ in terms of finding a new agricultural technique, but a moral and spiritual conversion. At the heart of their change was a transformation of what they valued and how they viewed the purpose of their lives and work. Their farms were becoming works of care which, although they still needed to be commercially viable, could never be measured in such terms. Many discovered that farming from a basis of nurturing the earth was also a more human way to farm that provided a healthier and more nurturing place for their families. A number of farmers recounted how they came to see their farms as not just functional spaces, but as works of *beauty* – in a sense, they were becoming artists.

Although *Call of the Reed Warbler* documents a variety of practices depending on the particular landscape, ecological niches and personal preferences of farmers, the results were fairly common. [See the story on Danthonia Farm, p.6, for an example of regenerative practices.] Most gave significant space on their farms (one third of the farm was not uncommon) to tree planting and biodiversity, thus significantly *reducing* their productive space. Many reported the gradual return of native grasses and wildlife that had long been absent – sometimes for generations. The title of the book comes from an encounter the author had on a farm in WA, witnessing a reed warbler – a locally rare bird whose habitat was virtually non-existent in the area – enjoying a restored wetland.

But on the other hand, as they improved their management practices with the attendant improvement in soil health, the spaces that remained in production produced *higher yields*, whether of crops or livestock, and higher quality product, attracting higher prices. At the same time, as they shifted away from the treadmill of chemical inputs, they also significantly reduced the *recurrent costs* of their farms. The result was that despite reducing their productive space, nearly all of the documented farms either maintained their profitability (for good years) or improved upon it. But much more significantly, all of these farms were beginning to once again store water in the soil rather than letting it run off. This made them significantly more resilient in times of drought. Whereas, in good years, the regenerative farms were generally on a par with their neighbours commercially, in bad years, which in Australia are

common, they far out-performed their neighbours. The end result was a more solid commercial viability in agriculture.

Moreover, not only were these farms storing water in their soil, they were also beginning to store *carbon* (the two are linked). A University of Melbourne study of a sheep property near Canberra managed on regenerative principles found that the farm sequestered *eleven times* more carbon than it emitted. Currently, agriculture is a major carbon emitter – around 14% of national green house gas emissions (GHG). But if managed along regenerative systems, agriculture could become a massive source of *carbon drawdown*, with the potential to sequester, by one estimate, as much as half of the nation’s GHG emissions.

Finally, alongside all of these benefits, many of the farmers whose stories are told in *Call of the Reed Warbler* reported that they found their farms more fulfilling places to be. More than that, in a nation everywhere facing a farm succession crisis, many reported that their children wanted to stay on the farm too. Their imagination had been captured by a creative and rewarding work that was truly worth their while.

Justice still to be done ...

In one sense, *Call of the Reed Warbler* is a series of stories about healing and hope – healing of the land and healing of human souls. In a world of bad news, this is truly a valuable commodity. But the healing is not yet complete. Just as the book is grounded in consciousness of the amount of damage that has been done to the pre-European Australian landscape, so too it is grounded in consciousness of the massive act of dispossession that made this damage possible. For Massy, the discovery of new ways to farm in Australia was tied to a deepening appreciation of the ways that Aboriginal Australians managed the land for thousands of years previously. Books like Bruce Pascoe’s

Dark Emu have revealed Aboriginal food systems that were radically more sophisticated than has generally been assumed.

The persistent ranking of indigenous Australians at the bottom of our national wellbeing indicators testifies as to how deeply the wound of dispossession runs. There is much that needs to be done to heal this wound, but I cannot shake the conviction that somehow beginning to meaningfully restore Aboriginal communities as economic and ecological land managers must be an important part of the picture ...

Common to all of these farmers was not just a ‘conversion’ in terms of finding a new agricultural technique, but a moral and spiritual conversion.



Beating the Big Dry

Fighting drought by reviving ancient landscapes

by Johannes Meier

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Since the year 2000, historic droughts and flooding rains have hit Australia's farmers hard. Pastures have withered in affected areas, forcing farmers to shoot starving sheep and cattle. Could there be a different way to practise agriculture that helps the land flourish even amidst climate change? *Plough's* Chris Voll talked to Johannes Meier, who runs the Danthonia Bruderhof's farm in New South Wales.

The unique challenges of Australian agriculture

Plough: *In May 2019, Danthonia Bruderhof celebrated twenty years since its founding. Tell us about the community's ongoing discovery of how best to farm this land.*

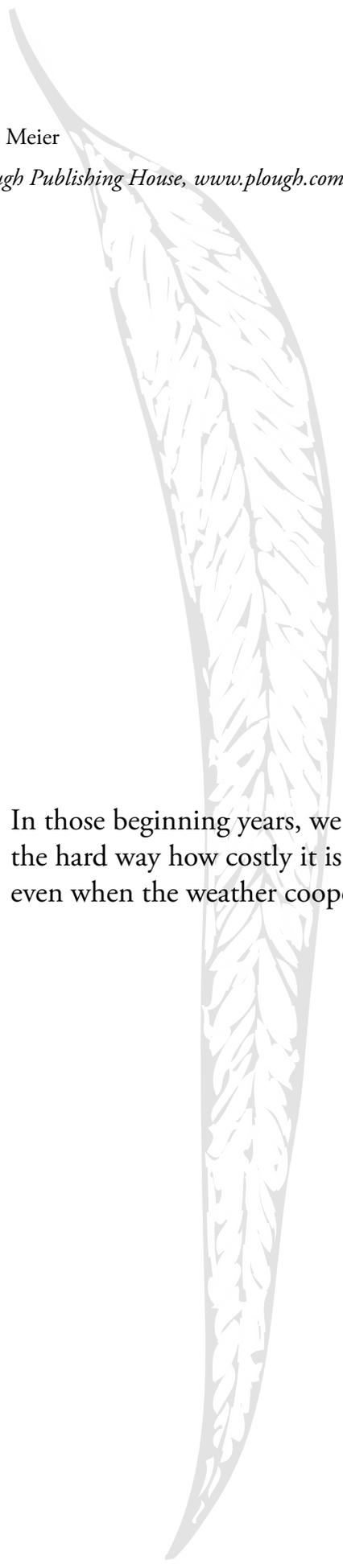
Johannes Meier: In 1999, the Bruderhof Community purchased two neighbouring farms in the Northern Tablelands district of New South Wales. It's an area known for its agriculture and is deemed reasonably rain-safe, at least on paper.

We arrived full of enthusiasm – and inexperience! To help us, for the first year we retained the farm manager from Danthonia's previous owner before taking on the farm ourselves. Like most farms in this district, Danthonia had run a mixed operation, grazing beef cattle and merino sheep and cultivating standard crops: grains in winter, beans, sorghum, corn and sunflowers in summer. We continued planting crops for that first year and it went well. But we then decided to focus just on livestock.

In those beginning years, we discovered the hard way how costly it is to farm, even when the weather cooperates. In addition to keeping the vehicles and implements up and running, there's the outlay for herbicides, seed, fertiliser and so forth. The first wool clip from our sheep covered the cost of chemical drenches and shearing, but it was clear the earnings weren't going to be nearly enough to support the growing community. What's more, the farm was placing unsustainable demands on our workforce at a time when we were also putting up buildings and finding ways to get involved in our new neighbourhood.

We weren't coping. So we scaled back and tried a few common models. We allowed contractors to run their cattle on our property for a fee. For a number of years we leased out the farm. Of course, as we discovered, tenants naturally want to make as much money as possible from the property, often at the expense of the landscape. Within a couple of years, overgrazing had seriously damaged our land.

My family arrived at Danthonia in November 2004. By then, the effects of what would become known as Australia's Millennium Drought were already painfully obvious. Drought became even more severe, persisting until autumn 2010. The drought caused us to think hard about the way we cared for our landscape. I'd come from England, where rain is often more of a bother than



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Johannes Meier with the Danthonia cattle.

a blessing. So it was extremely strange to find myself constantly looking to the west and watching the clouds every day, month after month, year after year, waiting for the gift of rain. When occasional rain did fall, the land hardly responded – it was in such poor condition.

In 2007, we watched our creek dry up. It's a beautiful little creek, lined with willows, running through a wide floodplain at the base of Swan Peak, Danthonia's prominent landmark. I will never forget seeing the drying, algae-glutted pools, with dead fish – golden perch, eel-tailed catfish, and Murray cod, some up to thirty inches long – lying belly-up; the eroded, crumbling banks; no flow whatsoever. In 2009, it happened again, only with no dead fish. They were all gone. I remember thinking, "This isn't right. What are we doing here?"

So the crucible of drought turned us to an arduous process of discovery: how to bring our landscape back from the brink and restore it to life and health.

The Millennium Drought

Yet was the Millennium Drought really such an exceptional event? Isn't drought just part of how Australia's climate has always been?

That's only partly true. There's no doubt it's a rugged environment – you can plan on droughts and floods. Farmers in our region will tell you that for any ten years you can figure on two bumper years, three or four reasonable-to-mediocre years and three or four total failures.

But now, in addition to Australia's naturally fickle weather, we're also contending with climate change: average temperatures have risen markedly since 1950,

with an even greater increase in how often we get days with extreme temperatures. That certainly increases the challenge of farming.

It's crucial to remember we're part of a much longer story. Australia is home to the world's most ancient continuous civilisation, with the first indigenous Australians thought to have arrived around 65,000 years ago. If you equate that span of time to a single day, then the first European settlers – the First Fleet that entered Botany Bay from England in 1788 – got here less than seven minutes ago.

Some of those Europeans kept excellent diaries or made drawings and paintings of what they found. The country they describe was vibrant and healthy, with natural pastures boasting three to four hundred species of plants. They documented that even when no rain had fallen for three months, the valley systems held lush, fresh grass.

Their records clearly show that the fertile zones were not limited to the coastline. They describe a landscape beautifully adapted to benefit from the cyclical climate, with unique functions that enabled it to capture and store water. They described topsoil depths of one to two metres, with cracks deep enough a man could hold a machete and lower it and his entire arm into them, and still not touch the bottom. That soil was so spongy that even during a drought a single wagon's tracks would remain visible in the pasture sward for years.

The explorers found a landscape that functions very differently than Europe's, whose large waterways carry superfluous water to the sea. Instead of these, Australia had wide, broad floodplains filled with reeds over a dozen feet high, swamps with occasional pools and riffles where water moved downhill through the valleys. Some of these riparian systems were twenty-five miles wide and capable of holding immense quantities of water, which was



released into the landscape during drought. Others, such as the marshlands along Danthonia's creek, were narrower, but served that same sponge-like function.

It's hard to overstress the importance of the plants in these systems. The reeds and other diverse, multi-storeyed plants managed water for the landscape. Tragically, that was not understood by the first Europeans. They brought their own paradigms: drain the swamps, open up the waterways to boats, bring hard-hooved grazing animals into the valleys, plough the topsoil and plant monoculture crops.

The results were catastrophic. In less than ten generations, Australia has seen massive erosion and desertification brought on by the destruction of functioning riparian areas and by farming practices that disregard the landscape's natural ability to hold water and keep salts at bay. Today, we're farming on subsoil, not topsoil. Natural plant and animal diversity is a shadow of what it was. With few plants to help store water in the landscape, slow its movement, spread fertility across flood plains and control salts, when rainfall comes it washes out to sea, carrying with it untold tons of precious topsoil.

Yet some would say you're painting far too bleak a picture. Is Australian agriculture really in crisis?

I can only speak from the experience of the farmers here in eastern Australia. As has been widely reported in the media, farmers are really struggling – as a result of the drought, they have little remaining ground cover, livestock are starving, wildfires have increased and there's dust blowing everywhere. Many farmers say it's the worst drought in a hundred years. They've had to drastically reduce the number of animals they stock and have been hand-feeding hay and grain for the last one to two years.

Today, we're farming on subsoil, not topsoil. Natural plant and animal diversity is a shadow of what it was.

This situation spells financial ruin for many. The fact that our government agencies have been giving out hundreds of millions of dollars in emergency aid to farmers indicates the scale of the crisis. And for the individual farmer, the aid offered is often pitifully inadequate.

From what I've come to understand from numerous farmers across this country, as well as from the insights of scientists and farmers internationally, there is no doubt in my mind that this is largely the result of conventional farming methods. These have done great damage, especially here in Australia.

Moving beyond conventional agriculture

Still, haven't the methods of agriculture developed over the past hundred years been hugely effective in growing more food?

It's true that through mechanization and artificial fertilisers, we massively increased our ability to produce food. On the face of it, this looks like amazing progress –

much more food for a lot less labour. But what becomes ever clearer is that industrial agriculture violates the natural ecosystems on which human beings rely. It hurts the landscape, the animals and us, the consumers. And as we're seeing here in Australia, at some point it stops working.

Take intensive tillage, for example. Ploughing, disking and harrowing expose soil biology, a vital source of plant nutrients, to the elements. Moisture evaporates, soil erodes and soil carbon is lost. In our part of the world, our soils are 'vertisols' – heavy, cracking, clay-based soils that are very prone to erosion. In one good thunderstorm, inches of topsoil disappear from tilled ground, as we saw at Danthonia in our early days of Australian farming.

With industrialisation came monocultures – huge fields planted with a single crop variety. Every farmer implements crop rotation, but when we ignore the contribution diverse plants make to soil biology and load on synthetic fertilisers, we're killing our soil.

After World War I, huge factories that had been cranking out ammonium nitrate for explosives were suddenly shuttered – but not for long, because someone discovered that ammonium nitrate was a wonderful source of nitrogen for plants. Soon they were synthesising the three primary nutrients for plant growth – nitrogen, phosphorus, and potassium – and ladling this NPK fertiliser onto crops.

And the plants seemed to love it. They grew higher and yielded larger harvests. But the soil suffered. In a healthy ecosystem, plants live in symbiosis with the soil in an exchange of sugars for nutrients. What we didn't realise was that by short-circuiting the nutrient cycle through NPK fertiliser, we were cutting off numerous other nutrients and micronutrients that would come into the plant and

build a nutrient-dense product. As a result, we now have woefully nutrient-deficient crops. In fact, studies suggest we may need to eat far more fruit and vegetables than our grandparents did in order to get the same nutritional benefits. There's strong evidence linking these dietary deficiencies to our increased health problems.

On top of that is the witch's brew of chemicals we've dumped on our landscape for years, with limited understanding of the toxic effects they have on our ecosystem and on us. Our Western diet has become a delivery system for poisonous chemicals. Glyphosate (the key ingredient in the weed killer Roundup), which is increasingly suspected as a carcinogen, is everywhere from children's breakfast cereals to German beer, some of which has been found to contain 300 times the legal limit for drinking water. A 2016 study concluded that 93 percent of Americans have glyphosate in their urine. To what extent are agricultural chemicals contributing to the increase in a wide range of diseases in Western countries – autoimmune disorders, obesity, diabetes, heart disease, infertility, and autism?

Intensive irrigation is another aspect of industrial agriculture that has often proved destructive, especially here. It's opened farming opportunities in landscapes with inadequate rainfall, yet these areas often have high levels of salt in their groundwater. Over time, through irrigation, salt build-up in the soil has ruined huge swathes of agricultural land. Aquifers can't keep up with our insatiable need for water, so perennial drought ensues. Recently, Australian media have extensively documented the ecological disaster that is the Murray-Darling river system, brought on largely by mismanagement of water for agriculture.

The good news, however, is that there is a way back. We can stop destroying and start restoring. We can work with nature so that, in essence, the land heals itself. It is simply a matter of grasping certain principles that must be respected. For us, coming to terms with these key principles was a journey. But we now know there are logical steps to follow.

Walk us through how that actually works. Danthonia has similar rainfall to its neighbours, and yet here there's feed for the cattle and water in the dams, while neighbouring farms are parched and the livestock are starving. Why the marked difference?

There's a multifaceted answer. Let's start by looking at what makes a landscape healthy.

One indicator of an ecosystem's health is the ability of its plants to convert sunlight to sugars. These sugars help plants grow and are also fed to the soil, transforming into humus – that amazing substance at the heart of topsoil that holds minerals and resources, as well as four times its own weight in water. Through the plants' activity, humus and soil organic matter are built up, increasing soil carbon, and the land begins to absorb and hold more moisture. Instead of running off the hillsides to the ocean, rain stays in the landscape.

Scientists calculate that for every one percent of soil carbon present, the landscape can hold 140,000 litres

of water per hectare (about 15,000 gallons per acre). In Australia, the estimated average soil carbon content pre-European settlement ran from 7–20 percent. It now averages below 1 percent. Imagine if we increased it to 5 percent, which is still below pre-settlement levels: ten acres of land would be capable of holding enough water to overflow an Olympic-size swimming pool.

Understanding this is one thing. But how do we actually bring the landscape back to health? Here at Danthonia, having seen how overgrazing by tenants had damaged our pastures, we knew the answer would involve the way we run cattle. Through that, we learned about the concept of holistic grazing management and its proponent, Allan Savory. He is a Zimbabwean ecologist, environmentalist, and livestock farmer who set out to discover why so-called overgrazing was ravaging the African landscape when herd sizes were at an all-time low. His experiments demonstrated that when cattle were bunched together to mimic traditional herd density, the landscape began to revive.

That's holistic grazing management in a nutshell. Once we understood its basic concepts, we got out our fencing tools and began dividing our large paddocks into smaller ones, where we crowd more cattle for shorter grazing periods. Holistic grazing requires careful planning and record keeping and the commitment to move cattle frequently, sometimes daily. In my opinion, it is our most powerful tool to exert landscape change and recovery. That is what regenerative agriculture, as we call it, is all about.

How does that help in combatting the effects of drought?

Around 2006, we came across an Aussie named Peter Andrews, who's given forty years of his life to understanding how to regenerate the landscape. Peter is a genius for his ability to read landscapes and understand the functions needed to restore them. He developed his ideas into a framework called Natural Sequence Farming.

I visited Peter's farm in 2007, at the height of the Millennium Drought. He took me first to the



Paddock and dam before and after holistic management with sparse ground cover on the left (2007), and lush ground cover on the right (2015). [Apologies: these two photos really require colour to see the full effect.]



Water stored in the soil feeds the creek.

neighbouring property and showed me the bone-dry creek. Then we walked downstream onto his land. Pretty soon, there were pools of water, and floodplains growing green. By the time we reached the end of his property, the creek was a flowing stream. It was astounding: in the middle of a desert-dry landscape was a running creek surrounded by dense trees and shrubs, with abundant animal life. We continued along the creek into the adjoining property. Hardly three hundred meters downstream from Peter's farm, the bed was dry again. I had never seen such a stark demonstration of the link between the local ecosystem and water in the landscape. It inspired us at Danthonia: if Peter Andrews can do it, why can't we?

With Peter's input, we started implementing Natural Sequence Farming. We removed our cattle from riparian zones to allow the creek to heal and to encourage vegetation along its banks and floodplain. In these areas, we planted numerous trees. In times of flood, this plant life helps slow the water and capture nutrients. The goal is to encourage the natural recreation of linked ponds and reed beds, such as were here for millennia.

On the slopes higher up, we are working to mimic other once-natural functions, by building level contour banks that retain water from big rains. When the bank overflows, strategic openings allow water to spread slowly so the land can absorb it. Nutrients washed down the slope also spread evenly. Below the bank, we plant trees that utilise those nutrients, provide shade and contribute to soil biology. In our valley, which drains to the creek, we're developing a system of ponds and reed beds and planting trees to slow the movement of water.

The community has planted thousands of trees over the past two decades. Why?

So far, we've planted around 100,000 trees. They bring

all kinds of benefits. Trees impede wind as it travels across the landscape; the faster wind moves, the more moisture we lose. Trees provide habitats and shade. Where there are trees, the earth will absorb up to sixty times more rainfall than pastureland. Their roots pull nutrients up from far below the surface – a mature tree deposits 7 percent of its full biomass into the soil every year, which benefits shallower plants. And they are simply beautiful.

We've planted trees strategically, often in beltways along ridges. These are a mixture of native and exotic varieties for diversity. We fence them to keep the cattle out. Today, trees we planted fifteen years ago are tall enough that cattle and native wildlife can move among them, enjoying their shade and depositing their dung and urine high in the landscape where the nutrients can do the most good as water moves them downhill.

Bringing back the birds

Have you seen measurable changes yet as a result of the steps you've taken?

Definitely! Birds are an early indicator of ecosystem health. When Danthonia's birdwatchers started counting over a decade ago, we recorded around one hundred bird species; today, that number stands at 150 and counting. Of the fifty new arrivals, eleven species are associated with expanded and healthier wetlands and open water, and fifteen with the significant increase in flowering trees and shrubs. The rest relate to species migration and generally improved quality of life.

Three months ago, as a result of the drought, the contour banks dried out. Yet the sward is spongy underfoot, and the grass is green and it continues to grow. This underscores that the most effective place to hold water is

in the soil. Recently I compared our well water records against our current usage. Despite very poor rainfall, our wells have higher water levels than in bygone droughts. More water is being held in the landscape.

At our creek, we've found that water enters our property at a

flow rate of sixteen litres a minute. Where the creek leaves our farm, water flows at fifty litres a minute. Even during drought, the volume of water we're passing to our neighbour's downstream is three times greater than what we're starting with! It's because water is being retained higher up on our land and working downhill over time. This is tremendously encouraging and inspires us to keep working.

You spoke earlier about the incredible loss of topsoil from Australia's landscape. That soil must have been thousands of years in the making. How can you hope to regenerate it?

Historically, some experts have said it takes a thousand years to build an inch of topsoil. But we've learned

It was astounding: in the middle of a desert-dry landscape was a running creek surrounded by dense trees and shrubs, with abundant animal life.

that's actually not the case. Soil is not built primarily by decaying leaf matter and so forth. Living, healthy topsoil is created by plant root exudates – the carbohydrates, vitamins, organic acids and other nutrients released into the soil by the root systems of plants. Of the sugars that plants create through photosynthesis, 30–40 percent transfers to the soil through the roots in exchange for nutrients. In this way, plants feed soil biology: fungi, bacteria, microorganisms and mycorrhizae, the symbiotic associations between plants and fungi in the root zone. Those take the sugar and convert it to humus, which is topsoil.

So topsoil can actually be built quite quickly. But it won't happen without diverse plant life. This diversity is key, and it has everything to do with the way we farm.

It's a cutting-edge area of scientific research. We're learning that as plant diversity increases there's a certain trigger point – called quorum sensing – where topsoil begins to build rapidly. How many species of plants do you need for a quorum? The more the merrier, microbiologists are saying. Different plants produce different root exudates, allowing access to specific soil nutrients. There have been positive results from as few as twelve species, and more rapid success with forty.

Our best native pastures at Danthonia contain fifteen to twenty species. We're a long way from the hundreds of species these landscapes once enjoyed – all forming a richly diverse pasture sward that allowed topsoil to build and be maintained, enabling it to hold water and release it during drought. The challenge is that it's tough to grow a diverse pasture on poor soil. Spreading compost extract introduces living biology into the soil, but that biology then struggles to survive. So we're experimenting with a biological stimulant, a cocktail of microbes and organic compounds that feeds and encourages the living elements already in the soil.

Where does this leave farmers who rely on crops for their livelihood?

I can't speak from personal experience, since at Danthonia we got out of cropping a decade ago and converted the land into pasture. But there are promising models of a different way to farm crops. In Western Australia, for example, Ian and Di Haggerty run their farm without chemical inputs. They graze livestock intensively, then sow wheat into those same paddocks and grow it over winter for spring harvesting. Once they've harvested the crop, they move the cattle back in. Working with the livestock, they're able to control weeds without chemical sprays. Their crop yield is less than if they used synthetic fertilisers, but it also costs less to grow, so they're coming out ahead. At the same time, they're building soil carbon and biology.

Regenerative farming as the way forward

What do you say to conventional farmers who are open to changing, but may feel it's too costly to transition?



Take one step at a time. If you're into livestock, take steps toward management-intensive grazing. If you're into cropping, seek out successful regenerative farmers and learn from them. I tell them, too, that the first few years transitioning may be tough, but the results speak for themselves. Cost inputs will go down, nature will begin to heal. The good Lord has designed a natural system that is remarkably able to recover from the worst we've thrown at it.

What would you like to see Australia's government do in support of farmers?

Number one, there has to be buy-in for a regenerative approach, as a matter of urgency. We need to educate officials to convince them to move beyond time-honoured, but harmful, paradigms. Number two, we need government funding to help pay for farmer education and for the upfront costs involved in transitioning to regenerative agriculture: for instance, the fencing required for rotational grazing.

Perhaps the biggest point of contention is water use and the way it's regulated. Current laws are designed to facilitate moving as much water as possible off the land and into storage areas, from which it can be used for irrigation. That's counterproductive and needs to change. All of this has to be done responsibly; teamwork among scientists, politicians, bureaucrats and farmers is essential.

Have you run into opposition to regenerative agriculture?

Sure. Recently, I went into our local store and was talking to the agronomist there, whom I've known and got along with for years. I said, "I'm no longer going to be using herbicides." He just turned and walked away. That was the end of the conversation. Whether it's about money, I can't say, but he makes his living selling herbicides.

Tim Wright, a farmer down the road from us, has spent twenty-five years regenerating his property. He's been very successful. Yet despite that, he has neighbours who still ignore him, and he's the butt of jokes at his local store. We

farmers can be a hard-headed bunch – but I like to think that can work in our favour when we put our minds to fixing a problem!

Over time, the Danthonia Bruderhof has earned the trust of the local Aboriginal community. Is there a connection to how you farm?

In Australia, there's a tradition of beginning public gatherings with a "Welcome to Country": an indigenous person acknowledges the "traditional custodians" of the land on which the gathering takes place and pays respect to elders past and present. This concept of custodianship – of being caretakers of a landscape, so as to pass it on to future generations in better shape than we inherited it – is one we have tried to embrace. So that is common ground, I believe, with our Aboriginal neighbours.

The truth is, what we're doing at Danthonia to care for the land is not such a big deal. As thrilled as I am with the steps we're taking and the way nature is responding, it is only one small part of why we live in community. Our calling is to live a life of discipleship to Christ and to follow his path as best we are able. Caring for this land is simply a reflection of our desire to be true to Christ who loves the flowers of the field, sparrows, children; who takes pity on the sick and needy; whose heart is with the destitute and downtrodden. This impels our efforts toward fellowship with and understanding of those around us and particularly with our Aboriginal brothers and sisters. Charles Massy, whose book, *Call of the Reed Warbler*, is an absolute must-read for anyone considering regenerative agriculture, says it well: "Not until we attain reconciliation with both the land's first peoples and the land itself, will we be enabled to 'arrive' and truly belong on this continent."

Regenerative agriculture is ultimately about getting back to the task that God gave Adam in Genesis 2: to care for the earth that God created as his garden. We have to

start humbly, recognising that we Western consumers are complicit in the global ecological disaster that industrial agriculture has created. Greed and demand drive the markets – and separate us from the way God intended us to live. Agriculture has a lot to answer for, but I truly believe that agriculture has tremendous potential to regenerate our world.

Those of us who farm need empathy for the land and animals; for our neighbour next door; for those starving a world away; for future generations; for everything God created. Our hearts must work as hard as our heads and our hands.

Recently, I was reminded of words by the prophet Jeremiah, who lived in desperate times. "This is what the Lord says: 'Stand at the crossroads and look; ask for the ancient paths, ask where the good way is, and walk in it, and you will find rest for your souls'" (Jer. 6:16).

All that's required of us is to recognise the crossroads, ask to see the ancient and good way, and then step in that direction.

Interview conducted on January 11 and 17, 2019, at Danthonia Bruderhof in Elsmore, New South Wales.



Johannes addressing 300 local farmers gathered at Danthonia in September 2018 for a field day on regenerative agriculture. Also participating was soils ecologist Dr. Christine Jones, whose research into restoring topsoil with plant life has inspired Danthonia's work over the last decade.

The church as a response to poverty

by Dave Fagg

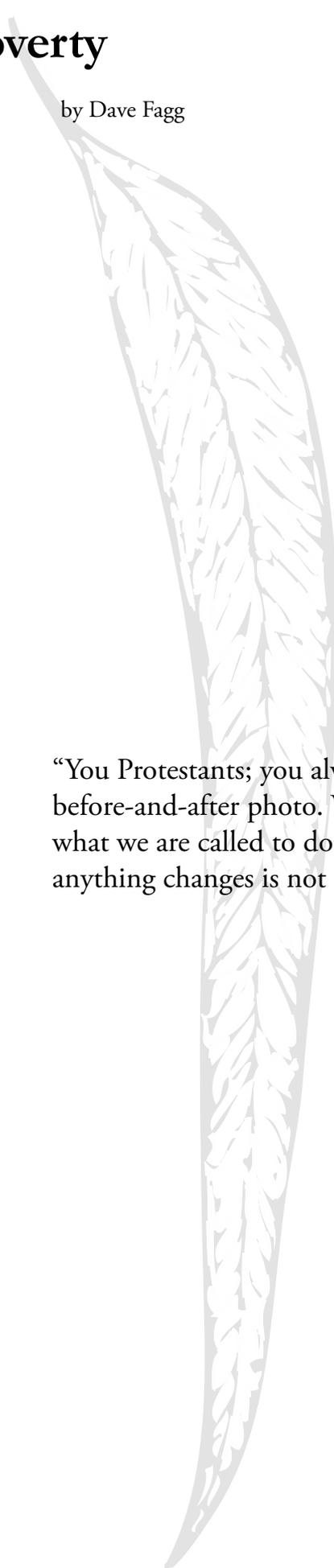
In previous articles (Oct 2016, May 2018, Nov 2018), I've laid out the shape of poverty in Long Gully, why it persists and what we Christians need to repent of in order to respond to poverty biblically. This last article sketches out a Christian response to the kind of poverty I've recounted, reclaiming the centrality of the local church for responding to poverty and to the poor.

There is no solution

Let's start by clearing some of the ground. I say the church needs to "respond to poverty" rather than "solve poverty" for a specific reason. There is no solution to poverty found in biblical faith. That lies on the other side of the promised new creation. The bible is full of calls to resist injustice against the poor, remember the poor and treat the poor fairly. It is clear that God envisions a world free from poverty, but it is also clear that such a world is not in our power to achieve.

This might seem a counsel of despair. But it is not. As young adults, Kylie and I travelled the world for 10 months, living with Christian organisations who were dedicated to working with those on the margins in the USA and South Africa. It was our first port of call that provided the biggest lesson. Since 1970, the Los Angeles Catholic Worker community has run a soup kitchen, prayed daily, published a newspaper and gone to jail regularly for their consistent protests against war and injustice visited upon the poor. After 6 weeks of living with this passionate group, we went out for dinner with Jeff and Catherine, the founders of the community. We asked them, "What's your aim? What change do you want to see?" They answered, "We aren't aiming for anything to change." We were a little confused. After all, what was the point of all this service and activism if not to change something? We pressed them with the question again. Same answer. They chuckled a little and explained that their aim was to do what the church is called to do: comfort the afflicted and afflict the comfortable. They teased us gently, "You Protestants; you always need a before-and-after photo. We just do what we are called to do. Whether anything changes is not up to us."

Their perspective is a welcome corrective to the temptation for Christians when faced with poverty to try to solve it. This is an understandable temptation. The bible rails against those who treat the poor unjustly and the poor are manifestly at the centre of Jesus' ministry on earth. If you combine this with our residual sense that the church still possesses some power in society, then a predictable outcome is that Christians will want to solve the problems that face us. And yet, the New Testament does not expect the eradication of poverty. Instead, it narrates the formation of communities in which there are no "rich" or "poor", and where everyone has enough, and which consecrate the practices of generosity and hospitality against the drive to acquire and consume. It is this local expression of the church that I want to hold out as the central way for Christians to respond to the poor.



"You Protestants; you always need a before-and-after photo. We just do what we are called to do. Whether anything changes is not up to us."

However, for any Christian confronted by the brute reality of poverty, the church has often seemed a stumbling block. We just can't imagine our congregation welcoming those who are poor. Or the church seems too wrapped up in its own problems to look beyond its walls, or too invested in an unjust system to even desire social justice. In response, such disillusionment usually leads to either (1) joining or starting a Christian organisation that will solve poverty through direct action or policy activism, or (2) gaining employment in a secular industry that works with those in poverty. Though both are laudable paths as far as they go, neither sums up a Christian response. Forming an organisation to respond to poverty tends to lead to the bureaucratisation of compassion: this creates distance between the poor and the professionals and distances the average Christian from the poor by allowing them to outsource their compassion via donations to the organisation. The existence of a poverty-related industry disconnects Christian compassion from its rightful expression as a practice of *Christian community* and often leads to a sense of disconnection from the church on the part of the employee.

Of course, sometimes an organisation *needs* to be formed in order to focus on a particular aspect of poverty and it is often a matter of vocation that individual Christians *should* be involved in organisations working to respond to poverty. The church must encourage and equip them to be the light of Christ in their work. But a fully Christian response to poverty must synchronise with the heart of what the church is: a community of ordinary people following Jesus together. Congregations of Christians are thus signs of the reign of God, however badly we live that calling out. We point to a reality that we hope for, but only glimpse in the here and now. What would the local church need to do, and what would we need to remember, in order to be such signs of the reign of God in relation to those who are poor?

What should the church do?

Before we launch in, it's important to note two things. First, when I say, "the church should do such and such", I am not meaning to say that these things need to happen in the gathered times of worship of the church congregation (although they may). Instead, I mean that the activity is enabled, supported and carried out by the community of people which is "the church". Second, although I will explain four practices fairly concisely, this should not be taken to mean that they are easy to do.

1. Make friends with the poor

This is as straightforward as it sounds, though it is difficult. Make friends with the poor. We usually make friends with people near to us in culture, class or interest.

Making friends with the poor requires us to deliberately spend time with people with whom we seem to have little in common. It is tempting to see ourselves as superior to the poor in intelligence, achievement, worth and morality, yet such a self-perception is fundamentally contrary to Jesus' way and to the bible's brutal honesty about the human heart. Friendship forces us to see the truth of our common humanity with the poor.

Some of Jesus' last words to his disciples were a declaration of friendship. It is central to the relationship between Jesus and us, his people, to the kind of relationship that is meant to exist between Christians and to the way we interact with others, especially the poor. Friendship recognises the image of God in all who are poor, forgotten, separated. Friendship cannot be sustained by well-funded organisations, or accurate research or excellent policy, despite the necessity of these things. It needs a community of people that believes such friendship is worth the risks and difficulties. What kind of community can sustain this? The church is the place where friendship between rich and poor can take place because of our friendship with Jesus.

The existence of a poverty-related industry disconnects Christian compassion from its rightful expression as a practice of *Christian community*

2. Stay faithful to hard places

The faithful presence of a Christian community in a poorer neighbourhood is a gift. Places of economic insecurity often suffer from transience, lack of trust in neighbours and welfare organisations that are committed to the area only last while the funding does. Thankfully, the church in the West is beginning to rediscover the nature of the "parish". Karina Kreminski says:

Once the church begins to think about itself primarily in isolation and designs its mission, programs, and structures for its own survival and self-glory, it loses its primary call to be a light in this world and an expression of the mission of God for the redemption of the world. Neighbourhoods are places where we can live out this mission in pursuit of beauty, justice, mercy and truth. In fact, radical things happen when we make a shift from asking "God, what are you up to in my church?" to "God, what are you up to in my neighbourhood?"

In the face of transience and short-term funding, church congregations can enable their members to be committed residents in their neighbourhood. This has all kinds of "knock-on" effects. The young child you met at the local primary school becomes the young person at the bus stop, becomes the parent themselves. Your long-term relationship with them is a crucial plank in their development as people and as a witness to what friendship with Jesus looks like. Efforts to make a poorer neighbourhood kinder, healthier, or fairer are given huge impetus with the presence of committed and long-term residents who give time, energy and money to their place.



3. Generous lives

When confronted with the reality of poverty, it is tempting to clam up. Many of those who live in poverty are extraordinarily generous people; they bring up grandchildren, run community groups and will support many of the church's ventures. However, many of those in poverty will seem (to us) grasping, ungrateful, difficult and unwilling to help themselves. I know that my gut reaction is to close up to these people: to refuse my time, energy and resources. There are good reasons for doing so sometimes; we need to take care of ourselves and treating people as the recipients of our largesse is unhealthy for both them and us.

However, the challenge remains for us, the friends of Jesus, to live generous lives in which the resources that we possess are regularly given to those who need it beyond our comfort zone. John Chrysostom had this bracing reminder to those of us who have more than we need:

If you cannot remember everything, instead of everything, I beg you, remember this without fail, that not to share our own wealth with the poor is theft from the poor and deprivation of their means of life; we do not possess our own wealth, but theirs.

In addition, it is not only our material and financial resources we are called to share, but also our family life, our time and our energy. In doing so, we involve those on the margins in the ever-extending and loving community of the church – this is a witness to them of the love of God and an essential dynamic in our own growth as disciples.

4. Community amongst each other

I could have put this first as a condition of the other three practices, because without it our response to poverty becomes individualistic, prone to an unhelpful sense of “heroism” and, finally, unsustainable. However, attempting to build community first, and *then* make friends with the poor and so on, will likely result in church congregations becoming inwardly-focused. Community often results from, as well as enables, the practices I've suggested above. Some writers on mission have called this “*communitas*” (Alan Hirsch and others): a close form of social solidarity that results when a group of people embarks on a risky venture together.

Local churches need to foster and practise community amongst each other, and encourage the formation of *communitas* that results from doing something adventurous together. Often, church members only see each other at a Sunday service. Without a strong sense of dependency on each other, and a sense of common purpose, our churches become pre-occupied with their internal processes, gatherings, and buildings. All of these things must be given their due attention, of course, but this attention must be proportionate to the tasks of making friends with the poor, being faithful residents and living generous lives.



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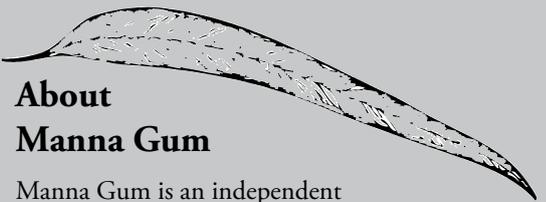
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Manna Gum is an independent non-profit organisation that seeks to:

1. Help Christians reclaim and practise Biblical teaching on material life; and
2. Promote understanding of the ways our economic lives impact upon ourselves, others and the earth.

Manna Gum is motivated by a vision of renewal of the Church in Australia as an alternative community that witnesses to the Kingdom of God.

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