

# Soils to grow food that will make us healthy

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## Part 1 Any road won't do



Janice Joplin - one my favourite singers - had a line 'if you don't know where you are going any road will do'.

Where I want to go in this series is clear. How to create soil which will grow plants which will make us people healthy.

You may like to look at this video which shows the chain from soil to plants to diet to health. [www.youtube.com/watch?v=Tsga-W02Mgw](http://www.youtube.com/watch?v=Tsga-W02Mgw)

I have talked about silos - self-contained areas of specialise knowledge which don't communicate with other silos. We have to cross three silos, soil, plants and our guts. This article looks at this chain to start to answer the question 'How can I create soil which will improve my health?'

### How do soil, plants and bodies work?



Nutrition science took a giant leap forward in the Second World War as the military worked out how to feed its soldiers in far flung places. The pace kept up with major studies into the relationship between diet and health. Masses of data was collected and analysed using sophisticated statistical techniques but with little understanding of the mechanics.

This lack of understanding of the mechanics led to major errors which in turn has led to the world's greatest health crisis and which we are now only slowly unravelling

Why is understanding the mechanics so important? Take the problem of starting my lawn mower. If I were to conduct a statistical analysis - without understanding the mechanism - I would learn that there is a 98% correlation between using the choke and it starting and would therefore always use the choke.

This would work pretty well until I needed to empty the grass catcher and tried to restart it - when it would refuse to start however much choke or priming I tried. Not a total disaster - I am likely to just push it into the shed and go and have a glass of red and next day it would start perfectly - no worries - it is just a lawn mower.



But if I understood the mechanics of starting a motor I would know that it normally requires a slightly richer mix to get started from cold - but if I applied too much choke when warm it would flood and never start - unless I turned off the choke and opened the throttle when it would probably start on the fourth or fifth pull.

Starting lawn mowers and diabetes are on a different scale. If the penalty was getting diabetes and having my legs chopped off or dropping dead from a heart attack it would be a bit more serious than long grass. Lack of understanding of the mechanics is pretty much what happened with diet and health. Despite the mass of statistics the experts got the answer wrong - leading to the world's greatest health crisis with over a billion people getting fat, diabetes, heart attacks and strokes.

It wasn't simply that they choose the wrong side in the fats v sugar debate - they failed to understand the complexity of the human body - particularly the importance of hormones which control our body - bit like buying a Lamborghini then thinking it does not go fast because you had not understood that you actually need to press the accelerator to make it go fast..

How this happened is one of the world's dramatic stories. I don't want to stuff it up and make this story boring.



Factory farming where food is mass produced using chemicals leading to diets high in sugars, fats and salt but low in micronutrients, vitamins, minerals and phytonutrients has amplified these errors and would never have been allowed had we really understood the mechanics of growing food, diet and health as a continuous chain.

## Boring, boring, boring

In my working days I use to write long boring technical papers - even I thought they were boring - about things like solving the simultaneous equations of heat transfer and fluid flow. Yes really boring - so I thought I better take some advice on how to present this amazing story.



I found a good article on getting attention which started by saying that on the web you have 30 seconds to grab people attentions. I would have thought that if you were facing having your foot chopped off with diabetes that your attention span would be longer than 30 seconds - but maybe I am just a boring person.

So here goes with a dramatic start - **you are going to die.**

Then I read the next line - be positive no one wants to hear bad news.

So I rewrote - **you are going to die eventually but if you reads this stuff you will live to be one hundred an eight - be active all your life - and die making passionate love to your loved one.**

Then I read the next line - don't make false claims- you must be believable.

## Truth and pragmatism

Scientists are obsessed about the truth and particularly in the medical area have developed a gold standard of the double blind controlled test.



Having a control is fundamental - if Galileo had simply dropped a cannon ball from the leaning tower of Pizza it would have had zero effect (apart from the person who got donked on the head). But he dropped

one iron and one wooden ball and observed that they fell at pretty much the same rate. Of course if he had been really smart he would have invented the mobile phone and filmed them falling and then observed that they initially fell at same rate then as the balls picked up speed that the iron ball began to pull ahead. He would have learned about air resistance - but he missed out. That's the problem with being a genius - everyone is looking for that little bit extra.

Despite his failure to invent the mobile phone he did develop a mechanism to explain falling objects - the heavier the mass the greater the force pulling the ball down - but the greater the mass - the more force is needed to accelerate the ball - two opposing effects that both cancel each other out.

Had he not had a control he would not have developed a mechanism and without a mechanism people would have spent the next umpteen years debating whether a ball made of cheese would still fall at the same rate - until Newton grew up. (Newton was born on the very same day that Galileo died - isn't Mr Google wonderful).

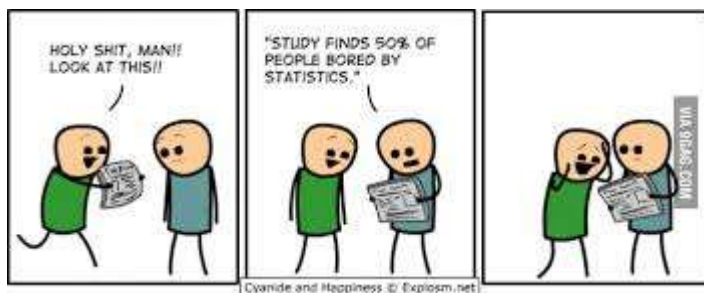


However brilliant his insight was into the laws of gravity he did not have any proof - all he could say was that this seemed such a fundamental conclusion that worked in all known cases that it was a probably a fundamental truth. The fact that he had no absolute proof of this or his many other theories led him into great conflict with the church of the day.

Engineers - who tend to get paid by what they make rather than the quality of their intellectual arguments are not so obsessed with the truth - they love to understand the mechanism and have two simple criterion - is it useful and does it work.

## Goofs, statistics and mechanisms

So what has Galileo's balls got to do with the importance of our health, worms in the soil and all this good stuff? Simple - the early work on the relationship between diet and health was largely based on statistical analysis.

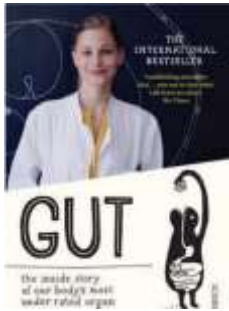


When I was younger my business centred around numerical methods so I know a bit about statistics, I have spent many hours trying to make sense of the often conflicting views on diet trying to get to the mechanics of how our guts work. I thought I had it worked out and even wrote my explanation in my series '[How to grow \(or buy\) healthy vegetables](#)' (on my web). I have a bit of fun with the errors that can come from statistics which lack a mechanism.

But fortunately medical research has advanced and now we have learned much about the mechanisms which control our bodies and understand the mechanics of how our guts work.

## Part 2 Guts and hormones

### Hello Guts



In one of those happy moments I stumbled upon a book which describes how our guts work in such a simple and entertaining way and saves me an awful lot of writing.

It is one of the best books I have read for a long time

**Gut: the inside story of our body's most under-rated organ by Giulia Enders.**

There is just a mass of information available on diet and health Giulia's book is one of the best summaries I have come across - definitely recommended. She even makes poop fun.



If you are interested in your health (or just want to stay alive a bit longer) you should really read this book. The essence is that our guts contains an amazing number of nerves, it is a source of intelligence which is not that much smaller than our main brain. It works away to guard us, protect us and make sure we have the food we need for a healthy life. It talks to our brain via nerves and hormones making us feel hungry or full, making us crave or be repulsed by certain foods.

On our guts 'instructions' our hormones our tell brain to prefer cheese cake to rotting rat flesh. It's been evolving to do this since humanoids first appeared almost a million years ago - and it has got pretty smart at it. But recently we have screwed things up a bit which has got it confused.

### Addictive sugar

Sugar, particularly that magic mixture of sugar, fats and salt we buy from the supermarket is new on the scene - it just does not occur naturally. When our gut sees all this sugar it gets all excited at this magnificent source of energy - and tells the brain to tell the pancreas to pump out insulin to turn all this lovely sugar into fat - which it then stores away for the next rainy day (or more precisely non rainy days) when there may be no food.

Our body actually needs sugars floating around in our blood stream but our guts have got overexcited and put so much of it away for later that we now feel hungry again - and start craving more sugar and goodies - so we pig out again (and again) and the cycle just keeps on going round and round - and so we get fatter and fatter. That's addiction.



I am a bit of a hoarder - I have boxes of mower bits for mowers that have long since joined John Cleese's dead parrot. But our guts are a worse hoarder and just hang onto that fat - which lead to all those modern deceases that come from misbehaving fat - diabetes, heart attacks, strokes etc.

It seems that our guts are really smart and can detect lack of critical vitamins and minerals and sends our yet more message to eat more and more.

## People vary

There is enormous variability between people.



Some people can eat a vat of ice cream and the gut says woopy - now go and climb Mt Kilimanjaro, go to the disco or cycle around the Simpson Desert. It is a happy little gut that believes everything will work out fine so never worry about tomorrow - and never bothers to store the fat - so the body never gets fat.

Other people can eat just one apple pip and the gut says 'Oh dear! Better watch out' so it stores anything it can find ready for possible tough times.' That person ends up being fat almost regardless of what they eat.

I say the gut - but it is really the hormones in the gut - that are in control.

It is this variability between people that make the purely statistical approach so unreliable, we may think we are measuring the differences between food types but what we are also measuring the variability between people.

## Sorry mum - I am full and just can't eat one more thing

But our hormones are affected by what we eat. If we eat lots of fibre it slows the whole digestions process down so we avoid these sugars highs and lows. If we are getting all the vitamins and minerals we need then the craving stop and we feel satisfied.

You think this is easy - just eat food with lots of fibre, vitamins and minerals gobble down a few pills and back to the cheese cake and all will be fine. Not so fast! It turns out that gobbling down pills is not the wonder solution that it first appears - we need a very fine balance and an excess of one mineral can block others. We need a balance.



Fortunately nature has already solved this problem of providing this balance of fibre and nutrients which our bodies can digest. It's called plants - and plants produce complex chemicals called phytochemicals of phytonutrients.

Even if we eat animals the effects still work through the food chain - what matters is the things that what we eat - eats. (That's a plug for grass fed beef and free range eggs.)

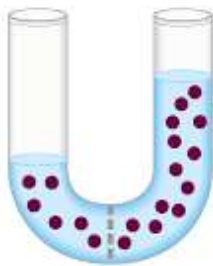
We can now see the start of the chain developing. Plants make the phytochemicals which are eaten by the cow that makes our hamburger which affects our hormones which affect how much we eat and what our bodies does with the food.

Let's go one step more down the chain and look at how plants work.

## Part 3 Plants, fibre and phyto-nutrients

At this point I should write a nice neat explanation of how plants work. But I can't - I am gob smacked in awe on how plants work. I feel like someone who has just poured a jig saw puzzle with four thousands bits onto my desk. I have worked out the corners (that's 4 done only 3,996 to go). I have worked out the blue bits with straight side are from the sky but the next step is a mystery.

OK I can explain somethings. Not the full explanation of the mechanism I would like but maybe good enough to get us moving down the chain.



I understand how the roots pick up water and nutrients from the soil. This is done by osmosis in which a dilute solution will move through a porous barrier (like a root hair) into a stronger solution (like inside the root).

I understand that water is a most peculiar molecule in which the molecules have an amazing attraction for other water molecules (and some other materials which is useful for wicking beds).

Water molecules form a chain which is incredibly strong. It stretches from the leaves right down to the roots. When water evaporates from the leaves it heaves on this long chain hauling up water from the roots to the top of a tall tree. (Surface tension is nowhere near powerful enough to do this). But a whole range of chemicals which powers the plant are dissolved in this water. These are the chemicals which the plants are going to use to provide us with nutrients rich food (in the case of a tomato) or kill us (in the case of the tomato's close cousin - deadly night shade).



But one thing plant plants don't have it teeth jutting out of their roots to go and munch up rocks to get the chemicals and minerals they need to provide us with balanced nutritious food. They can only absorb minerals and nutrients which are in solution.

But they have worked out one little trick - they emit sugars from their roots - not just any old sugars but specific sugars which will attract and feed things (like mycorrhizal fungi) which live in the soil who will happily do a trade in sugars for minerals. But that is for the next stage - how soil works.

But what leaves me gasping is plants mastery over chemistry. I sort of understood how photosynthesis works - how they take energy from sunlight to break down carbon dioxide from the air and water from the soil to release oxygen (thanks plants) and form complex carbohydrates like the sugars. To do this they need a range of chemicals which they pick up from the soil - these are generally catalysts and only needed in small quantities. We know all this.



But what gets me gogo is phytochemicals. Somehow they produce an incredible array of chemicals which seem finely tuned to serve the plants. They can produce chemicals which will deter other plants from growing near them - bracken and casuarinas are classics - nothing grows near

them. The technical term is allelopathy and is a major hazard in making compost - often the compost looks ready for use but if these allelopathetic chemicals are in the mix they will stop growth - there is nothing much to do but wait for them to decompose.

That's smart - but even more remarkable is the insect repellents. But even smarter is that some plants can't make insect repellents themselves but they can communicate with other plants that do. So when they need a bit of help out goes the message to the pesky insect - come near me and I will tell my big brother and he will biff you. They use the mycorrhizal fungi as a sort of underground internet.

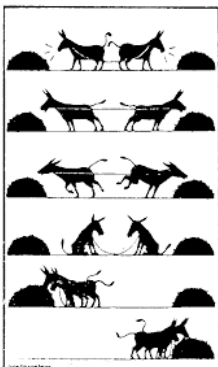
One step up the ladder of awe inspiringness is the phytochemicals in fruit. A tomato has over a thousand different chemicals, why so many I have no idea - but I can see they make the tomato taste good so we eat them - the seeds pass through us unharmed and the reproduction cycle continues. My compost heap is a mass of tomatoes.



But the puzzle comes to a crescendo with the leaves. The plants which we consider food plants have an amazing array of phytonutrients which are really crucial for our health. Most plants - we could call them the sensible ones - have leaves which are full of toxins which taste terrible so only the most stupid animal (like a Koala) would even think about making

them lunch.

So why should there be plants on the face of the earth which seems to go out of their way to be eaten? It is not just our genetic modification of food plants - there are hundreds of plants in the wild which are tasty and digestible. We used to eat them but for some reason - which I find a little stupid - we have stopped using them as a source of food or medicine.



I am interested in how ecology works and the wonders of synergistic cooperation - but I am still baffled. The only explanation I can think is that these food plants do not grow in isolation but in a companion relationship with other plants from which they get some benefit. These food plants will attract animals which may eat them but the animals will provide some benefit by churning up the soil and pooping.

Maybe the companion plant provides some protection so not all the tasty plants get eaten so the ones that survive have a nicely churned up and fertilised soil. I do know that when my lettuce gets near seeding they turn sour and indigestible which fits in with this hunch.

## Phytonutrients

But what we do know is that these plants - whatever their devious motives - provide us with a supply of vitamins, minerals and phytonutrients which have always been an important part of our diet. They now form the main defence against the concoctions of the mega food corporation which are feeding us with tasty goodies - but all full of fats, sugars and salts - which are accelerating our race to the grave.

But there is a sting in the tail. These plants simply cannot make these keys to our health - the phytonutrients - unless the basic raw materials are in the soil and available (i.e. in solution) in the soil. Actually being in solution is still not enough - if it was a simple solution they would drain away - the soil must have the right surface chemistry so the chemicals are attracted to the surface of the soil particles ready for the plant to pick off as needed.

Soil is so much more complicated than a pile of dirt.

We may be a bit light on in the mechanism department for soils but we can be sure of one key factor. Plants produce phytonutrients which require a broad spectrum of minerals. These phytochemicals play a crucial role in our health even though we may not be sure of their exact chemical structure or what role they play on our bodies.

So we have one more link in our chain. How does soil provide the raw materials for plants to make these phytonutrients?

So it is now time to turn to the last of the three stages - how soil works.



## Part 4 How soil works?

### The complex chain

Let's just pause for a moment and track our journey - we have learned that our bodies are controlled by hormones - a little less well understood is how phytochemicals play a major role in activating our hormones. Even less well understood is how the soil - and all the goodies in the soil - affects the plant's production of phytochemicals.

OK we all wish that science had the total truth - but there is much we still do not know - that's life - we cannot just stop eating until we have all the answers. But we can still make progress - remember the engineer's criteria - 'is it useful and does it work'.



I talk about the chain for good reason. There are hundreds of really good books and references on plants and soils which describe in great details the minerals that need to be in the soil to grow healthy plants. All good stuff.

### It's complicated

But the fact is that we people are far more complex than plants and our needs are different.

There are some minerals that plants need in very small quantities - often called trace elements - but we need in much large quantities. Iron and zinc are good examples. These are often called the sex minerals as ladies need iron while men need zinc (which is squirted out in semen by the lucky man).

So whether your interest is in preserving the species or just having a good time on Friday nights you need these minerals in much more than trace levels.

Iodine is important for our brains and in regions lacking iodine in the soil the vegetables will still grow and look healthy but will lead to people suffering from cretinism or poor development of the brain. Selenium appears to be essential for our DNA to reproduce successfully (without errors which lead to cancer) yet plants seem to have no need for Selenium.

Fortunately (for us) if these minerals are both in the soil and available to the plants (two separate criteria or bio-available) they will be incorporated into the structure of the plant for us (or our animals) to eat.

### No worries - just throw on a few bags of mineral and compost

No worries you may say - just throw a few bags of nutrients and minerals and compost onto the vegetable patch and all will be well.



Now don't get me wrong - minerals and compost are great and they absolutely improve the soil. I know there are an army of dedicated composters out there but before you start writing me hate mail let me defend myself by saying that compost and minerals are great - but not enough.

Again not so fast. Plant roots just cannot dig into the soil and gobble up a bunch of iron, zinc, molybdenum and all those other goodies we need. But nature has been evolving soil for the last couple of million years - in between ice ages - so maybe we should begin our story with how soil has evolved.

If I this article is really boring please just remember on little thing - the importance of soil biology which is the key to our health.

## Simple me and parent material

At one time I had some pretty naïve ideas about parent material and just thought that all I had to do was to understand the local geology and I would automatically know about the nature of the local soil. But fortunately my friend Mr Google took pity on my ignorance and decided to enlighten me.



There are some soils which come directly from the parent material - volcanic rock produces some of the best soil. Volcanic rock is full of a broad spectrum of minerals. It is initially broken down by Lichens - then a combination of weathering and the tough weeds break it down even further until there is adequate top soil for normal plants to become established.

Volcanic soils may have a broad spectrum of minerals but many parent soils do not. In fact many of the soils which are produced from parent material may well be lacking in certain minerals. This is often overcome by adding the missing minerals.



South Australia has soils that are naturally deficient in one or more essential minerals making early agriculture unproductive. This was analysed and remedied by detailed studies and application of the missing minerals see

[http://www.pir.sa.gov.au/\\_data/assets/pdf\\_file/0011/49619/Trace Element disorders in SA.pdf](http://www.pir.sa.gov.au/_data/assets/pdf_file/0011/49619/Trace_Element_disorders_in_SA.pdf)

But what I had not cottoned onto until Mr Google was kind enough to point it out to me was that some 70% of soils - and certainly the world's best soils - are based on transported materials. The highly fertile great plains have been accumulating minerals which simply have blown in on the wind over millions of years.

The fertile top soil may be many metres thick - not because nature could make top soils that thick in one go - but because layer on layer were built up over time (actually rather a lot of time). If you want to study these magnificent soils you better hurry up as our current farming system is destroying them at many times the rate they were formed.



I had seen the Loess soils in China where nature (and the Chinese) have cut through metres of soil to reveal many years of history of soil formation.

## Why does this turn me on

I want to know how to make really good soil which will grow plants which will make us healthy (or for the meat eating non-vegetarians grow animals we can eat to make us healthy). I have seen how intelligent and dedicated health professionals came to the wrong answer on diet simply because they did not appreciate the complexity of the human body (and the food chain which creates our diet). It's hard for them to simply say 'I don't really know'.



I feel we could be making a similar mistake with soils. There is nothing wrong per se with bunging on a few minerals and compost - but I think it could be just as simplistic (and wrong) as the fats v sugar debate.

If we study how nature has made soils over the millennia - and can accelerate the process - then we may achieve the aim of soil which grows plants which make us healthy.

I have an experiment under way in which I am trying to imitate and accelerate this natural process of gradually adding materials to the top of the soil. I hope I can report on this sooner than Feb 5016.

## Compost and minerals - just part of the story

Alan Savory has made a great contribution to our understanding of soils. I recommend his Ted talk

[https://www.ted.com/talks/allan\\_savory\\_how\\_to\\_green\\_the\\_world\\_s\\_deserts\\_and\\_reverse\\_climate\\_change?language=en](https://www.ted.com/talks/allan_savory_how_to_green_the_world_s_deserts_and_reverse_climate_change?language=en)



Let me just hit his key points. In his younger years he was responsible for managing soils in National Parks in Africa. At first he followed conventional wisdom which said that to preserve the soil then all disruptive effects, which basically means animals and humans must be excluded from the parks.

One hundred thousand Wildebeests wondering around was viewed as highly damaging to the soil and elephants just go around pulling up trees - well say no more - out they go. It simply did not work - the soil deteriorated even faster.

But having tried and failed (an experience I can well relate to) he decided he needed to think a bit deeper about how soil was formed. This led him to develop 'holistic management' which to my mind is one of the great contributions to modern thinking.



Simplifying he said that modern science - which is reductionist - or highly specialised focusing on one area of specialist knowledge - can lead to fundamentally wrong conclusions. We need to take a holistic overview of all relevant information.

This very neatly explains how the early diet researchers came to such a horrifically wrong conclusion about fats. This was the era when hydrogenated fats were being heavily promoted and adopted in the community. They undertook detailed scientific test and came to the conclusion that these fats were highly dangerous for our health and needed to be virtually banned from our diets.

Based on their scientific experiments this was a perfectly logical conclusion - these guys are leading scientists - not some bunch of dumbos.

They pushed for a low fat diet which led to a far worse net result with people switching to diets high in sugars and carbohydrates. They failed to take a look at the problem holistically.

Not all fats are bad - some definitely are - but others are essential for health. They took the view our bodies need sugars and carbohydrates and are therefore healthy - viewed from a narrow perspective this is correct. What only became clear later was that they affect our hormones making us perpetually hungry so we overate and became fat.

Each step of the logic process is correct from a narrow perspective but when viewed holistically has led to the world's largest health problem.

It is hardly ever debated in the literature but soils play a critical role in our health - they are part of the holistic picture on health.

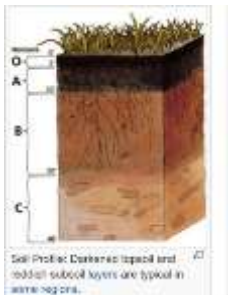
But it is easy to get sucked in by our extensive knowledge of soils - pick up any decent reference on soils and it will give a comprehensive review of the structure and chemistry of soils. Scientifically this is correct - just as scientifically some fats are bad for our health. But we have to learn from Alan Savory's inceptive thinking and look at the problem holistically.

He is not disputing the structure, chemistry and physics of soils - they are correct. He is not disputing the importance of bacteria in decomposing dead vegetation. So composters we are not having a go at you.

We have to look at the whole area of soil, plants, animals and all the living creatures in soil holistically. They have been evolving together over millions of years and if we can understand - even partially understand these complex relationships - then we may be able to create soils which will make us healthy.

## Soils from parent material

Let's start by having a look at the classic picture of how soils are formed from parent material (and most of the people who write about soils seem to have missed the point that some of our best soils are made from transported material).



My friends at Wikipedia have kindly supplied this picture of typical soil profiles. An upper layer which is largely organic then progressing through A and B layers with decreasing organic content to the parent material below.



It is interesting to look at the root structure of a typical plant which seems to have adapted to these layers - with a fine fibrous layer near the surface lining up with the high organic layer while the taproot may penetrate right through the organic layer into the parent material.

I have experimented with soils for wicking beds. I have made soils which are beautifully fine and the seeds germinate really well - but the growth slows down after a while. I have made other soils full of pores and hence rather coarse - the few seeds that do germinate grow

really well all the way to maturity. But if I look at nature and learn I have my fine soil on top for germination and more porous soil underneath I get the best of both worlds.

That's one thing I learned for nature and not Mr. Google.

## Compaction and the Wildebeest



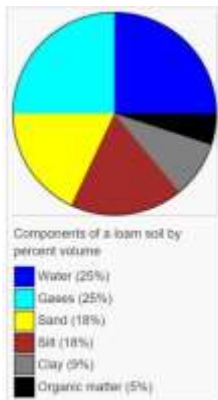
Read any book on soils and it will warn you about compaction. Don't drive your tractor on the soil or even walk on it. All sounds good and logical. But wait - in Africa hundreds of thousands of Wildebeest trundle across the plains. Now Wildebeests are pretty heavy animals with a small foot so the pressure under their feet is far higher than a tractor tyre or a man's foot.

If there happened to be any transvestite Wildebeests who had watched Priscilla Queen of the Desert and were pouncing around wearing high heels the pressure would be even higher.

Is there some incongruity here?

## Typical 'natural' soils

It is interesting to look at the composition of a typical soil.



Almost half the volume is made up of voids which may be partially filled with water. There is a broad spectrum of particle sizes from sand, through silts to the very fine clay particles.

Some half of the total volume is voids. How does this reconcile with compaction and transvestite Wildebeests?

The answer is simple if we look at soil from a holistic evolutionary viewpoint.

There is a whole range of plants, creatures, insects and animals involved in making soil.



Plant roots can exert enormous forces - as can be seen from any tree in a street pavement - the roots die off leaving a network of holes, the micro creatures are busy living and dying making a multitude of pin holes, larger creatures - worms are the obvious ones - but there are multitudes of creatures great and small burrowing through the ground.

Small animals are making their burrows, birds are digging for worms and the larger animals are churning up the top soil and pooping which encourages the night time worms to go on an adventure spree.

Left to itself - nature does a good job by continuously creating porosity as a web of interconnected channels.

Nature - left to itself is pretty good at creating a soil with a good structure - wind and rain are continuously bringing in a fresh supply of minerals (at least in the right climatic zone) - birds and animals and all living things are busy pooping and dying to add extra nutrients.

So left to itself nature is pretty smart at making soils. But - and there is always a but - it is very slow.

The challenge we face is to understand how nature makes soil - and that means a holistic understanding - then speed the whole process up a few thousand times.

That is the topic of the next article in this series where I will describe the system I have developed to create soil - specifically for Wicking Beds - but the system can be tweaked for creating soils for any purpose.

If you have not already done so you may like to register for future articles by simply emailing me [colinaustin@bigpond.com](mailto:colinaustin@bigpond.com) and I will put you on the list.