

Discussion Paper

Ecological Truth of Landscape “Self-Repair”

By

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Abstract.

Land and water ecosystem ‘self-repair’ is a helpful **natural ecological process** not a people made agricultural or a landscape engineering unhelpful **practice** in rural Australia.

Paul opens discussion on the ecological truth of landscape “self-repair” by: “If land managers learn and apply the principles of ecology to their own land and water systems, their own properties will “self-repair” without monetary input. This is a vital, yet poorly understood topic that is essential to current and future generations.

In this paper Paul Newell thanks Peter Andrews OBE after 31 years of trials and errors. Paul’s wealth of experience and being mentored by the leading landscape master Peter Andrews, has led Paul to also form his own understanding and use of natural farming systems and he introduces the concept of “Landsmanship” through a natural ecological approach, and also the need for naturally occurring dense banded vegetation.

Paul also warns of the dangers and limitations of industrial agriculture and the need to develop an in depth working knowledge of “Self-Evolving Resilience of Landscape Ecosystems,” which are the principles of Natural Sequence Farming.

People are not evolved enough in their knowledge of ecology to realise that the ecology is always working; to naturally and freely further evolve the earth, in the absence of people.

Paul encourages us to value the new science of ecological awareness as we are now a “keystone species” and as ecologically aware people, are able to encourage the natural ecology to restore the whole landscape at **no monetary cost**. He highlights the natural whole of valley eco-system landscape concept that retains its own water (condensation from air, on-surface water and in-ground water), while becoming a “water meadow” of newly regenerated trees and regenerated annual and perennial grasses heralding in the new “Ecological Revolution” of the whole world as a living landscape ecosystem.

These inspiring transformational thoughts, give new hope and instruction on how to regenerate our soils, grasslands and our forests by increasing the nutrient / mineral / water cycle (as this is one cycle).

Paul Newell reminds us also that natural farming (not agriculture as is used today as an industrial method) is an ecological process to produce **FRESH PRODUCE** of food and fibre from a biological process.

Introduction

This paper on the Ecological Truth of Landscape “Self-Repair” mentions about industrial Agriculture that is an industrial practice to produce an industrialised **PRODUCT** in the absence of ecological understanding. Ecological understanding is an essential component of natural ecological farming to produce **FRESH PRODUCE**. It is important to understand also that photosynthesising plants govern eco-systems (not people).

My early training came from ecologically aware people that worked with the land. I went on during my life time to discover a whole of valley eco-system landscape approach, which is functional, **retaining its own water and soil**, while becoming a nutrient dense grassland, as a “water meadow” or wetland forest in Australia.

I would also like to celebrate Peter Andrews’ capacity to be the first to ecologically restore his own land and for first finding the methods of Nature’s “self-repair” in an Australian landscape. Peter developed landscape resilience in restoring the land and water ecology of Australia in the absence of any ecological understanding from the agricultural authorities.

Thanks also goes to Peter, for his continuous instruction over many years. Again, thank you also for answering my question: “*What is the ecological role of Microbes, Plants and Animals (including people)?*” Answer: They make up the ecology. It is hoped Peter gets a professional body of ecologically aware people together to advise farming families living on the land about the natural ecology, as ecology is the only thing to work for them profitably on their own farm, making use of free natural phenomena.

Agriculture Is an Industrial Process to Produce A PRODUCT

I would like to remind everyone that the term “Agriculture” was used by banks, bureaucracy and industrial organisations as a method of breaking into the profitability of natural farming. They wanted to have a part of the farmers profit by creating and selling artificial “input” products to them, even going to the point of creating new words: Agriculture and fertilizer as a substitute for natural farming systems (the natural ecology) and natural fertiliser (compost). The industry of killing humans has been transferred into industrial agriculture, especially when post war explosives were turned into fertilizers and nerve gasses that were used to kill soldiers, turned into killing insects. The commercial marketing of agriculture created its own industrial revolution and processed foods, which has continued into our era “created” by the Western world. For example by the development of monoculture production units like people built factory farms with industrial inputs so that money could be made from the food chain. This process is inadvertently making deserts over time (not cycling nutrients) everywhere people make Agriculture and as artificial industries practiced on the land. It is not possible to make Nature into an industry, but we can enable Nature to work for us.

An Absence of Ecological Understanding

Without any **Ecological Understanding** people during the present industrial era have used their own human logic (paradigm of thought) rather than Nature’s eco-logic (ecology), to try and return function (production) to land and water systems. In addition, many people who knew nothing about farming, invented artificial industrial Agriculture in the late 1700’s as an industrial concept with accountancy and farming costs as if farming the land and water system was in a manmade factory.

The industrialisation of Agriculture with new farm “in puts” made farming more aggressive and yielded artificial productivity. This occurred especially after both World Wars when at the end of hostilities there was a build-up of unsaleable armaments that were repurposed as Agricultural chemicals. Many people have used them over the years and have failed on the land too, big time.

Therefore, it is essential from the government department’s point of view that in their entirety, agency personnel who are only trained in industrial Agricultural theory **be retrained** in ecological farming methods, and that the derived Agricultural theory be discredited and the term “Agriculture” in its entirety must be discredited.

Farming is an ecological process to produce fresh PRODUCE of food and fibre from a biological process.

Farming naturally is an extension of the method of hunter gathering by perpetually producing food from the natural increase (evolution) of soil, water, microbes, plants and animals using sunlight as the source of energy. Sunlight is a free source of energy available every day, and night time is the time of rest without sunlight. Every living thing works at one time and rests at another time, whether by day or by night. Nature functions as a natural phenomenon without human intervention. People are the “Stewards” of Nature’s creation, not the “creator” of anything natural, especially the production of food. We can guide and cooperate with Nature to work for us but not rule Nature who rules us as living beings.

Photosynthesising Plants Govern Eco-Systems

Peter Andrews is absolutely right about multi-species (Biodiversity) of photosynthesising plants growing together that extrude from their roots all the requirements of growth for all other plants. Although Peter alluded to this, there is much more to know about the ecology of plants.

Having an excess of **plant and animal based nutrients in the soil** ceases all plant competition between plants and enables all plants to grow together without starving any plants of nutrient. The reason for the increase in production is the resultant dung, urine and trampling of unused material by high-density multi-species livestock that then becomes compost on the surface of the soil. Compost is Nature’s own fertiliser being produced by the natural process of an intensive grazing method using the different capacity of each individual animal’s method of treating forage in their intestines.

Grazing periods, as short term disturbance, and also long term rest for the regeneration period is essential in all grazing regimes. This is the most important method of grazing with all multi-species (Biodiversity) of animals in the one place of grazing, for the one short time of grazing, before long term rest. Also, short term disturbance and long term rest allows the roots of grazed off plants to grow continuously and grow the top plant growth again very quickly after defoliation. This is instead of “sluffing off” (decaying or rotting down of) the roots to equal the reduction in top growth and rotting back into soil and begin to grow again, as with continuously grazed or mowed off plants. Top soil is increased in depth by such continuously photosynthesising grasslands that are allowed to seed down twice a year to continue growing all season long as summer and winter species.

Gentle Movement of Livestock

The quiet movement of livestock is essential in all stock handling. We are training livestock at all times without rushing them and training is the main thing we are doing. It is especially important to not make any noise such as yelling or striking metal infrastructure that can “echo out” from gate ways or yards as stock are entering them, making any nervous livestock turn around and flee.

Evolving Eco-Systems

In Peter Andrews’ little ditty: “Slow the flow, let every plant grow and watch where the animals go” he has shown that he has discovered the natural processes of evolution that Nature has used to further evolve the surface of the Earth as an ecosystem.

Nature has made this new science of ecological awareness available to people who wish to learn in this present era. For as people we are now in this age an essential “keystone species.” Thinking about the ecology, and working for our own benefit we can also think about what animals do with their own separate characteristics; to the ecology, to the re-establishment of natural systems worldwide, to engaging water that people depend upon, to the earth full of living species (microbes, plants and animals) and to the self-restoration of all land and water systems worldwide.

What Peter Andrews really discovered with an ecological interpretation, is the method used by Nature of the individual ecological roles of water, earth, microbes, plants and animals, including people (all species have an ecological role to play) to further evolve the living ecosystem on the surface of the Earth.

Although Charles Darwin discovered how species evolved (The Origin of Species), and that is very important to human knowledge, what Peter Andrews has discovered is the natural phenomena, “**Self-Evolving Resilience of Landscape Ecosystems**” (The principles of NSF) that makes life possible. This is an automatic process of Nature, based upon the natural skeleton and function of the landscape that most people never notice that Nature made and essentially generally work against.

When a land is functional it **works in the opposite way to dysfunctional lands**. People who don't understand this, think that they need to do things to make Nature work better, subsequently cause further dysfunction in their landscape.

The **only thing people can do** is regenerate from new or existing seed, shrubs, grasses and trees, (all plants and animals are native species of the whole planet Earth) and as well add plant / animal derived nutrient to the soil, by grazing with multi species of animals. And by not using man made Agricultural chemicals (fertilizer and herbicide) that can only as a manmade chemical deplete soil of nutrients.

Inappropriate Paradigm

Most modern day people, with only an industrialised paradigm of thought in their minds, are unable to grasp the importance of Peter Andrews' work, because they think inappropriately, that people with human authority and other people's money, rule the world and can do to Nature whatever they think they can do. As they have in the Murray / Darling Catchment where their own people management has subsequently caused further dysfunction. There should be no political persuasion or bureaucratic rules and regulations in the rural landscape, for the ecology is the only thing working for the benefit of mankind and **the 'natural' ecology is not able to be controlled or regulated by people (governments or others)**. Manmade laws and regulations work against the natural ecology and do not work for industrial Agriculture, although many people think they do.

There seems to me that there is nothing in the world of Science closer to Nature's methods of restoring land and water ecosystems than what Peter Andrews discovered. The explanations Peter Andrews gives, always need to be made simpler and the way in which the very different ecological roles of all other species of plants and animals interact together and the nutrient they contribute, alive or dead, needs to be recognised. So, people can both work with Nature more easily to retain soil and water locally and further evolve land and water systems and how they can better understand the implementation of natural phenomena more correctly in line with what Nature does with **the ecological tools, of microbes, plants and animals, together**.

The mulch from growing **high density** multi-species of plants, (dead plants and animal bodies) and **multi-species** animal impact (the manure and trampling they give) **grows soils, plants and animals for free** for us on the farm. All animals work the farm, as they live.

Landscapes work as **whole valley ecosystems**. A valley is a land form that stretches from ridge to ridge that water runs down and animals bring up nutrient as they camp and dung on the ridges, regardless of scale. Peter Andrews taught me this the first day I met him. Any infrastructure or people made chemical incorrectly placed within a valley, disturbs the natural systems that Nature creates. Of course, taking an ecological view makes a paradigm shift in the way most people think today in the Western world, so they have a problem of **cognition** in their own thinking.

People will need to change the way they think and stop living the way they do artificially and allow Nature to be in charge of the rural world or they will become extinct. Nature only waits until extinction, no matter how long, and then self-repairs using the existing nutrients, with or without people who live artificially.

Many people from all around the world, are already going broke using Agricultural Chemicals, as manmade chemicals cost so much. Many people are sick from not only using chemicals, but eating food grown with Agricultural Chemicals (that don't really work) without any knowledge to the contrary or having access to alternative natural food to sustain them.

Starting With Ecological Aware People.

I started work on the Land as an apprentice to Australia's largest wool broking firm, Winchcombe Carson, who were excellent national stock and station agents. I was taken and sent around all the old properties learning from all the old practical people. I learnt shepherding sheep for instance from Old Cecil an Englishman, who was the classer for all stud merino sheep in Australia. I learnt about what the country had been explaining to them, about soils, weeds, fencing and livestock as one subject of ecology; what Nature was doing to the land and water, eroding it and degrading it in the absence of dense vegetation.

Having passed their experience on to me I ended up in the employment of the Department of Agriculture, NSW as a research officer doing comparison trials with multi-species of crops, and multi-species of animals.

Part of my research work involved comparison trials of crops (all the species that farmers used) and included the use of "chemical" agriculture. What I observed was that agricultural chemicals did not work and were deleterious to the soil. During this time and initially by chance I slowly learnt the importance of **intensive** livestock, resting paddocks and use of multi-species, which others describe today as biodiversity of mixed livestock and native animal and plant species.

By the time I left the now defunct Department of Agriculture NSW, I had ended up running their state wide Core Trial Programme (comparing all crop species used by farmers, including oil seed crops) and looking into multi-species crop production (comparing the best options of nine annual crops in succession on 22 sites without repeating any one crop in between). Also added to that we carried out grazing trials (using sheep, cattle, goats and wildlife), with a mobile research unit, travelling all over the Central West NSW. I used all types of farm machinery and heavy transport in the running of these concurrent multiple trial sites.

Discovering the Grazing Principles of Regenerative Farming

While working as a Research Officer in the old Department of Agriculture in the nineteen eighties I had the need to source sheep for "grazing off" trial sites to clean the sites up in the off season, before the sowing of the new season's seed. To source the sheep, I had to wait five weeks to get sheep after ordering them from other scientists. But I needed to graze the trial site and then after a short gap of about two weeks or so, graze the site a second or third time.

To hold the fifty sheep between the planned times of grazing the trial sites, I asked the foreman of the Research Station farm if I could use a small acre block of land next to my trial sites as a reserve to hold the sheep. He said yes, as no one else wanted it, because it was a fenced off eroded gully area and was full of weeds. Over the next five years, I ran the sheep in that area for odd blocks of time and rest (without grazing) on the old gully area and at other times on the trial sites and fed them multi-species grain from the store of samples from past seasons trials, that I was asked to get rid of. Sometimes the sheep needed to stay in the enclosed reserve for three months and sometimes only a week or so before required to graze the trial sites to perfection.

During the first two years or so and after a six months period of rest the old gully site grew grass magnificently and the Research Station people all asked me what fertilizer I used to make it grow that spectacularly. It was the best and greenest place on the research station. My answer was "*I just fed the sheep grain left over and stored from our previous trials*". They did not believe that was the only thing I had done with the sheep and believed I was using some super fertilizer and they were very cross with me that I would not reveal its name, as they were Department research officers too.

Asking my superior to allow me to study the principles of what has now become "Regenerative Farming", I received a curt "NO", as the end of the story. I had been grazing with short term disturbance (the grazing period) and long term rest (the regeneration period) of landscape since I was twelve years old, so the grazing production was not a surprise to me, but the effect of the introduction of additional feeding of multiple species of grain to the sheep and the resultant cropping yield in the trials was a tremendous surprise. So, I gradually got ready to leave and study regenerative farming on my own land. As fate would have it, within a month after leaving the Department I met Peter Andrews and life has not been the same since.

Peter Andrews OBE

I have known Peter Andrews since 1991 and meeting Peter allowed me to find alternative ways to address the problems within the natural processes of my farm. The natural ecology that I was very familiar with, then became my focus and I started farming in a new ecological paradigm.

1. By inventing ways of doing things more naturally and using what I already had available on my land, reduced artificial imports to my landscape and reduced my expenditure, simply by feeding sheep with farm grown grain as 'folding' before comparing cropping with and without fertilizer and introducing native grass seeds.
2. By aligning land use enterprise practices (banded vegetation) to induce whole of landscape function, with multi-species cropping without fertiliser and herbicide and multi-species livestock and by reducing the purchase and use of artificial products, machinery, chemicals, fuels, earth moving and labour to produce farm commodities, I found that more of the community concerns, compliance and expenditure issues, seemed to dissolve as I did things more naturally on my landscape with well-fed land and water systems that became self-organising.
3. By finding natural ways of recreating landscape formation with sedimentation, from developing and increasing soils and slow running water, the incorporation of weeds and redeveloping the retaining mechanisms, especially, self-growing rhizomatous plant species for retaining substance, species and function (sedimentation), production growth is now continuing further into dryer periods, reducing expenditure and increasing potential returns from increasing forage growth.
4. Through intense study and experimental research, I increasingly realised the value of natural function (production). I also realised that our communities generally had been profoundly unaware of the nature of matter and function, in-ground retained water and the condensation of more water from air, and how it all works together as the natural ecology in growing more plant material.

I then created a reversal in the function of my landscape by understanding and continuing the nutrient / water cycle.

Peter Andrews is not wrong, it is a lack of ecological understanding and the overall land and water management at NSF field sites that is the problem.

People generally do not "know enough" of how the ecology works and do not wish to know of a better way than they can think up as a people idea, to manage land and water in Australia. It is just too hard to change their Western paradigm of thought and then to allow other species that are more intelligent at being 'task specific' species to restore landscape wide resilience for human benefit. Each and every species has a "task specific" ecological role to play together with each and every other species to self-repair the landscape to hold its own water and soil and cool the landscape.

We all just need a **convincing epiphany** to get ourselves out of our comfort zone that will change our minds to a more ecological view to suit Nature as a whole, rather than ourselves as people alone. Many more people are beginning to realise that people have a 'Stewardship' role to play on the Earth that 'gifts' us everything we all need but not as 'creator' of our own individual single species habitat that is just an industrial monoculture.

Peter Andrews' great gift to Australia and Australians is that he has devoted his life to "forcing" people to think quite differently about their own landscapes. This is in absolute opposition to what Western thinking and teaching has 'mind conditioned' people into believing is the best way to live under human authority, which inadvertently only makes desert of habitats, over time {as shown} through human history.

To add a little to Dorothy Mackellar's poem:

"Australia is NOW a sunburnt BUT SOON A WATER FILLED country. A land of sweeping FLOOD plains THAT COULD ALL BE SUB-SURFACE FILLED AS WATER STORAGE AWAY FROM EVAPORATION, THATCHED WITH PRODUCTIVE WATER MEADOWS. A land of ACCIDENTAL droughts HAVING LOST VEGETATION DENSITY. Of ragged mountains ranges THAT ALSO RUN OFF ALL ITS RAIN FALL WATER. A land of flooding rains THAT EVAPORATE IMMEDIATELY AT SUMMER TEMPERATURES UNLESS ALL OUR PEOPLE, USING PLANTS AND ANIMALS, (NOT PEOPLE DECISIONS) RESTORE SOIL POROSITY AND VEGETATION DENSITY TO ABSORB THE RUN OFF, TO OFFSET THE MAINLY PEOPLE MADE SURFACE

Natural Sequence Farming

In those earlier years of 1991-95, when studying Peter Andrews' work with him at Tarwyn Park (that I first called Natural Sequence Farming - NSF) I always admired and was intrigued as I learned more from Peter, how closely the principles of NSF were to the principles of the natural ecology, continuing to evolve the surface of Earth. But it has taken many years of practical ecological research in the field to establish the exact science in comparison to what Nature does, what individual species do as the changing ecology and what mankind can do to enhance the natural ecology, and assist Nature to evolve landscapes further, using the nutrient / mineral / water cycle.

Knowing the old ways and the new ways has both proved a great benefit and a curse to me, until I learned **more** from Professor David Goldney and Peter Andrews OBE and also from my own research work of over thirty years into natural phenomena, of what Nature does as **more** as the natural ecology.

My own restoration work started with a five hundred acre block of land with two creeks running through it. This land had been over grazed and over cropped for over one hundred years, turning an area of wetland into a giant gully. It was highly dysfunctional land that would not grow anything, even in a good season. My research and theories came together in restoring the soil and water holding capacity and increasing the nutrient / water cycle. I have achieved this without spending very much money. My regenerative methods used existing seeds, produced on my own land together with hard to find native grass seeds that I sourced from cemeteries and road sides that had not been over grazed. I have germinated trees on bare ground, shrubs, grasses and over two hundred foraging species into a high carrying capacity landscape. My cropping yields have always been above district averages and I was the first person in central west NSW to overcome dryland salinity using fed livestock. **Dryland salinity is a dysfunction of the soil that has nothing to do with emissions of CO2 from using fossil fuels and the land and water systems regenerate by the use of the correct grazing methods with multiples of grazing and forage species.**

Evolving Landscape Ecosystems (Natural Systems)

To understand the evolution of the surface of Earth (natural function), first we must understand the natural cycles of food nutrient, minerals and water that involve plants, microbes, animals, water, wind and temperature. Natural cycles work as a natural phenomenon building eco-structure and automatically drive evolutionary processes that Nature has evolved for the benefit of the whole biology (all of life together). Ecologically, people are at the top of the food chain so the natural ecology, that is free of monetary cost, evolved to suit us because the natural ecology is what we chose to eat from and we as people are part of the natural ecology.

All the green that covers the Earth as plants is protein that converts to nitrogen and all the seeds of plants is carbohydrate that converts the starch to energy. All recycled as whole food by insects, birds and domestic livestock as nutrients. All photosynthesising plants extrude plant sugars in water from their root systems to feed multi-species soil bacteria that surround their plant roots, in return for the exchange of feed elements from soil bacteria in water, needed for all biological life (a natural cyclic system). It is this symbiotic cyclic connection between plants, animals and soil bacteria that transfer nutrients and water to the food chain on Earth.

In functional landscapes no artificial "in puts" are needed. Water is organised and directed by the nutrient cycle and living ecosystems self-organise when functional.

Biological Process

Life on Earth began with single cell life. Every biological process is interconnected and dependent upon the cycle of single cell organisms, therefore, every multi cell organism is dependent upon its micro biome. The basis of all life is the micro biome. Planetary health is dependent upon the micro base of life. In form and in function the land and

water system is the same at the micro scale as it is at the macro scale. So we can look at small systems individually and visualise much larger systems, as scale models.

The gut biome in every animal (including people) is the most important element in life and perhaps the least understood. This is the start of the nutrient / mineral / water cycle (as this is one cycle), without which plants don't grow in abundance.

Most living creatures in the Western world live within a scarcity of nutrients that people make happen when land and water systems do not function. All life in the wilderness, without human intervention, lives in abundance of nutrients. The resting (freedom from grazing) and rewilding of landscapes (allowing the natural ecology to work unadded) works as Nature "self-repairs" the land and water system. As people live more closely with Nature, we get used to living with abundance, not scarcity. This abundance of food is a shock to our beings, living always with plenty of food surrounding us all, not buying in from a supermarket. Why do we use seeds as waste? Why do we use organic matter as waste? These are the growing elements that Nature uses to grow our food. Every permanent fence line must be an orchard of multi-species food trees for animals and people to eat. Every paddock of multi-species must be able to feed animals and people.

Monocultures limit the nutrient supply. Using artificial fertilizer and herbicide kills the nutrient / mineral / water cycle (as this is one cycle). People made Agriculture, in opposition to Nature, makes nutrients from decaying soil organisms, (killed by artificial fertilizer) available to plants as food, so impoverishing the soil (stealing nutrients from the soil to feed people) as we export all our food from the farm there is no local food left for people to eat. Most Australian native plants are also allergic to manmade soil additives, so plant species are reduced by people made methods of land use, as in a city where most food is imported from afar.

Please read my landscape literacy list at <https://landsmanship.com/publications-for-download>

True Science Ignored

Dr Elaine Ingham and Dr Christine Jones (my teachers in soil biology) both have been telling us over the last twenty / thirty years or more about gut biome and photosynthesising plants feeding soil bacteria in return for the elements of plant growth, which is then available for all other plant species. But they gain a lot of adverse criticism from Governments that support Agriculture practices and the chemical companies that sell to unsuspecting farmers the now unsaleable, (at the end of war) explosives (repurposed as fertilizers) and nerve gasses (repurposed as herbicides, insecticides and fungicides) they "created" to kill pest organisms (soldiers) in war. Most public health issues owe their origins to this long term approved "con trick", having in this industrial era, poisoned our food and water using industrial methods of land use.

Ecologically Linked

Nutrient and water (the blood stream of the Earth) are ecologically linked throughout the natural environment. Every living species has an ecological role to play in the eco-system we each live in. Succession (natural change in species) in plant communities, derived from increasing nutrient, always moves towards forming forests and grasslands. So, if we kill so called weeds (broad leaf annuals) rather than using them (incorporated in the soil), to restore the soil as multiples of decaying species, we are destroying Nature's own method of increasing soil health, water retention and function. So called weeds are the nutrient species for the soil. Grasslands is peak function that soon becomes dominant over all weeds and the die-back of trees is eliminated by the excess nutrient governed by multiples of species of both plants and animals functioning together. When a **whole of valley eco-system** landscape is functional, it retains its own water and soil, while becoming a nutrient dense grassland, as a "water meadow" or wetland forest in Australia.

We only live to be conscious of Nature (the reason we exist) and understand how nature works, so why don't we study Nature to help us all in every way?

Why?

Why don't we use earthworm bed sewerage systems (my own invention), instead of the government built very expensive sewerage methods that eliminate all nutrients from towns and cities all around the world and use massive amounts of chemicals to destroy nutrients contained in the sewerage?

(Earthworm bed sewerage systems are both single flush toilet and expandable systems to many facilities, they are self-organising, healthy and stay clean all the year through. They make new fertile soil and never need cleaning treatment (unless we use chemicals) and also grow forgeable species for animals to eat without chemicals, as we have done on our farm for over twenty years.)

Why don't we all live underground in self-made subsurface housing and not have the costs of building materials (cob and stone footings and thatch covering), water retention and heating and cooling, etc. needed in above ground housing?

Why don't we build farm dams in reverse order? Forming them as a bent bank downstream and make the wall run the excess water over the entire wall as a spillway, at a shallow depth and spread the water wide across the valley floor and eliminate erosion? Built to retain the water then go and spread out, rather than built to retain the water and have a concentrated water spillway that erodes soil.

Why don't we use livestock to make the soil of "whole" valley catchments absorbent and soak in all water to saturation to avoid most floods?

Why don't we use canola oil straight off the header filtered into our tractor fuel tank? Canola oil (from oil seed crops) is a lubricant and a fuel, not used as a food for people who cannot digest it.

We as people have built the infrastructure of Western Civilisation so we can change it too, to our own and Nature's advantage. Nature forms eco-structures that never fails.

Nutrient Links the Living Food Chain

Species diversity, soil microbes, plants and animals and the nutrients they each contain, is the most important aspect of restoring land and water systems. The gut microbes in multi-species of animals is the same microbes that are in the soil producing their food, so to keep them linked ecologically is productive for both. Separately they are dysfunctional, as in a feed lot feeding livestock.

If we feed one species correctly in a functional ecosystem, we feed all species in an ecosystem. That is the system that keeps working no matter how long the gaps in use. The whole biological process we refer to as life on Earth, is just one process of species support depending on available feed (nutrient). Feed the wildlife don't kill it. Kill one species out and all species decline by unravelling, having lost their own support species. "Habitat in Common" is life on Earth where all species live together as food and shelter for each other.

Please read: Ecology not Technology Creates "Habitat in Common" at <https://landsmanship.files.wordpress.com>

Natural Cycles

Nutrients from plant / animal systems, contained in decaying plant and animal material (as in the compost layer, short duration grazing systems layer on the soil surface), increase vegetation density of photosynthesising plants (all living plants), increasingly build soil and develop water holding capacity of the ecosystem, whether we like the plants or animals involved or not. Multi-species of living plants, animals and their decay into soil as well as wind and water make up the nutrient / water cycle. All the people need to do is maintain the nutrient / water cycle that includes multi-species (Biodiversity) of plants and animals, wind and water to feed themselves and all the plants and animals that they wish to eat.

All Civilisation in the Modern Day World.

Civilisation is just ecologically unsound as it requires an industrial process to function. Industrial civilisation generally encourages people to grow plant or animal monocultures (single plant systems) using fertilizers and herbicides, kill all weeds, artificially irrigate crops, burn the stubble and grow eucalypts. Industrial agricultural advocates fencing out streams, (but I fence ridge line to ridge line to transfer the fertility back to the top of the ridges, carried with livestock as dung and urine). Agricultural processes lose their water, erode their precious soil and landholders buy all their expensive requirements from whole of world supplied supermarkets making money for someone else.

Natural Phenomena

In our work that we call “**Landsmanship,**” we only use the natural phenomena supplied by Nature and the ecological roles of plants and animals to do whatever needs to be done. We use intensive stocking and slashing occasionally to encourage grass growth. This is using natural systems for grasslands and cropping. Before industrialisation people allowed natural systems to supply everything they needed on the land. We are now, with new ecological knowledge, independent farmers and don't need the assistance of society, permission from government or their bureaucracy. We do not want government funding or what the chemical companies want to provide. Most of the natural resources we need to live and work with is on our own land as we grow everything we need on the farm. As natural farmers our own farm supplies directly to the end local user through a community garden farm, run by a single family.

Banded Vegetation (Often Not Seen)

An interesting natural phenomena is banded vegetation, growing transverse to flow (across the slope), that is always there and working and growing with extra nutrients cycled by animal and water, without human intervention. Peter Andrews sought to copy this band with formed earth contours, but banded vegetation is generally only seen when hill slopes are initially self-restoring, with nutrient cycling of dung and urine from livestock. This is first with accumulation of so-called weeds and soil sedimenting on the topside of the vegetation band to form the first vegetation, before succeeding to bands of grass, while sedimenting the slopes and to then succeed (regenerate) to multi-species grasslands and forests that geminate on bare soil.

Banded vegetation is Nature's way of slowing surface streaming water, moving surface water across the slope with the spiral stream current of water, sedimenting sloping land with the ambient current of water at the riffle benches. (There are two currents of water in any stream. The spiral current that takes streams on a meander and the ambient current that takes the stream up and down, sedimenting where the water stream slows on the upper level of the riffle bench and the band of vegetation). (Photo in my Landsmanship paper).

Where multi bands of vegetation cross water ways, (only in functional landscapes), densely vegetated riffle benches naturally form from deposition with the right rhizomatous species (Couch, Kikuyu and Phragmites Australis) present, to step down (Peter has correctly identified this step) and slow water that continuously absorbs into the alluvium. Only in functional landscapes do vegetated riffle benches grow during water flow by sedimentation and maturing plant growth and build sedimentation to the height of the lowest bank, so filling the water way with soil and dense vegetation, eventually becoming a deep alluvium filled flood plain. But this does not happen in people made dysfunctional landscapes.

All our own farm landscapes now operate with Nature in charge and natural systems working so people can enjoy everything they do on the land, without monetary cost. The nutrient / water cycle now runs the farm within our presence. Climate is a regional phenomenon, dependant to a large degree on vegetation density.

Regional vegetation density, that “breathes in” carbon dioxide as food, is the main factor in climate stability, maintains the in-ground water table and slows water that is otherwise continuously draining away from all the land mass of continents into the sea and raising ocean levels.

The dew cycle from the atmosphere each day feeds the ever increasing soil bacteria by guttation from the plant roots. Guttation is formed by the extrusion of droplets of sugars in water to feed all other plants. It is pumped out

of their roots, due to plant pressure. That is why there is a need for multiple species as each plant gives off a different mix of nutrients, because all photosynthesising plants are both transpiring from their leaves to cool the landscape as dew and issuing sugars from their roots to feed all other plants.

Even on the hottest day, there is a cool breeze coming in to our landscape. All sunlight is absorbed before reaching and heating the soil and air conditioned and used by green growing photosynthesising leaves that are transpiring (condensing air to water vapour) water vapour that is cooling the passing air. We have green grass growing the whole year through, regardless of drought.

Species Number and Paradigms of Thought

When any functional specie is absent (locally lost species) the nutrient / water cycle is broken (as in a monoculture) and so the plant / animal system of the whole landscape eco-system of species, unravels, as a continuous loss of species. In the absence of multi-species of plants and animal systems, landscape dysfunction occurs.

The more the number of individual species in an ecosystem, the more function occurs in the ecosystem. Up to two hundred species of plants and plus multi-species of animals growing and foraging on the land is best, this corresponds with the plant density of some parts of Australia before white occupation.

Dysfunctional ecosystems operate in reverse of functional ecosystems.

People generally, without a paradigm shift in the fundamental way they think of the Australian (and the world) landscape, from an industrial view (uninformed) to an ecological view (informed) do not realise that most of Australia is a dysfunctional land and water system. A system no longer supported by multiples of species of microbes, plants and animals together, all helping each other to make the Australian continent functional, as the Murray Darling river system should be, just as the rest of Australia once was.

The Biotic Pump

Another natural phenomena, no longer present over all in Australia is the “biotic pump”. Peter Andrews no doubt recalls Professor Willy Ripple and Professor Yon Pokorny explaining this to us many times when they were out here from Europe. Peter Andrews understands **condensation from air**, for that is how NSF, as Dr John Field from the National University said *“makes more water run out of valleys where Peter Andrews practices, than can be measured coming in to these valleys”*. Our own naturally hydrated landscapes, even on the hottest day now, has a cool breeze coming in from all sides, as air is condensed over our hydrated land. This is the “biotic pump” bringing in warm moist (hydrated) air (wind) from afar to a relative cooler air zone, laying over a well hydrated land, adding more water (from condensed air) to our land and water system. Condensed air can give up to a third increase on annual rainfall.

When we are able to hydrate Australia by retaining water where it falls (soaking into the soil) and keeping it there by using livestock, and perennial and annual plants to both supply in-ground water and have the cooling effect of transpiring dense vegetation to cool and condense the air over land, the biotic pump will bring in more warm moist air from the surrounding oceans, in multiples of short cycles, (the natural phenomena of short cycles of moisture) to hydrate our whole continent.

It is the biotic pump and vegetation density, (continuous growing grasslands are the saviour of life on earth) over continents, that helps reverse heat radiation, reverses desertification and removes the symptoms of so called global warming (dysfunction) that really is a lack of green nutrient dense plants transpiring and cooling the hydrated land. (Global warming is not the result of excess CO₂ in the atmosphere, it is a lack of green and growing plant leaves that are transpiring.) Our vegetation dense hydrated landscapes are an **ecological restored micro replica** for our whole continent, as it is for the Murray / Darling Catchment. So, when do we as natural farmers who understand the natural ecology, start on the Murray / Darling River system and graze and farm it correctly, without supervision from the bureaucracy? Or with their retrained help.

Species Loss in Australia, Through the Last Ice Age

Breaking of the nutrient / mineral / water cycle, occurred during the last ice age in Australia, with massive species loss due to a lack of multi-species support over time, brought about a single species dominance (monoculture) of eucalypts in Australia. People's minds evolve as they learn more of Nature and how Nature works (functions). Single species dominance (any single species) is the forerunner of desertification anywhere in the world, unless multiples of species are re-established using multi-species plant / animal systems (regenerating the correct species, not planting) based upon perennial plants. Look at the hot deserts of the world. (Many independent scientists have written about this. Read my papers.)

Without Ecological Understanding

In our world today, all human dominant landscapes are becoming deserts, all are made dysfunctional by people, over time, doing the best that they could do. People have the ability to manage the biology (microbes, plants and animal systems) but have a very poor record of managing the hydrology (water) over time. Nature has managed water on Earth very well, for a very long time using the ecology functionally.

People are a single dominant species responsible for the drying out, chemical dependent and monoculture system that we as people produce over time. Our country districts are just like a city landscape, completely dysfunctional.

Trainee Landscapes

In our trainee landscapes across Central West NSW, we don't use any form of landscape engineering of our own making, we only use the ecological roles of plants and animals, together. All vegetation and loose brush (that **cannot be washed away and makes for sedimentation and vegetation density in creek beds**), of any source if placed in any sized incision will increase sedimentation and grow more vegetation density in any gully or creek bed. Nature forms the land functionally by increasing microbes, plants, animals, soil and water and by simultaneous local erosion and sedimentation, as equal and opposite actions that form functional soil. Nor do we seek to manipulate water movement, for Nature is better at that than people. But we do manage the biology (microbes, plants and animals) and move plants and animals about to form eco-structure (ecological structures made by plants, animals and sediments). We find that if we manage the biology (microbes, plants and animals ecologically) correctly, then Nature manages whole of valley hydrology better than people can. **We only use plant / animal systems to do all the restoration work for us** (using natural systems).

As Nature is the main operator of natural systems (the systems of Earth's evolution) we tend not to make any mistakes that Nature is not able to fix during the rest periods (without animals, including people), where our intervention is absent. The restoration structures that Nature makes from naturally growing plants and living animals together with sedimentation and water (eco-structure), does not blow away in wind, wash away in floods or burn in fires (too moist and futile) as it is a Nature made landscape (fertile and hydrated), not people made landscape (dry and infertile) and flammable.

Land Regeneration

We have been able to regenerate our soils, grasslands and our forests by increasing the nutrient / mineral / water cycle (as this is one cycle). Simply by replacing locally lost species, using intensive multi species of livestock and feeding back farm grown oats and five percent of lupin grain (increase nutrient on the land by feeding livestock with multi-species food grain) only to those animals that eat grain naturally (chooks, sheep, and pigs) our farm soils have converted from a sodic cream/light fawn to a fertile rich red to black. Cattle only eat grass, people eat nearly everything and all living creatures make good soil (especially people), living or dead.

As a result, there is so much vegetation now in our once degraded bare creeks and gullies that water does not flow along or drain away, the creek is performing like a vegetated wetland, water meadow or long lake, retaining water from end to end.

All streams, regardless of size or scale, where all species are present naturally form into the natural phenomena called a “Pool and Riffle system” or “**Chain of Ponds**”, a series of ponds of still water between riffle benches, where the banded vegetation crosses the stream bed. The feature vegetation of each biologically mature bench (or artificial leaky weir) are riparian rhizome species like Kikuyu and Couch grass, with the best being the King of Plants – Phragmites Australis. The term “step” is also used in NSF to describe a riffle bench with sediment build up on the upslope side, regardless of scale.

On the land the upslope side of banded vegetation were developed with the use of multiples of naturally formed banded contour vegetation on the slopes, and water soaks deeply into accumulated sediment on the up-slope side, thoroughly absorbing surface water that hydrates the whole valley landscape. There is no run off from our land until saturation and no erosion, all surface water is clear, filtered by dense vegetation. As Peter Andrews has often said; “*Water streaming over water filled vegetation, does not erode soil*”. Sedimentation is always greater than erosion in functional landscapes and we gain more soil from outside raised dust and eroded soils coming in and condensing on our land. Willy-Willys even lay dust trails on our land, the dust is kept up in the air by the heating of the air by the land and condensed by the coolness of our hydrated land. No dust ever rises from our hydrated land, even from wheel traffic in hot dry weather. Our hydrated landscapes are not able to burn as they are too moist. I have worn rubber boots now for five or six years as the dew is greater than leather boots can stand.

A “Water Meadow”

Another valley floor that contributes from the side, where a “Department of Soil Conservation” water diversion bank that was used to divert water to the other side of the valley, cut out in a storm. It has then allowed the water from a five kilometre long neighbouring gully to flow onto the highest part of the valley floor and is maintaining a “water meadow” of very high productivity, as “self-watering” land that grew green grass throughout the last drought.

Again, Peter Andrews is correct in saying that in a functional valley the current of the excess flood water, runs on the highest part of the valley floor. This situation is now most noticeable on the three valley floors we have ecologically restored, using plant/animal systems and slow moving water. In a dysfunctional valley the water flows on the lowest part of the valley floor and water concentration erodes a gully in the lightly vegetated floor of the valley.

Old Well, As a Piezometer

Just on the downslope side of our land a forty foot deep concrete well built in the 1950’s, that has been dry all that time, through wet or dry sessions, is now full of water since the end of the last drought and running over into the creek. If we use this as a piezometer it gives us an idea of the water holding capacity of Australian valley floors. This situation appears just like I observed that Peter achieved at Tarwyn Park.

Reducing Surface Water Storage

As industrial People we have not realised the water retention and storage capacity of all our valley floors in Australia and officially our Australian government keep building large surface water storages, without Ecological Understanding, that evaporate more water than plants, animals and people use, and use up the water in a river. Ask the downstream river landowners why they lack water in a regulated stream, especially in the presence of large dams of water. A dam is just a large evaporation bowl in the absence of plants growing on the surface of the water.

Five Year Apprenticeships

The only way to train people is to use the time honoured method of apprenticeships under the experienced tutelage of skilled ecologically aware people. People without a life time of practical experience cannot train people on the job, in complex multi skill based disciplines, such as farming.

As we use the plants and animals as ecological tools, not technology, to evolve the land and water ecosystem and to farm the land, we self-resource in every way we can. We use a “share farming” agreement with our landholding trainees, for a five year period so as to give “hands on” management training, over time. When we “pull out” we leave half of the breeding livestock that we have used **for free**, as ecological tools that we have produced on their land with them. This is a win / win, as everyone gets paid “in kind”.

To obtain their degree each of my trainees must achieve the ecological restoration of a micro replica of the Murray / Darling Catchment. Most do under initial instruction. Every skilled person in rural Australia needs many trainees (or apprentices) to get diverse practical experience, without any formality from our industrialised society. Natural farming gains everything from the natural cycles between the atmosphere and the biosphere working functionally. We farmers who do not fertilize, irrigate, use herbicides or pharmaceuticals or buy in anything to farm with, have no need of human authority in rural Australia, because farming the land naturally, we are self-resourcing communities, and are the producers of all our own natural resources, without monetary cost. All our costs are profits and all our produce is profit.

God willing common sense will allow all our Australian people to follow an ecological way of thinking, as many people are already doing in self-resourcing agrarian landscapes, starting the “Ecological Revolution” all over the world.

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