A Permaculturist's Guide to Understanding Holistic Management

Questions for Allan Savory

[To the permaculture community abroad and anyone else who finds it useful, we present this effort on the part of Paul Wheaton of www.permies.com and Allan Savory of www.savoryinstitute.com to promote the awareness and understanding of Mr. Savory's holistic approach and the collaboration of The Savory Institute learning hubs with the permaculture community at large. This series of questions was formulated by members of the permies forum and answered by Mr. Savory over the course of three days in May 2013 and has been edited into a more readable format for your use.]

Mr. Savory, what do you call your method?

We call it holistic management. This needs explanation. First, the word holistic was coined to describe how in nature everything functions in patterns and wholes. There are no parts or interconnections as those are mechanical constructs.

To bring this concept into everyday simple practical life in a way any person could use took time. Throughout history, management has been and continues to be reductionist, in that the objectives of management (even with integrated scientific teams) always have as their context a desire, need or, in the case of policies and development projects, the problem being addressed. Rare is the objective that does not have as its context desire, need, or problem addressed. The real world is holistic with society/cultures, economies, and our environment each being holistic in nature and together even more so.

Any objective without a context or with inadequate context tends to lead to unintended/ unplanned consequences. Managing holistically is all about solving various problems yourself, albeit with ideas from others. The farmer/rancher takes each objective in his/her management and ensures it is in a holistic context. This is a new concept that was not previously in any branch of science, religion or philosophy. When defined in any situation the holistic context ties people's deepest spiritual and material values to their life-supporting environment through all the forms of production that will support such a life far into the future.

Managing holistically in any situation is done using two processes commonly acting together. The first of these is to use the holistic framework for overall decision-making. Here is where you consider actions to achieve any objective or goal and make sure that beyond need, desire or addressing a problem, they are in holistic context. If in this step it is determined that livestock are needed on the land, then the second process of holistic planned grazing kicks in to address that complexity.

What is Holistic Planned Grazing?

This is the planning process developed to address the complexity of soils, weather, wild and domestic animals and plants on the land when livestock are grazed - complexity that is never adequately addressed in any rotational grazing, mob grazing, short duration or any other

grazing system ever devised. Holistic planned grazing is nothing like rotational grazing or any grazing system. We had to develop something entirely different after witnessing all grazing systems fail to deal with the full social, land, animal, plant, economic complexity farmers and ranchers deal with daily.

Holistic planned grazing is universally applicable, having been developed over about fifty years in all environments, from true desert margins with almost no rainfall at all, to very high rainfall areas with over 2,500 mm of rain. It applies to all soils and nature of country, from open plains and savannas to mountains. In every situation, the detail differs, but the identical planning process applies. Our institute has refined, and continues to refine, the process every time we strike any new problem anywhere in the world.

How do you determine stocking rates and time of grazing?

Concerns about stocking rate and timing cannot be determined out of the context of the whole situation managed. All these questions are answered in the planning of the grazing. Almost all livestock operators have too few animals too long on the land. Commonly, with mob, short-duration or any rotational grazing system, farmers begin by putting in fencing – fixed or mobile. However, looked at holistically with the usual economic hardships involved, this is seldom the right first action needed. Many times over the years having to help farmers in severe financial trouble, the first and wisest action was to simply amalgamate herds and increase animals while planning the grazing.

Is it necessary to have livestock?

No, it is not always necessary to have livestock. Sometimes they absolutely should not be used – most commonly in tropical humid forest situations. That depends on what situation is being managed. However, if desertification is involved and is to be reversed on any significant scale, then it is necessary these days to use livestock in some form. The global desertification situation we face is serious and can only be addressed using livestock properly grazed, and I do not say that lightly or with any fear of informed criticism.

If, during the process of using the holistic framework and a holistic context for the landowner's objectives, it is determined that livestock are required – either because there is no other "tool" available to humans (and science) to do what is required, or this as well as the need to feed people, then livestock would be used with the planned grazing process. If the first process indicated everything required could be achieved by some other means, known to say, permaculturists, then you would do so.

If initially there are no animals at present, then the first process of simply using the holistic framework to make decisions helps people determine how to get started – whether it is best to buy animals, lease grazing, what types of animals, how fast to expand, whether to increase animals first and fencing later from income generated from the land, and so on, as this all has to be in context and not simply an objective of getting animals.

It is said that holistic management costs too much for most people. Is this true?

This is untrue, although a common misunderstanding by people who think holistic management is some form of management system, which it is not. Management systems should never be used except in management situations where everything is pretty predictable. Management of complexity needs to be done through a constant decision-making and planning process.

Managing holistically, people should make every step in the changeover from conventional management to holistic lead to greater profitability. That is why the study of early adopters of holistic management in the U.S. done by Deb Stinner, et. al., at Ohio State University showed they averaged 300% more profitability. This over about the same time span in which 600,000 U.S. farmers went bankrupt, and suicide was the leading agricultural cause of death. None of us, myself included, does things perfectly, and we are finding people not understanding holistic management very well but at least starting and sticking with these two processes are improving their lives and land considerably.

How does holistic management and planned grazing work on large acreage?

Q. Background: We run approximately 500 cattle (½ ours, ½ lessee) on 8,800 acres in South Dakota. Land is high plains, mainly rough country with a lot of draws, divided into 10 pastures. Two 1,000-acre pastures have a river; the rest have stock dams, and one has a well. A neighbor, Todd Mortenson, has been using holistic management since the 1990s, and we have been looking at implementing it as well. His carrying capacity on his 8,000 acres is 1,600 head, not 500. I've watched your TED talk and am looking for funds to attend your conference at the end of June in Colorado. Interestingly, I spent about three hours today wandering about the pastures with Michel Kravcik talking about small water cycle theory and how to implement his Blue Alternative techniques on the land here. We talked a little about how your holistic grazing would work with his system of contour trenches, weirs, dams, and other water retention mechanisms, but we didn't know enough to talk any specifics. Here are my two questions:

1. Todd says holistic management is different than mob grazing, but he didn't explain how. For the life of me, I can't figure out how mob grazing would work in our area, given the amount of fencing needed and manpower running cows all over the country all day long. Could you explain how your system is different than mob grazing?

2. Many areas in our pastures are turning into hardpan, particularly level areas on hilltops and plateaus. Hardpan is a dry alkaline flat where not much grows but cactus. These areas expand year by year. We have diminished a few by placing mineral tubs and salt blocks in them.

The cattle crush the cacti, chop up the surface and poop all over. This has helped in a couple areas but is not consistently effective. Could your system help restore these areas, and how?

Thank you for your time,

Margaret Bad Warrior
Cheyenne River Sioux Reservation
Ziebach County, South Dakota

A: Margaret, yours is a very typical situation – nothing new in what you have, and we have helped many people get out of such situations. Get yourself to the conference if you can. It will be probably the best investment of your life – I mean it.

The main reason you are experiencing the normal symptoms of desertification is over-resting the land, with too few animals overgrazing plants while resting the land. This, in seasonal humidity environments such as yours is, leads to less effectiveness of your rainfall (desertification). You are right not to use mob grazing or any other grazing system.

When managing holistically we have no grazing system at all, having realized almost fifty years ago that, by definition, all prescriptive management systems will fail. It was for this reason I developed holistic planned grazing to replace all rotational and other grazing systems. In now over forty years, I have yet to see holistic planned grazing ever fail or lead people into any problems and more so in terrible years where it has saved ranchers over and over.

However, I have experienced thousands of ranchers get training and then fail to plan and later complain that planned grazing did not work. I have also encountered a great many people who plagiarize or create derivatives - from either my work or that of Andre Voisin (who developed "Rational Grazing") - and give them names of their own: short-duration grazing system, cell-grazing system, management intensive grazing, wagon wheel, etc., with mob grazing being the latest derivative fad. Within the first year after I started training academics and ranchers in the U.S., I counted some 13 derivatives, and all dropped the planning process that is the core and reason for consistent success with planned grazing. This, if you read Everett Rogers book, Diffusion of Innovations, is a pretty normal behavior of humans. We learn something new, but for various reasons – ego, desire for recognition, pride and being human - we have to give it a name and twist of our own.

You are right to worry about the cost of all the fencing, etc., and you will learn when managing holistically how to deal with this. When making decisions as we do, using the holistic framework in conjunction with its planned grazing and financial planning, no fence should be put in if it "costs" money. Fences should only be put in when they "make" money. Remember, I pioneered much of the development in a country under world sanctions, with the highest prices of inputs for farming and ranching in the world and some of the lowest prices for products.

You can get a good idea of the basics from the Holistic Management textbook, especially the accompanying handbook written by Jody Butterfield. These and other materials, including e-books are available through the Savory Institute website. Anyone should theoretically be able to teach themselves from the materials, but most of us do benefit from some training and coaching.

I note that you have already seen the change in your hardpan areas by simply concentrating large animals on them periodically. When you do begin managing holistically you will start bringing such change about all over the land step-by-profitable-step, generating the capital from the land as you go. On the ranch, where we are pushing things hardest to learn and doing it all without fencing, we used to have thousands of acres dominated by bare, hard, crusted soil but now are literally running out of bare ground, even for teaching purposes.

If you are able to get to the conference, you will learn that we are strategizing to have people develop locally-led and managed learning hubs around the U.S. and the world. There are people from 12 countries already forming such hubs attending the conference. Through these, we believe people will be able to collaborate and learn, and the Savory Institute will keep all connected globally through an Internet platform.

The hubs are aimed at bringing together people, organizations (permaculture and others), universities, government agencies, etc. All have vital pieces of the puzzle, and only through such collaboration and addressing the full social, environmental, and economic complexity have we any chance of addressing the problems of our own making (as most are), which are culminating in agriculture today producing more eroding soil, by far, than food. I hope we see you there, and do introduce yourself if you see me.

Does planned grazing still work on land with extended snow cover?

Land covered with snow for many months makes no difference. Many ranchers in the regions of prolonged snow in the US and Canada are practicing holistic planned grazing and learning how to cut many costs of hay cutting, etc.

Does holistic management apply on a small scale?

There is no case too small or too large. Here is about the smallest example I know of:

A woman (single mother with son) was in training with me concerning larger situations, and she saw this idea of defining a holistic context for all decisions in life, on the farm, etc. could be used personally. She defined a holistic context for herself and her life, as she wanted it to be - tied to her life-supporting resource base. She went shopping with her small son a few days later, filled her shopping cart, and was at the cash register to pay. Suddenly, she thought about that context and put almost everything back on the shelves.

Everything we buy is an objective. The context for almost all we buy is "need" or "desire," and that is not an adequate context always in our complex lives. As she thought about her holistic context, she realized she needed almost none of the stuff she had loaded into her cart. You can't go much smaller than that.

There is no need to scale holistic management down. It is a decision making process and a grazing planning process if livestock are involved. You cannot scale those down. I, and others no doubt familiar with the holistic framework, use it in my home and daily life.

Recently, our staff in Africa was all set to grade our roads as the quickest, cheapest, most practical way of improving our very bad access road. Normally, this would have gone ahead as everyone does it, and it seems common sense. When I had the staff put that possible action into a context beyond addressing the problem of the bad access road, in other words, into a holistic context, things changed.

They then could understand it was totally the wrong thing to do, and now the road is being done by hand. It is socially, environmentally, and economically, both short- and long-term, the right thing to do for us, our community, and our land. That is pretty small scale but big impact, as they are learning.

How would planned grazing work on a dry, small area surrounded by urban development?

Q: I have a question for grazing sheep in a low rainfall area in Southern California.

During the last 14 years, Temecula weather: averages 62°F year round. Rain averages: 13 inches with a low 0.37 inches and high at 26.7 inches. Summer months are hot and dry with an average 79°F temperature.
Summer months may have up to 18 days over 100°F.
Winter months average approximately 51°F.
Winter months may have up to 13 days under 32°F.

Geology: Temecula is in the Temecula Valley area of Southern California. The land area is considered Mediterranean climate to near desert chaparral with wet winters and hot dry summers. The meadow area has low hills with decomposed granite, a light sandy loam soil.

(I would say that we haven't seen 13 inches in a loooong time. It's more on the lower end of the scale - very dry!) The area we are talking about is 350 acres of meadow with trails for walking, biking, horseback riding. Our community recently got a grant to preserve the land and start using more holistic management techniques.

The common area is basically rolling hills, which was speculated to be dry-farmed roughly 100 years ago and was grazed by sheep at one point. Mostly non-native grasses have become dominant and more importantly, soil erosion. We'd like to restore the landscape, stop erosion,

and promote the natural habitat of native shrubs, grasses, and wildflowers. There are coyotes that still exist here, as well as burrowing owls, which are becoming endangered.

We are in the beginning stages of planning and thinking of using sheep to graze the land again, hoping that we can do it in a way that will help restore the landscape. Right now we have a tractor mowing at certain times of the year for fire safety.

My questions are: How many sheep should we put on the land, within how large of an area at any given time? And how often do we move them? When is it best to start? Will sheep be the best option?

There was talk about the shepherd using electric fencing to move them around the common. My concern is that I don't think the shepherd has the understanding of soil rehabilitation in order to utilize the sheep accordingly. None of us in the committee know the proper tactics for this. I've studied permaculture and have been around cell grazing, but that was in a completely different climate. So I'm very unfamiliar with what steps to take in this situation.

Any help is greatly appreciated! Thank you for taking the time to answer everyone's questions!

- John

A: John, I have looked at your site and that was helpful. I have sent a message to help me put you in touch with a person who might help you and who did extensive training with me. Meanwhile, if you desire to restore that land to the highest level of health you can, you will need to use livestock, and sheep are as good as any on such a dry, small area surrounded by urban development. However, if you talk of using livestock, you risk starting conflicting opinions in your community, so do not do so.

Having that objective with the problem (degraded land) as the context is not likely to work without all manner of unintended consequences, possible conflicts in surrounding community, etc. So, as you use the holistic framework to help all of you involved begin moving forward in unison, without conflicting opinions and with the common good of all and the environment in mind, you will need to understand how to get the right people at the table (decision makers and those with veto power) and define a holistic context. That, I can tell you now, is the hardest thing you will need to do. From there on, all should sail smoothly.

Once you have the holistic context defined, everyone will be fully on board you will find. Then, you can start discussing all the possible ways of healing that land within that context. Never say any idea emerging from anyone is a bad idea, because you do not know. Only when you use the filtering to see if any of the ideas emerging is in context will you know, and if any idea was not socially, economically, and environmentally sound for your situation, you will drop it, as will the person who put forward that idea (having learned that it is not a good idea in that situation at the present time and not having been told it was not a good idea).

At this point is where the idea of using livestock can be brought forward and treated in similar manner. From there, you proceed to detail about what type of livestock (sheep probably best, with or without goats) and how the livestock should be managed to address the complexity. There is only one way we currently know, and that is the holistic planned grazing it has taken so many of us so many years to develop.

. . . I am going to try to get you connected to local help.

How do you begin on a new piece of badly degraded land? How do the livestock find food?

I have never, even in the worst situations come across land with absolutely no feed in the form of sparse grass, leaf fall and twigs from trees or browse on small desert bushes, etc. The exception being true desert with no rainfall which we do not try to change, or mine reclamation where there are relatively small totally bare areas. In the latter (mine reclamation), we do use bought-in feed in the form of the cheapest, nastiest hay we can find full of seed of weeds, annual grasses, or anything to provide some feed but mainly litter.

On the land with larger areas, as I say, there is always something there supporting usually pathetically few poor animals. So there we begin, and we use the simple principle that all biological functions follow an S-shaped or sigmoid curve (i.e., plants grow slowly and gradually accelerate till full grown). We want them to be allowed to get past the slow initial growth rate to the fast growth rate (or steep part of that curve), so we need to buy time for that to happen once they germinate.

If we take any area of land, as time not area is what matters most, that area of land can, say, presently only carry X number of animals (goats, cattle, donkeys, or whatever) for a year. Therefore, if we divide that land into two, it can carry X for about 180 days on half the land. That leaves any plants establishing on the other half 180 days to grow unimpeded if they germinate.

If we divide the land into four, then a quarter of the land can carry X for about 90 days, and that leave plants establishing on the bulk of the land about 270 days of unimpeded growth. Hope you get the idea. Now, if we can also increase the animals and change their behaviour to more bunching behaviour, we can overcome the greatest problem with such desertifying land (over-resting the land) by increasing the animal impact (hoof action, breaking soil capped surface, dunging and urinating) and, through this, get more plants germinating and establishing. Any plants are needed to begin providing both more feed for animals and more litter for soil cover.

With this principle in mind, I first tested this out before going public. We chose the worst land we could find in the driest and most desertified part of Zimbabwe, land on which perennial grassland had disappeared, and we had not one single grass plant we knew of in over a 100 mile drive. Taking the worst piece we could in that area (a 4,000 acre piece of it), we divided it into 30 parts, using fencing at that time (1960's). Now, I would not use fencing any longer, as we can do it more effectively with herding at lower cost.

Anyway, on that land we doubled X (the number of animals it was carrying), and that proved too little, so by end of first year we went to 3X. That, with holistic planned grazing, resulted in the animals, on average, being on any unit of the land for one to two days only with enough existing feed for so short a stay. They did well on the available forage (initially, mostly twigs, leaf fall, and a few small shrubs, as there was no grass at all).

Through the greatly increased animal impact (3 x numbers on only a thirtieth of the land), plants, of many species, began to germinate and most with recovery periods of uninterrupted growth (between 30 to 60 days), established well enough to be grazed or browsed without overgrazing or over-browsing. We found this led very quickly to solid perennial grassland developing - no feeding and no need to reseed or plant grass, shrubs, or trees. All began establishing themselves.

We began immediately in the dry season, because I was trying to see if I could cause holistic planned grazing to fail and pushing it to extremes no rancher in his/her right mind would do. We could not cause it to fail, and it simply got better and better year after year. Normally, because ranchers do not have my experience and, thus confidence, I suggest they do not start healing such land in the dry season, but begin at the beginning of the humid or growing season as they gain confidence. I hope this helps you get the idea.

How do you supply adequate water for so much livestock in such brittle areas? What is your secret?

There is no secret, unfortunately, and we often struggle with this in early stages, until effectiveness of available rainfall can be realistically increased. We have, over the years in many countries, used all manner of solutions to watering greatly increased numbers of livestock reasonably quickly. Things like carting water (expensive so avoided where possible), piping water from several weak points to one point, of course using some form of large holding reservoir (mostly made with the eggshell concrete structure of which permaculture people are aware). We have taken one of these as high as three meters with good result, although all our staff stood by waiting for it to burst on first filling!

We have had people in Mexico successfully harvest off large stony hills with small directing walls to one point and collecting in a large retaining reservoir, with all operating on gravity flow where possible. We have used large area harvesting flood water (Paraguay) into a hollow with a windmill to pump the water into a large holding reservoir (almost a cup and saucer). We have pumped from sand in rivers. We can come up with all manner of ideas if people keep helping one another solve such problems.

Where we have found no solution for the early stages, we can usually at least get people planning livestock grazing properly over the humid growing season, using scattered surface water while it lasts to begin reversing the land (and water) degradation. In Africa, we have had great problems with theft of solar panels and people not maintaining diesel engines where we need solar or diesel to pump from boreholes, and where the wind is not reliable enough when

needed. There we are right now attempting something we think might work but is very difficult - using animal power to pump from boreholes.

The Egyptians used and still use animal power to pump from the Nile, but that is lifting the water only a small height. We are attempting to lift several tons of water 100 meters as our target each day. We now know why no one tried this - it is damn difficult. We do have a prototype pump now almost working and are making further adjustments before field testing on a borehole using four oxen to pump.

We are using the generator of a wind power outfit as used in generating electricity from wind in the US and then a submersible pump, only oxen and not wind turn it. If it works, we will let people know. Right now, we know the cost of R & D has been very high, and so unless it works really well, it will be a white elephant.

Regarding my point about early stages until we can improve water cycle and thus borehole reliance and stream flow duration, we are seeing encouraging results at our Africa Centre Dimbangombe ranch, where we are pushing the most advanced work using herding and integrating wildlife with the livestock management herd. We have closed down two artificial water holes we used to have to maintain for the wildlife as no longer needed. River flow has improved dramatically over the last four years of average seasons.

This year [2013] is a great learning year, as we have had a very poor rain season with the river drier than we have seen for about 15 years, and we will see how we come through 'til December. I am not too worried but will be there toward the end of the long dry spell to gain maximum learning, as I am always learning. Also, a lot will depend on the numbers of elephants visiting to water on us with such a dry year - can be 600 or more a day, which really soaks up some water.

All this that we learn is always made available to others. What we have experienced in this dry year is that we still made the rainfall so much more effective that we have grown more grass, forbs, shrubs, new trees, etc., than we ever did in the past in the best of years and are having to double up on the herd just to try to keep pace with production. So all in all, it is really a balancing act using increased animals to increase water and deal with the time delay - all new ground. [I guess that is] not much of an answer for you, as we are all learning how to deal with this problem of initially limited water.

What almost no people understand is that our man-made droughts due to desertification are, typical of nature's feedback loops, cumulative. In other words, creating, as we have, non-effective rainfall, the largest reservoir of fresh water in the world (soil) becomes progressively drier year by year. Likewise, if we reverse this, it becomes cumulative, and this, I believe, we are now seeing on Dimbangombe, as wetlands expand even in dry years.

What are your uses of infrastructure, fencing, and constraining the herd?

Regarding herding vs. fencing – these are simply decisions to be made in the initial or first part of managing holistically. This initial decision making also applies to the type of fencing – permanent, with how many strands, structure, electric, permanent or portable, and so on. It is where we at our Dimbangombe learning site ranch made the decision to use herding, because fencing in any form was not in context - too many elephant, buffalo, sable, kudu, giraffe, zebra, lions, etc., etc.

I am increasingly trying to get commercial ranchers in the US, Australia, or anywhere to begin seriously re-looking at fencing vs. herding. Almost all immediately say they cannot because of labour costs – that, despite them saying they are managing holistically, tells me they are still in a reductionist mindset. I say this because what we have worked out at Dimbangombe is proving [very] encouraging, due entirely to herding. We are achieving a rate of reversal of land degradation I have not experienced anywhere since the first advanced project we ran forty years ago – where we were pushing the envelope to try to see if we could cause failure with holistic planned grazing (which we were unable to do).

The reason is, in hindsight, now obvious to me. Over-resting the land is the single greatest thing leading to desertification in any country. I tried to make this point in my TED talk, showing the terrible desertification in a US National Park and on research sites. Using fencing on very large land units we have struggled, and continue to struggle, to overcome the high level of partial rest (which has almost the same effect on the land as total rest, as I often illustrate in talks using US experimental plots that demonstrate this). With herding we overcome the partial rest easily and constantly.

Day and night the entire management herd (500 cattle with some goats and sheep) is always on an area of about an acre or less, no matter where we have them. This in turn is leading to much faster improvement in the land, water retention, wildlife habitat (for most species, but we are now having to preserve some bare ground for some species), and of course, the growth of all plants – grasses, forbs, shrubs and trees. We have cultural and predator problems with using dogs and horses that Australians and others do not have to contend with at all. I believe when others begin to look at the possibilities seriously (taking into account the full complexity - social, environmental and economic) and improve on what we are doing, using dogs and horses, they will be surprised.

Do you have experience with fedges (food hedges)?

I have no experience using fedges and only know of our past efforts to use vegetative fences in the form of prickly pear, aloes or sisal. Again, this is simply a matter of seeing if those are in a holistic context, and if so, use them. Any such measure if it goes through the filtering we use to ensure it is in holistic context will always be the very best that you can come up with in your situation at that time and this means there is no other known measure that can do what you want more economically that is socially and environmentally sound also.

Are you aware of Joel Salatin's work?

I am aware of Joel's work and his enlightened use of chickens and pigs, and I like it. We are using chickens on Dimbangombe. We keep them in mobile homes where they can roost or lay and be moved at night when the predator-friendly overnight kraals move. From dawn to dusk they fend for themselves, minimizing fly larvae in the dung and picking parasites off animals that have been held back for any reason as the management herd leaves for their day working to improve the land and water.

We did try pigs but had to give up, because we could not use dogs. In the thick bush and long grass, pigs hung back from the main herd, undetected by herders, and we were feeding leopards well! Dr. Manuel Casas in Mexico had a great management herd – cattle, horses, sheep, goats, and pigs all herded in forest with excellent results. The only problem I recall him experiencing was the need to remove the pigs while goats were kidding or sheep lambing.

We are using dogs in a limited way – to alert herders at night when lions approach - but even there we are experiencing heavy casualties from leopards and lions. I think we have a solution to that now though.

How do you accomplish herding vs. fencing?

Do not try to reinvent the wheel by going ahead with anything before thoroughly exploring all we have learned and are doing so far with herding and with overnight holding of livestock. Increasingly, we will have this information on the new website being developed to serve global learning hubs - where people can easily communicate globally between hubs.

In brief, we herd to "virtual" paddocks that are large for ease of planning (no fencing but boundaries herders know – road, river, elephant path, or whatever). Then, within those, we herd the animals daily but for no more than about three days in the same place within a "paddock." The livestock are returned to an overnight kraal that is very portable and moves about every week. When the time they are to be in any virtual paddock is over, they are moved to the next, and so on.

In this way, we are planning long recovery periods with few paddocks, but also achieving short periods of grazing and trampling. Of course, in the planning done twice a year we are integrating the livestock with the wildlife needs, cropping areas, and other land uses. Anyway, as I say, you do not need to start from scratch as we did nor to repeat the mistakes we made. I do not know how all this could be done with dogs alone, but I do believe man and dog or man, horse, and dogs will be far superior to what we are doing with herders alone.

Is there a kind of electric fence that is easily moved on land with many obstructions?

Yes, there are several forms of electric fence easy to move. However, with either electric or especially with any permanent fencing on land with many obstacles, the first essential is to get the planning of any infrastructure right. This is because a poor layout of fencing, roads, handling facilities, etc. leads to higher costs over every year. So we plan the layout afresh, even on long-established ranches. We bring about the changeover from the present to the ideal layout over the following years profitably step-by-step.

There is no body of knowledge associated with holistic management (as in permaculture, for example), but there are areas where, due to the new insights that made the development of the holistic framework possible, there is a body of knowledge. One is in how to layout the infrastructure for livestock. In the past, infrastructure of things like fencing was influenced by available water, soil, and vegetation types, etc. (with both overgrazing of plants and over-compaction due to livestock no longer a problem). With planned grazing, we could use entirely different thinking and cut infrastructure and running costs. This knowledge will be especially useful if you have a broken-up pattern of land.

Done well, it will lower costs of handling over all the years ahead. Much of that information is in the appropriate chapter in the handbook accompanying the Holistic Management textbook (obtainable from the SI site).

When it comes to portable electric fencing, since you are likely to use this, there is one thing I have found excellent for reducing time and labour. Make your own large eyelets of even hooks out of thick insulated wire. These can then be tied to any form of post – tree, metal post, wood, permanent posts, or whatever - and then, the wire or tape is all you move. Once posts with large insulated eyelets of hooks are in place moving the wire or tape can be done by detaching at one end and simply winding it up, using a homemade spool run by a battery operated drill. That can be either on a stand or on a four-wheeler.

Only some types of electric fence short out when touching wet grass. Long ago, we used the New Zealand (Gallaghers) energizers in Paraguay - used single strand through long grass (actually meeting over the pickups) in very high rainfall and constantly wet - and that held very large herds of cattle with no problem.

For gates, we have long used a form of gate put anywhere along a more permanent electric fence - one where the whole fence lifts, allowing a wide area for animals to move across. I believe the design is in our handbook.

Is shade in the form of trees or man-made devices needed?

Yes, trees are likely to play many roles in grazing situations for soil, animals, water, nutrient cycling, and more reasons. They are important for animals, reduce frosting of grass, shade and cool the water, etc. In the case of small land units, agro-forestry cropping and pastures planted

with trees can make a lot of sense and fall within the holistic context so essential to ensuring all such management is not addressing symptoms and is likely to be truly sustained without any damaging consequences.

Managing larger land units, I have never yet found it necessary to plant trees, because as we put things right, using livestock properly managed, everything we find begins growing better - forbs, shrubs, trees, and grass. I know a lot of people are planting trees to try to stop desertification, but that poses the question, Why are the trees not establishing themselves? Where we could not provide water in very hot climates under trees we reverted to artificial shade - even a thatched roof over the main water trough, and that helped animals significantly, drinking cooler water.

What do you think of the idea of shared grazing?

Q: Have you attempted to get small landholders to cooperate as a collective to create a large land mass suitable for large herds? Could such a group be formed where the acreage added [is based on] the percentage of the herd owned by that individual? The labour could be shared between ranchers as the herd enters their portion and then passed on when the herd moves off.

Could this be added to public land, i.e. BLM [Burea of Land Management] land for the USA or an equivalent in another country? This would hasten the regeneration of these public lands and get many more voices added to your line of thinking. - Jason

A: Jason, your line of reasoning is dead right. I have talked of farms getting too large and ranches getting too small to be ecologically viable and of how that could be addressed as soon as people really do manage holistically and stop confusing ownership with management. In the 1980's, ranchers in Zimbabwe began on their own to collaborate – maintaining ownership of their own ranches but pulling up boundary fences and sharing the wildlife well. Unfortunately, they removed their cattle, trying to rely on wildlife alone and land continued to deteriorate – just as was our experience on Dimbangombe under wildlife alone. All that has collapsed now for political reasons, but if still going, I am sure, with what we now know, we could have enabled those ranchers to succeed just as we are doing on our land.

We do a great deal of work trying to get people to work together, especially on communally owned land, as is common in Africa. We tried for years in Africa and can tell you a lot of things not to do. Finally, we brought in more people and gained more insights from others.

Over the past three years, we have done an enormous amount of work and development of training materials around adult experiential learning and community mobilization. Now, we are seeing encouraging results. My wife has directed much of that program. Mobilizing any community where the collaboration of many is a prerequisite of meaningful reversal of land degradation is, as we have learned, not easy.

What are your thoughts on the concept of re-wilding the world?

Yes, I am aware of the idea of re-wilding. It is a great idea but impractical, perhaps, with all of today's interferences with movement of past mega herds and numbers – roads, towns, railways, and more. It is also not needed if only we can get the holistic framework into international consciousness in time to avert disaster beyond imagination, due to global desertification/climate change. I sincerely believe that we can do what is required (and intended with re-wilding) using livestock as I outlined in the TED talk in conjunction with the holistic framework.

Long ago, having a similar idea to re-wilding in a way, I coined the words "game ranching," in the 1950's when I was still influenced by my university training and belief that livestock caused desertification through overgrazing. Later, working with two American Fulbright Scholars (Ray Dasmann and Archie Mossman), we got that game ranching industry going. However, it was one of my many mistakes, as all game ranches I have visited I find are deteriorating, as was our land at Dimbangombe under wildlife alone.

While conservation (leaving things to nature) works extremely well in regions of near perennial humidity, as the large NGOs have established, if we look at national parks with wildlife alone in the seasonal humidity environments, we see serious biodiversity loss and desertification occurring. That was what I showed in one of my TED talk slides – very seriously desertifying national park in the U.S. We are, I am afraid, going to have to rethink this entire concept in seasonal humidity environments, and I see no hope of stopping the degradation other than to manage them holistically.

Does a combination of wild and domestic rotational grazing work?

Because of that wording, *rotational grazing*, I have to be clear in explaining. Once you have a holistic context, you will be able to weigh up many alternatives within that context, thus avoiding unintended consequences to you, the land, or the wildlife. If, when you are there, you still feel using livestock is the best way to move forward, for your own and the wildlife's sake, then you will also see that rotational grazing will be a no-no, as will any intensive grazing system.

You will find that all this complexity is easily addressed if you simply use the holistic grazing planning process in which all the obstacles, other land uses, wildlife needs, as and when known are laid out, and you can see where to place your management herd to have them always in the right place for the right reasons at the right time. If you are on a large piece of land, things you would need to think about to have all working well for the wildlife and yourself are the type of fencing, if, as is likely, you use fencing. Where there are many deer, elk, or whatever, one good move is to only have the fencing where the cattle are at any time, with wildlife free to move over all the rest of the land. This can be done easily with less labour time using permanent posts but moveable wire or tape as stated above [in the section on electric fencing].

What we do on our Africa learning/training site, because we deal with a great amount of varied wildlife, is to remove all livestock bells and use nothing but low stress livestock handling, learned originally from Bud Williams. The livestock are always pretty quiet, and most of the game ignores them. Long ago, we learned with the planned grazing that most wildlife soon adopted a pattern of feeding two moves behind our large cattle herd. I have also witnessed them feeding amongst the cattle but leaving at dawn when human disturbance increased (on a ranch I was helping in Texas years ago).

As you get into planned grazing there is more you will learn. For instance, this coming season [2013] I will be training our staff through the planning to use the livestock management herd to create even more wildlife habitat with more mosaic edge effect. We will be deliberately overgrazing almost all plants on selected sites in long grass but with high animal impact to create open, very short grass areas surrounded by longer grass and brush. Right now, our herders have learned how to heal all the land as we are doing but to also leave chosen sites bare for wildlife needs, and we have about ten such sites.

Many species come to these sites frequently, including francolin and other birds, to dust themselves - now hard to do over most of the land. The livestock, you will find, are an incredible tool with which to do so many things we previously tried to do at high cost and long-term failure using fire or various aspects of technology. We are using the livestock to heal gullies and eroding sites of all manner, to improve crop yields, for firebreaks, thinning bush, creating fawning sites for bushbuck and social sites for other species and, of course, rendering many so-called weeds or noxious plants harmless at no cost. The longer we go, the more we learn, and ours is far from perfect but is exciting, continuous learning.

What can be done on small acreage with difficult conditions?

Q: I have read http://www.savoryinstitute.com/faq/, especially, "How small can your land area be?" and, "Can I use any herbivore for Holistic Planned Grazing?" But, are you still thinking of only hoofed animals and large enough ranches and pastoral areas?

I need animals because I do not eat grains, but my land is a steep terraced place of 1½ hectares. I grow trees and veggies on about one acre. The rest is rocky and pastured by the local neighbor's goats. He will not change his traditional habits. My other neighbors are not locals, and they are vegan. They just cut the herbs growing under their trees.

What can I do with my planned animals? Can I do something like holistic planned grazing with mainly chickens and other birds + guinea pigs? Can the chicken tractor be considered as a sort of HPG and managed according to holistic planned grazing? I think they can be managed in the crop area!

I also know a one horse, one goat owner. Should I consider looking for an agreement? Is there a way to use any hoofed animal without them eating the trees? Or, in your system and any pastoral system, are the animals managed only apart from any crop? Thanks, Xisca

A: Xisca, with such small land units in an environment such as you describe, you would be well-advised to look at ways of using any small animals or chickens, and Joel Salatin is a good example of someone being creative in doing so. In the long run, as more people understand how using the holistic framework helps everyone in any community, you may be able to collaborate with neighbours. Once you do that and all the members work within a defined and common holistic context, any manner of things become possible, as long as in working together you do not confuse "ownership" and "management."

In other words, while each might own small pieces of land, there are things you can jointly be doing with livestock over all small owned bits of land in collaborative management to the good of everyone and the environment and the local economy. There are two current trends in the world I find damaging. Farms are, because of mainstream industrial agriculture, getting larger, and rangelands (or non-cropland areas) are tending to get smaller. To be ecologically (and thus ultimately, economically and socially) viable, both need to be moving in the opposite direction.

We can do this in both cases as soon as management is holistic and ownership is not confused with management. In other words, a large farm owned by one person or company can be divided into many smaller management units, or small areas of land not suited to crops can be managed collaboratively as larger land units.

Can plants achieve the same results as livestock?

Some have asked me, Is there a way of using plants and technology instead of animals – i.e. planting trees, shrubs, grass and/or laying lots of dead plant litter on the ground (none of which can be done without the use of energy and technology in some form)? No, I am not aware of any method that comes close to what people can do using livestock properly managed to reverse desertification. Remember, reversing desertification alone is not adequate. It needs to be done in a socially, economically, and environmentally sound manner both short- and long-term.

Such methods (using labour, money, and technology to restore plant growth) work well producing more food more reliably at lower cost, etc. where humidity is reasonably distributed, as in the green zones or regions of the world I drew attention to in my TED talk - regions where desertification is not occurring. However, over most of the world with seasonal humidity where the large masses of herbivores developed with the soils and vegetation, and where desertification is occurring, I have not seen any water harvesting swales or contouring and planting equal what can be done mimicking nature with animals. I have seen, and of course heard of, projects promoted by permaculture in such areas showing very impressive results planting various species and laying litter with swales, terracing, or other water-harvesting measures. However, analyzing such projects holistically, as we can now do using the holistic framework, always brings a fuller picture to light and, of course, raises the question, Why did the plants need to be planted, the terraces need to be made, the water need to be harvested, or the litter need to be laid with mankind's help now but not in the past? In other words, it

throws up the fact that symptoms are being addressed at high cost (money, energy, and labour) and not the cause of desertification.

These sorts of measures (using technology to restore plant life) inevitably consume much manpower, and/or fossil fuel and money in an addictive manner, requiring constant attention and re-investment of such resources (because only symptoms are being addressed). Almost all of this people can avoid by using animals to address the cause, by using solar energy, and by having no unintended consequences (such as constant reinvestment of resources). There is also the matter of scale. If we are to reverse the man-made desertification leading to most of today's droughts, floods, poverty, social breakdown, violence, war, and climate change, we have to be realistic about scale. We simply have billions of acres to deal with and fast.

A Note to the Reader

Reader, you can use the holistic framework to help you sort out all the complexities of your own particular situation. You can learn more about the holistic framework in our textbook, Holistic Management: A New Framework for Decision Making, 2nd Edition. If, by the end of defining the holistic context for yourself in the situation you are managing and considering the many objectives that will come up toward achieving the goals in your life and business, you find that livestock should and need to be involved, then you should begin using planned grazing to deal with the complexity of animals having to be on the land and integrated with all other uses, cropping, weather, etc. You will find the grazing planning materials, guides, e-books needed on our website, along with other training materials, at http://www.savoryinstitute.com/products-page/.

What are your thoughts on native/non-native plants?

Try not to get locked into or influenced by so many of today's myths. Things like native and non-native are bureaucratic terms. Life has been moving around our planet over a long time, and to give a date and say if something arrived before that date, it gets its visa but if after that date, it does not get its visa is ridiculous and not scientific in any manner. This nonsense results in an endless waste of money and effort.

To date, we have no non-native species on the planet. Bearing that in mind, hopefully, you will just begin welcoming all plants as nature begins filling the enormous vacuum that we have caused. If some plants dominate the community to the extent of becoming a problem of any sort, the normal use of the holistic framework will deal with that. You will learn this during your progress as you manage the situation holistically.

We are very aware of the extreme dangers to many communities of new arrivals, especially if they are predators that did not previously exist in that community. So every effort needs to be made to avoid such introductions. However, once they are treating them as non-native and thus, somehow not following ecological principles, it results in billions of dollars of failure to eradicate any species once in the community, as we see in the US.

What can be done about poisonous plants increasing in pasture?

First, get a good idea of what holistic management means. Once you have defined the holistic context, it will help you. Anyone can just kill plants. When I first came to the US I found that $300 million was being spent annually killing noxious/non-native, etc., plants. They have not succeeded with a single plant in any state, and by calculation, something like $12 billion has been spent now without success anywhere.

Let's look at it differently. Some "problem" plants like knapweed, for example, we have been able to solve (get them to be just one of many more species in a healthy environment and causing no known problem) without spending a dollar. First, plants do not invade or compete, as I am sure most in permaculture know. Plants grow where the environment is well-suited to their germination and establishment, as nature constantly fills any vacuum resulting from our *mis*-management.

Almost all "problem" plants are tap-rooted, and this is very significant in environments where fibrous-rooted grasses provide most stability. If, for instance, you are having difficulty with a toxic plant such as poison hemlock, it will be because it is being provided with ideal conditions for germination and establishment of its seeds. The healthy grassland you want will be, obviously, mostly grass with fibrous root systems. Thus, your management of that land and the livestock needs to be constantly biasing things toward providing soil surface conditions or an environment in which hemlock seeds do not germinate well.

But there are always two aspects to think about: 1. Germination, and 2. Establishment. These are different. Many might germinate but your management might prevent them establishing. I believe with many "problem" plants germination is harder to prevent than establishment. Your management needs to be providing a mass of healthy fibrous-rooted grasses that are not conducive to any germinating tap-rooted plant establishing.

What do you know about the germination and establishment conditions required by a particular "problem" plant? Any information you can obtain here will help, because that should be built into the planned grazing. Developing dense grass root systems will automatically follow good planned grazing. If you are on management intensive grazing, I would advise you to get off it, as that could well be one of the things leading to a good germination and establishment environment for this [undesirable] plant. Otherwise, why would it be filling a vacuum most suited to its germination and establishment needs under your present management?

What is the relationship between cropland and pasture?

Q: Animal excrements are left everywhere on the ground, sure, good for nature and good for more grazing the next years! But, but, but! Most people want to get some poo for their crops!

I see no way to have the animals pooping where it is needed in crops! Well, yes, in rotations, or else they would eat the crop if it is a perennial one.

If we speak about greening the desert, I do see the advantages (I speak about goats as a local example of my place): 1. Goats leave excrements into nature, and 2. People watching goats also watch for starting fires.

I do know that some places are not suitable for growing crops, so I do really ask an open question, and I was enthusiastic at discovering your method, because I did not agree with vegetarians about saving the world by eating grains and getting rid of animals. If we want to feed animal manure to the crops, then a different system is needed, isn't it?

So, I wanted to know if holistic planned grazing is "only" (and great!) a separated grazing method, or if there is a link with crop management? Thanks! Let's spread more grazing animals for the good of the soil!

Xisca Nicolas
La Palma, Canary Islands
Zone 11
Dry subtropical Mediterranean

A: In any perennial crop field, it is not easy to learn ways of having animals dung and urinate directly, and I have no experience doing that, although it would be interesting to try to work out ways. Where we are gaining experience is where crop fields only have crops growing in them during the humid or growing season. In that vein, we are pioneering work in Zimbabwe where we bring the crop fields (about 10% of the land) into the holistic planned grazing.

We are using predator-friendly ways of running the livestock, and this involves moveable overnight holding places or kraals. With the animals in such kraals we can protect them from lions and other predators at night, while in the day we have them herded to the grazing to plan. Those overnight kraals we place on the crop fields during the non-growing season prior to cropping for short periods of about five to seven days. In this way, we have hundreds of animals crowded in a small area on the field every night leaving a lot of dung and urine.

Then, we are generally planting polycultures of crops into those fields with no other preparation. So far, this is working well with yields averaging three to five times the former yields or the yields on nearby untreated fields. During the humid or growing period of the year the kraals are still moved regularly but are placed generally on land we are trying to change dramatically - bare hard-capped areas, eroding gullies, heavy bush we are trying to open up, and so on. There again, the results are dramatic, and I showed some in the TED talk.

What can be done to deal with monoculture threats and to convince policymakers of the way forward?

Policies formed by higher authorities or governments above farmers and people on the land are generally well-meaning attempts at addressing problems – all policies are formed to address problems through one or more objectives. Now, policies (and development projects) need to meet three needs: 1. Be achievable, 2. Not address symptoms, and 3. Not lead to unintended

consequences. Always the context for the various objectives of policy is "the problem being addressed."

All objectives need a context. If they have no context or inadequate context, they amount to "loose cannons on the deck," likely to lead to damaging but unintended consequences. The real world of human societies, cultures, economies, governance, religions, weather, and environmental complexity is holistic – meaning there are no connections, parts, or any of our mechanistic constructs, but functioning in wholes and patterns, in feedback loops and more in such self-renewing complexity. In this real world of complexity, any objective with the "problem" as the context has an inadequate or unrealistic context. Because of this, it is unlikely to be achievable (other than short-term), is almost always addressing a symptom, and is highly likely to lead to unplanned and unintended damaging consequences.

We see humanity experiencing ever growing tsunamis or catastrophes of our own making associated with almost everything we "manage" which involves such complexity. If you look at everything we "make" it involves technology and expertise, but roads, bridges, dams, computers, planes, etc., although complicated, are never complex. They are designed by humans, do what they are supposed to do, are not self-renewing, and do not work with parts missing. Generally, we are very successful with these, as long as we measure success as having achieved the objective, and we ignore longer-term consequences on the environment and society. The holistic framework would help us reduce the damaging consequences of things we make using technology, but for the moment, let me stick to the things we manage, including policies that we do not make but which constitute management dealing with complexity almost beyond human comprehension.

Almost all of this damage brought about by faulty policies (and development projects) in every country (there is no exception) is avoidable when we use the holistic framework in formation of such policies and projects. This is because we work to a "holistic context" and use a set of 10 filters to ensure the objectives and means to attain such objectives are in that holistic context. When this is done, we commonly find almost all of the knowledge required to develop sound policies is available and what is causing the global damage we are witnessing (and have for thousands of years) is the way we have traditionally, in all cultures, made conscious decisions to achieve objectives. Most people, even though we often do not think so when we experience the damaging results, are trying to do the right thing, and it is our way of making all conscious decisions that leads to environmental damage, poverty, violence, war, and more.

How do we stop such policies? Having battled for fifty years on many fronts I know now, from both experience and from studying the research on how truly new paradigm-changing scientific insights get into democratic societies, that it only happens when public opinion forces institutional change in our many organizations. Twenty minutes of TED talk about reversing desertification now having gone to about two million viewers on various sites has done more than fifty years of dealing with universities, farming and ranching organizations, governments or international agencies.

Thousands of individuals in institutions have worked with us developing the holistic management framework for decision making, but they are as powerless as you and me to bring about change within their institutions. Now that public opinion is mounting, institutions will inevitably begin to change. I stress all that we know about such change indicates no amount of logic, data, facts, or evidence changes institutions – only public opinion brings about institutional change. Thanks to social networking today this is beginning to happen in several fields where "authorities" can no longer control information. All that you can do personally is to do your best working with thinking, concerned people and make sure you do all you can to spread public demand for change from today's almost universal faulty agricultural policies.

Decisions about objectives, such as planting trees, require a context. You will have one - commonly "need," "desire," or "addressing a problem" are the most universal, but these are not adequate when dealing with social, environmental, and economic complexity. Without knowing the holistic context in the whole situation you are managing, you will have no idea how to move forward. In general, monocultures are, as permaculturists know, defying nature and likely to lead to problems. I often say we were led into monocultures largely by economists thinking they were more manageable using technology, etc., but these systems are ecologically unmanageable.

No approach I am aware of hits home talking to any politician. Long ago, working with two American Fulbright Scholars, as I did in Africa, we often talked of what we could achieve if only we could get an ecologist into Parliament. Well, later I did and was even president of a political party; I found I could do nothing at all to move forward with new thinking, because it cannot be done in democratic societies before it has widespread public acceptance.

I had not yet read Eric Ashby's, Reconciling Man with the Environment! Had I done so, I would not have wasted my time. As he points out, using America and Britain as his case studies over the last 200 years, the politicians cannot lead with anything new but only when public opinion changes, and it is safe to "lead." Despite knowing and having experienced this, I do keep trying in every way that I can in the hope of bringing about change, short of waiting for mass public opinion change, to save mankind, as we are seeing with climate change right now.

What can be done in semi-arid land where grasslands have already disappeared (for example, Bahia in Brazil)?

The Bahia area is problematic and may well be one of the many from which grasslands largely disappeared with the great destruction of large herbivores in the past. If livestock are currently being run on extensive non-cropping areas, then it is highly likely you will see improvement if you simply start using the planning process we do - thus increasing animal impact while minimizing any overgrazing or over-browsing of plants. The possibility of not seeing improvement is about zero.

However, there is always more to it that we cover with the holistic framework - the need to manage in a manner that decreases rather than increases risk, financial or weather, and to make it profitable step-by-step as the land is improved. The Savory Institute is encouraging people in all countries to establish locally-led and -managed learning hubs, from which knowledge and experiences can spread locally. Do have a look at this strategy on our website. None of us, least of all me, has answers to these difficult situations. What we do have, that is proving so encouraging, is the framework we have developed with its planned grazing process used when livestock are involved, and that is enabling people using existing knowledge and some new insights to begin solving their problems.

When grazing on sandy soil with high rainfall

Qs: 1. Is there benefit to adding minerals for the animals?

2. My pasture is short of legumes, should I add some?

3. What is the role of trees in a cattle operation? I have some areas with some tall (30m+), dense forest. Should I graze it, and how?

4. The grass in my area, if not grazed, will reach about 24 inches (60 cm). How tall should I allow it to get before I run cattle over it? - Richard

A: Richard, in such high rainfall with a sandy soil there is probably a lot of leaching of nutrients, and you may well need to supplement trace minerals, etc., especially so while building soil life and health. The best I ever came across for dealing with such situations was a product produced by a US firm that provided all macro and micronutrients in separate form and allowed the animals to select with no minerals mixed. In cases where we were unable to solve problems of poor animal performance, using all expert advice we could, the animals solved it, taking different nutrients than expected by us. A major intake we found in such situations was actually soda bicarbonate.

As you are engaged in pasture management, do read all you can from Voisin. My wife and I had his main book republished in the US, because so many "grazing experts" were pirating his work without credit and distorting it. Go back to the original. It is exceptional, I think you will find.

If you have to add legumes, it suggests something wrong to me. Get the conditions right, and most take care of themselves. Long ago, when farmers were being advised in Rhodesia to introduce wonder legumes from Australia, I questioned it, because Africa is full of legumes, but ours were fading out.

I had clients introduce Australian legumes but spend little on them – I suggested instead of spending money planting them over large areas, simply plant some narrow strips from the top of slopes to the valley bottoms across all vegetation types, put them and all the land under holistic planned grazing, and watch. If as good as claimed, they would spread. On all [of those

ranches], the Australian-introduced legumes faded out, and our own came back in strength. It was a lesson for me.

Again, without context and knowledge of your situation, I cannot answer your tree question or your long grass question. I used to answer such questions routinely when I was consulting, but I was unknowingly using the universal way we humans make decisions. That is, to achieve objectives with inadequate context. I was almost always wrong – about 98% of the time.

Thankfully, I discovered for myself why I was so consistently wrong (like all consultants) and so have, since then, concentrated rather on teaching people how to make such decisions holistically, rather than ever be told what to do. I wish I could help more but simply cannot without being there and understanding the entire situation better – I would do you a disservice.

Regarding the long grass, I guess all is relative. I would simply get animals grazing routinely with the holistic planned grazing process in such grass of two foot height. Our long grass is about 6-12 feet high, and generally, we are dealing with this problem a great deal in Africa and on the Africa Centre for Holistic Management ranch. We get the main large land-managing herd (about 500 cattle with about 100 goats and sheep) into the long grass to trample it down as soil-covering litter as much as we can.

Most of the long grass we find is a symptom of too much use of fire in the past - it is largely fire-dependent. As such, we are gradually, through using the livestock, trying to convert such grassland back to the former animal-maintained grassland/savanna or the long distant past – shorter, more leafy species with greater mix of legumes, etc. but all simply through mimicking nature, using the livestock integrated with the wildlife. So far, we are encouraged by the results.

What can be done on land with ancient erosion and desertification where traditional pastoralists of goats are already involved?

Q: I have had the pleasure of working and living in the Kyrgyz Republic, and I still have family there. The elevations are extreme and the majority of people are nomadic herders. The country is transitioning from one that is predominantly a herding nomadic economy to one that is attempting to become agrarian. For all intents and purposes, grazing is accomplished in the mountain valleys with small ruminant herds (goats, sheep, etc.), with cattle making up a relatively small portion of all grazing animals.

Valley grazing in the mountains is relatively stable, but the mountainous grazing zones are markedly deteriorating, and here comes the catch, because of alleged overgrazing taking place in these zones. I have been in quite a number of discussions relative to this type of situation, and I am having difficulty convincing my family, clan, and neighbors about the benefits of aggregation of animals and the gains it would provide for their herds, as well as for improvement in the sustainability of the deteriorating environment.

My two questions are the following:

1. How would you approach a situation where folks are adamant in placing the blame for the deterioration of the mountainous grazing zones and their apparent ossification and desertification on overgrazing? How could I facilitate a discussion that would provide the foundation upon which we could develop consensus from a micro trial, and then, once this trial is successful, move onto a larger or macro trial? Most grazing land is either family or clan owned or rented land.

2. Given the relative small size of herds in Kyrgyz, and taking into account that goats are not really grazers but are rather browsers, how would you seek to begin rehabilitating a small area to demonstrate the effectiveness of your techniques with a mixed herd consisting of goats, sheep, and a very small number of cows (1- 2 animals) + a horse that is generally used by the shepherd(s)?

Thank you for your consideration,
Alan

A: There may be an ancient pattern of terrible erosion and desertification over a long time, as well as recent deterioration. If you refer to my TED talk, you can see that a large portion of the earth's landscape can only feed people from livestock. In this situation you describe, you would need to do the best you can at the local level, while others of us keep trying to get governments to understand the need for all policy to be formulated holistically. The policy there is, as is almost universal in agriculture, going to cause unintended consequences and violence ultimately. This can only be avoided by using the holistic framework to form policies in place of what policymakers are using.

Placing the blame on overgrazing is universal and taught in universities, agricultural colleges, the range management profession and is the belief of governments, international agencies, and the major environmental non-profit organizations (as I said at TED – just as we once thought the world was flat, we were wrong). With this in mind, we cannot blame the pastoralists for believing overgrazing is the problem. As you now know, over-resting due to too few animals is the greatest cause of the desertification, and when the plants are at the same time exposed to those too few animals for too long, the resulting overgrazing of plants only adds to the problem – both by the damage to those plants and by the fact that they can no longer provide the ground-covering litter.

Rangelands cannot be overgrazed. Only plants can be, and when they are overgrazed on over-rested rangelands it is the straw that breaks the camel's back, and it is the overgrazing that gets blamed. There are thousands of PhD dissertations, but I have yet to see one that provides any scientific evidence that overgrazing is caused by the numbers of animals – all simply express it as a scientific truth, despite no science to back it. These beliefs being so old and universal, the best way to have pastoralists begin to understand may be to have them do a simple demonstration for themselves.

Have them agree on setting aside a small area (say one hectare). Assuming they herd their animals, have them mark the boundary of that plot with stones or whatever. Agree to not graze any animals in it except for, say, two times in the year for one day each time. When they do so, put a great many animals into the plot.

Then, just watch what happens, and keep doing that, observing and talking about it. They must keep all animals out of that plot in between, especially if there is no perennial grass at present. The pictures I showed in TED where the land had been bare and eroding for well over 30 years, regardless of how much rain we got all became grassland almost immediately after concentrating our herd on them, and your pastoralists will, I assure you, find the same.

I have suggested a long recovery period here only because this is only a demonstration of land recovery using high animal impact and no overgrazing of plants. Later, when holistically planning grazing it will be different. This is just to show everyone that too high a level of partial resting of the land is the main problem – the few animals wandering on it without bunching or herd behavior, leading to bare surfaces often algae covered, capped, etc.

Do not worry about goats being mainly browsers – they graze and browse. When you do a test plot as described, you will find that all plants begin to grow better, including the browse. The first ranch in the world ever to double the livestock numbers over the entire ranch was that of Dave Jack in South Africa. When we began it was desert bushes and no grass. We actually measured six kilometers from one annual grass plant to the next.
We began the holistic planned grazing, increasing the numbers as fast as we could. In that planning, I based the planned recovery periods for all plants (browse that was providing the bulk of feed, and for presently non-existent perennial grass) on the needs of the non-existent grass. My reasoning was that only perennial grasses with fibrous root systems could stabilize the soil in such low rainfall and not tap-rooted plants, as are all dicotyledonous plants. We were severely criticized by academics and government officials and told we would kill the desert bushes because they had research showing heavily browsed desert bushes needed 18 to 24 months to recover from severe browsing. We decided to use 30 to 60 day recovery, depending on daily plant growth rates to balance the needs for livestock performance and land reclamation.
This gave us, on average, very short grazing periods, so browse plants were no longer severely browsed and began to provide far more feed for the increasing numbers of animals. Perennial grass began to appear and the desert bushes began to provide far more feed. It is now grassland, and we did that entirely with small stock. The critics faded away.

Only changing public opinion is going to lead to governments changing policies, and this is universal - in Asia, in the UK, the US, or any nation. We are doing all we can to mount that public opinion change everywhere – no hope of addressing global desertification or the increasing droughts, floods, poverty, violence and climate change without that. Forming policies and development projects using the holistic framework is far easier than we have done over centuries. The difficulty is entirely how we get that knowledge into institutions in any

country. You can stay informed on the developments through our website www.savoryinstitute.com.

Does holistic management apply to wetlands?

The short answer is, yes. We can manage holistically, and need to, in all walks of life and all environments. Because of the historical origin in trying to solve the thousands of year old problem of desertification, people tend to think holistic management is about livestock. It is not, although they are essential to addressing desertification and climate change - where nothing else currently known to mankind (than livestock) can do what is required on the scale and with the frequency required.

Most of our materials do still leave people focused on livestock because we are at SI concentrating on global desertification first, and that will be corrected over time. I did once experience a rancher repeating training with me gaining a great "ah hah" moment. We had a factory owner in the training group training with ranchers. He posed a question about two problems in his factory - one, trying to determine whether some parts should be manufactured in house or externally contracted out, and the second, a high labour turnover costing the factory a lot. We tackled these with him solving his problems using the holistic framework and then had a coffee break. The rancher came up to me and said he was so glad to have been there; finally, he got it that this was not about his cattle but about making more complex decisions in his entire life and business.

For years, I lived in the Caribbean daily snorkeling amongst the beautiful coral reefs, watching them slowly being destroyed by islanders blaming tourists largely. The only way I knew to end that destruction of coral reefs underwater was to have used the holistic framework. I could not persuade authorities.

Yes, try to learn more about this if you want to save wetlands or manage wetlands.

What can be done in a densely wooded forest?

Q: My wife and I have a newly purchased property on five acres of densely-wooded forest with a high canopy of tall/thin pine trees which stand about 80 feet. Much of the day's light is robbed from the vegetation on the ground, but we really want to install a food-forest and herb garden system. All too often, we see homeowners massacring large amounts of forest to get more sunlight to the desired area, without concern to what effects it has on the overall environment.

Is there a way to study the sun's path, only taking down trees that are in this direct path? Or is it best to simply thin out existing trees to allow more light to reach the soil? We are desperately trying to figure out what is the best strategy in getting the most out of our situation, while maintaining the forest's natural beauty.

Also, if you don't mind me asking, do you have any other suggestions that would steer us in the right direction? We don't want to chop down the whole forest just to get more sunlight, but we want to be able to sustain our own vegetables and spices at the same time.

A: Frankly, I am at a loss on this one. The only thing I can think of is for you to track down Chris Maser if you can (author of excellent books that greatly impressed me), and see if he has advice. Sorry I cannot be of more help with such a localized matter out of my experience.

Working with Permaculture

If you are dealing with a small farm, integrating many crops and small livestock - chickens, ducks, a few sheep, or whatever - in such cases, we generally get people to engage with permaculture and its great network of people exchanging ideas and cropping practices. There is no "body of knowledge" attached to the holistic framework as permaculture has. The areas where there is a body of knowledge associated with using the holistic framework are only those areas where entirely new thinking came about because of the insights that led to us being able to develop the framework. Those are: 1. The land infrastructure layout associated with running livestock (because once we knew overgrazing had nothing to do with animal numbers, we no longer had to isolate soil types or be influenced by existing development or water), 2. The holistic grazing planning process because that could address the full complexity integrating livestock, plants, cropping, wildlife, planning constantly for droughts etc. that no mob or any other rotational grazing system can address, and 3.The holistic financial planning process that filled omissions in conventional financial planning not dealing with human psychology and photosynthesis from plants growing on regenerating soils as the ultimate foundation of any economy.

What are your thoughts on combining permaculture, hugelkultur, and mob grazing?

There are, I understand, many people who are managing holistically and who have permaculture training and experience. We always urge people in any cropping situation to become involved with permaculture. I would shy away from mob grazing, as it is a derivative of my work that dropped the planning process, which is the whole reason for the consistent success we see with holistic planned grazing.

What can be done in rough, hilly country with goats and crop production?

Q: I will not speak about my own place, as I am not farming animals, but about what I can see around. I am concerned. I eat local meat while most people buy frozen meat coming from South America.

For information, here is the situation, at least in La Palma, which is the greenest of the Canary islands: Goats are the most important livestock resource, then some sheep, and a few places can have cows. A lot of people have pigs. The ancient people of the island were absolutely living on goats, and they did not deforest the place. Then came the Europeans and modern times,

and there was a recent period with some over-grazing, and then, they reduced the herds. It is said that there are 8,000 goats in La Palma.

Goats around here have a paddock with the necessary place for milking. Then, they are freed most of the day in different places. All farmers do buy some granulated food, something with alfalfa coming from abroad.

Summers are dry, so people go with a car up in the mountain, into the laurisilva [a type of subtropical forest found in areas with high humidity and relatively stable, mild temperatures], cut some leafy branches, and take them back to their animals. There are local shepherd dogs, but I do not see them really at work. They only help by frightening some goats, so they keep the right way back home in the evening.

About cows: they live all year long outside, as it is not freezing. They are bred only for meat, so no milking. They are in fields, but their main food is green banana - with chemicals.

PROBLEMS I see: 1. Not enough access to food when all is dry (food is brought to the animals in summer), 2. No fields or savanna (but no desert either), just bushy (so I do not see how it can be fenced, even with electricity), and 3. I have never seen that ALL the vegetation is eaten in a place before moving. Anyway, this is bush and not pasture, so they cannot eat everything, and they choose what they like best. (I have to ask about cows' pasture land).

Xisca Nicolas
La Palma, Canary Islands
Zone 11
Dry subtropical Mediterranean

A: Xisca, I have had a good look at your pictures and your site using Google Earth, and you certainly do farm in a difficult situation. I hope you are able to read my other responses to gain a better understanding of holistic management. Having said that, let me make some comments. You seem already committed for many reasons to farming such rough hilly country, and you are rightly terracing to grow most crops, so I can think of no better people to help you than those in permaculture. Goats are probably the best suited to such rough wooded hills. Keeping them confined and carting feed is, as you know, costly in time and labour. If this has to be done, then think about using small, easily portable corrals for them and not keeping the corals in only one place. In this way, the portable corrals can be incorporated into crop field improvement as people in India (Tamil Nadu) have done for thousands of years.

If you are able to run the goats in those hills, the only practical fencing I currently know of is very simple single strand electric fencing that is moveable, using fixed post but movable wire or tape. Again, this should be on the basis of planned moves, so over-browsing is minimized, which will greatly increase production of all plants, goats, and soil cover. It is commonly believed that goats do not respect electric fencing, but they do given training and moved in a manner that reduces nutritional stress, as you would do with planned grazing.

Long ago, we did the initial training with very clever goats by using a small training area and painting the wire around that small area with molasses. After one lick, the goats had a healthy respect for the wire. From then on, the wire in the paddocks was respected, unless we put nutritional stress on the goats – which we avoid, as with cattle, by never having animals graze or browse all the vegetation.

With well-managed holistic planned grazing people never force animals to eat everything (that was done with what was called non-selective grazing, yet another grazing system that did not work). Doing so will always stress animals and lower their production. Most animals can be trained also to move themselves by simply training them to a whistle in the usual manner – whistle followed always by reward. Within days, they know hearing the whistle means go to the gate and move to fresh browse or come home to a corral to get a small reward. I have known of wild cattle that took four men on horseback a full day to move out of hilly, heavily bushy country, receiving four days of training – after which one man on foot could move every single animal in twenty minutes.

Do holistic management concepts apply to the urban environment?

No, holistic management concepts do not apply anywhere. I know it is initially difficult to shift our paradigm, but asking, Do holistic management concepts apply is like asking do music concepts apply. Managing holistically simply means using the holistic framework to manage the complexity always present with every situation we manage.

The holistic framework helps us make decisions in all walks of life that are socially/culturally, economically and environmentally in our own enlightened self-interest. Using the holistic framework most certainly applies in urban environments and will eventually have to be used if we are ever to work out how to sustain cities. All management, in the end, will need to be holistic. Period.

We cannot continue with the reductionist management of the past thousands of years if we are to avert disaster on a scale never before experienced. Many people try to use a holistic approach or use holistic concepts, but I have yet to see that ever work if looked into closely. I guess it would be like taking a pregnant approach, or trying to be a little bit pregnant. It just does not work.

Many academics in particular think that holistic management is no different than integrated science. It is entirely different – no matter how many scientific disciplines are integrated management remains reductionist as long as objectives of management have inadequate context to address nature' complexity combined with social/cultural and economic complexity.

Fortunately, people working on ideas like eco-cities and working with new thinking in global finance and economies, etc., are increasingly beginning to collaborate with us, and hopefully, with increasing collaboration we will begin working out solutions. None of us has answers and

least of all myself. All we have, and it is encouraging, is a framework that is now empowering people to work out answers mostly using the amazing amount of knowledge already available.

Read through the other sections and some of our other information available on our website to get a better feel for what managing holistically means. What we had not known until recently is that management, in all situations throughout history, in all ages and cultures, has a common underlying, very simple framework. It was that underlying framework, and not any other factor or lack of knowledge, skill, or motivation that led to our historical ever-mounting problems - today hitting us one after another and culminating in climate change as far as we can see. Now, with the modifications to our present underlying universal framework, embodied in the holistic framework, we are seeing encouraging results wherever people actually use the holistic framework. Gradually, understanding of this is creeping into public awareness, but it has been a long, slow process.

What is the difference between rotational, mob, short-duration, cell, and holistic planned grazing systems?

In the US in particular, there are a great many grazing systems being promoted by various people, and it has to be very confusing to the public, I know. Let me try to help by clearing all the confusion, starting with the fact that there is no holistic planned grazing system. In a business you call the accounting system a system because setting up a system is possible and pretty predictable with money received and spent. But you do not set up any such system to run the business.

The word *system* is used in management but also in things like ecosystem (with different meaning entirely). In management, it is wise to use management systems only when everything is predictable or reasonably so. Thus, it is wise to use accounting systems to keep track of accounts payable and receivable or inventory tracking systems to ensure a supermarket or your farm workshop does not run out of supplies.

However, when it comes to managing any business (and agricultural businesses are perhaps the most complex ever) it is extremely unwise to use any management system because almost everything is so unpredictable. Here it is wise to replace the management system mindset with planning by process (plan, monitor, control, re-plan). When realizing we could only reverse land degradation over most of the world's land - much of which is of too low a rainfall for crops or trees - by using livestock, I mentioned in the TED talk facing a dilemma – how to do this?

We knew in the 1960s that all rotational and other grazing systems, no matter how flexible, had failed and would keep failing to reverse desertification where it was occurring. As explained, we solved this by planning grazing with a very simple planning technique developed over 300 years. I took all those years and experience of immediate battlefield planning by the armies of Europe and simply adapted that, with the addition of a chart (to handle four dimensions that armies never had to deal with) to the complexity of animals, plants, soils, weather and much more.

It is so simple I could train children to do it. I found that worked when first tested almost fifty years ago. It has always worked when used, and I am not aware of a single failure by anyone using holistic planned grazing.

The moment it is converted to a system (holistic planned grazing system) it will fail, and that I will stake my life upon. Thousands of ranchers and many academics converted it to a system, and there are countless wrecks, and papers published saying it did not work. Of course it does not work if it is not done. None of the many academic peer-reviewed papers critical of our work ever even attempted to study the planned grazing process.

Why, people might wonder, are there so many grazing systems being promoted in the US? To understand this, we have to look at the research about how new innovations spread in society. The recognized authority on this was Everett Rogers who, in his book, The Diffusion of Innovations, describes this situation well.

When someone learns something new, for various reasons including ego, they tend to give it a twist and a name of their own, and so slowly, new innovations spread. When I came to the US there was really only continuous grazing and Hormay's rest-rotation system being widely promoted. One university soon after began to use Andre Voisin's work on pastures in Europe and his excellent "Rational Grazing" (rational translated to English meaning "thought out or planned" and not rotational), applicable to pasture situations (with good humidity distribution).

Within a few months of my beginning to train people in the US (eventually about 12,000), there were about a dozen grazing systems plagiarizing my work or using derivatives of holistic planned grazing. In every case, the planning process and entire reason for consistent success was dropped (that, after all, would identify where it came from). On top of this is the usual confusion as word of mouth (or writing) spreads. It is a bit like, "Send reinforcements we are going to advance," after being relayed through two people becoming, "Send refreshments we are going to a dance!"

The derivatives come either from Voisin or myself. Both Voisin and myself recognized and warned of the dangers of any form of rotational or other grazing system. I have no system and am totally against any grazing system, because no rotational or mob grazing ever devised can address the complexity farmers face. Remember, mob grazing has been the norm for over ten thousand years amongst many pastoralists, causing the vast man-made deserts.

Today, when anyone is grazing animals on planted pastures, rain-fed or irrigated, or on a small farm on land with reasonably well-distributed humidity throughout the year, I often suggest they follow the work of Andre Voisin, who developed Rational Grazing ("thought out or planned" was translated to English as "rational," not rotational grazing). My wife and I had his book republished by Island Press to help people keep using his original work. His is an exceptionally good book in pasture situations where humidity is well-distributed throughout the year.

Remember, holistic planned grazing was developed by thousands of people working with me from the edges of the true desert with no rainfall to the very high rainfall tropical forests on the Brazil-Paraguay border and all environments between, so it is pretty universal. Many of the derivatives - short duration grazing, cell grazing, wagon wheel system, management intensive grazing (MIG), or the latest mob grazing - will improve grazing lands up to a point, and you will note such systems are used in regions of reasonably good atmospheric and soil humidity throughout the year (the green zones in the satellite view I showed in my TED talk that are not generally experiencing desertification). Here, people are happy with what they experience, and that is great.

However, because such systems do not address complexity, what the people using them do not see or understand is what is missed, such as hidden costs. I once visited a much-promoted "successful" grazier in the US. He had received training in holistic planned grazing but, like many, had dropped the planning in favour of simply rotating his livestock around many paddocks on the basis of short grazing periods in a flexible manner. In his case, it was being promoted as a leading success story with MIG, and now it would probably be called mob grazing, as that is the latest fad.

It was a good season with abundant rainfall. I found him leasing additional land, costing money he could ill afford. Asking him if I could simply plan his grazing with him, we did so and found no need to lease grazing. He simply had too many mobs and was planning grazing periods and being flexible with those as stated. When we planned recovery periods, changed the number of herds and planned backwards also to assist better planning, we found no need for leased land.

I was taken once to a "Voisin pasture" operated by a university and shown it with great pride. Not willing to offend my hosts, I kept quiet but silently thought how Voisin would be writhing in his grave. Had his work been understood and not changed, it would have been easy to at least double the production of the pasture they were so proud of.

Only yesterday, I watched an excellent video about mob grazing, showing wonderful results in the US in an environment of relatively good atmospheric humidity distribution. However, I also noted prescriptive and dogmatic statements that will lead, for example, to farmers really battling financially into wrong actions. Long ago, I used to consult and advise, and with hindsight I learned that almost all my advice was wrong. We simply cannot be prescriptive about any practice in complex farming situations. Today, we at SI only try to help farmers by empowering them to make better decisions and plan the complexity whenever grazing animals are involved.

I do not respond or react to the derivatives of my work. People will gradually learn, and there is nothing else I can do. It does stress me, though, to see people confused and achieving less than they can if they only go back to the originals - either Voisin'sRational Grazing for small farms or pastures in more humid environments, or holistic planned grazing for any grazing worldwide in all environments. If anyone improves on either of these, go for it, as I will, because I have no aim but to help people succeed.

The holistic grazing planning process is a very simple step-by-step process, recording each small piece of information that is in your head on a planning chart and then, toward the end, plotting all the planned moves of the animals – to get the animals in the right place, for the right reason, at the right time with the behavior needed. We often plot moves backwards, which is powerful but dropped in the derivatives – hard to rotate backwards, I guess! Fortunately, the derivatives are generally not used in the seriously drought-prone regions. There we find the planning process plays a major role in avoiding catastrophes in the very poor years in a manner that simply cannot be done with any grazing system. Almost everyone has been confused by so many derivatives, as I feared would happen but could not prevent.

[Please be attentive when choosing a rancher or anyone else to mentor you. Even if you feel our institute has endorsed them, please check into whether or not they promote planned grazing, as opposed to any of the many rotational grazing derivatives – too many to mention all but including all forms of rotational, short duration, cell grazing, mob grazing, wagon wheel grazing, management intensive, cell grazing for profit, etc. If you do, as you may well do, choose to ignore the full complexity and use any of the derivatives, make sure you are in a reasonably well-distributed humidity environment on a small piece of land.]

For Further Learning

It can be frustrating [trying to explain applications with so many variables] on a computer. It is much easier on the land and with the planning process. The grazing planning is profoundly simple. I have trained an African who just left high school to work on a ranch to do it in 1.5 hours. He did a superb job. So can you.

Connect with Savory Institute, which is at the heart of the development of and training in holistic management globally. Get their free e-newsletter and also learn about their strategy of getting locally-led and -managed learning hubs around the US and world. We are working toward getting people, organizations, universities, NGOs, and more collaborating as we all learn faster how to manage holistically. We are going to need tremendous collaboration if we are to produce more food than eroding soil and address climate change, to which we cannot adapt any more than can the proverbial frog in slowly boiling water.

Begin your learning journey by signing up for our regular newsletter through www.savoryinstitute.com. On the products page, you will also find e-books about teaching yourself various aspects of holistic management. In the Handbook written by Jody Butterfield and myself, available on site, you will find the really simply laid out information on land planning where livestock are involved, holistic planned grazing, and holistic financial planning.

All are written in such a manner we believe people could largely teach themselves. The grazing planning process is a very simple step-by-step process, recording each small piece of information that is in your head on a planning chart. Then, toward the end, you plot all the planned moves of the animals – to get the animals in the right place, for the right reason, at the right time, and with the behavior needed.

Last Words

I sincerely hope I have been able to create at least an awareness that greatly improved cropping polyculture practices alone will not reverse the desertification taking place over billions of hectares of the world's land - land so vast, where humidity distribution is inadequate to maintain ecological processes using high levels of manpower, fossil fuels, and money to plant tap-rooted species (trees, shrubs, forbs) as the main agents of stability and production.

I also hope I have helped dispel the widespread beliefs that managing holistically is some sort of grazing system, an understandable confusion, because so many people have developed plagiarized derivatives of our work.

Long ago, I wrote that I could see only two things that might now save humanity – an issue large enough to unite us as a species and the means for ordinary citizens to openly communicate rapidly around the globe (free of censorship by authorities, experts and governments). Climate change is now with us, despite remaining denials, largely due to multi-billion dollar corporate smokescreens. The means for us to communicate globally we are now using as I write.

Agriculture is not just crop production. It is the production of food and fibre from the world's land and waters. As currently carried out with our reductionist management, agriculture is, without any doubt, mankind's most destructive endeavor ever, having destroyed more civilizations than armies and now a greater global threat even than fossil fuels. As I pointed out in the TED talk, even in a post-fossil-fuel world of benign mass energy, climate change will continue because of agriculture, if we do not change.

Agriculture always involves managing "complexity" - social, cultural, environmental, and economic. In a world in which nature and complexity function in wholes and patterns, as Smuts wrote in 1926, management needs to be holistic and cannot successfully be reductionist. Management also needs to be based on sound science and scientific principles, few could argue. What constitutes reductionist management? I would define it as management in which the context for any objective is need, desire, or addressing a problem.

All objectives require a context and such contexts are too simplistic for the complexity of the real world – hence, agriculture now contributing to global desertification, poverty, social breakdown, abuse of women and children, cultural genocide of ancient proud pastoral people, violence, war, and climate change. It was this same reductionist management that led to past civilizations failing, as their societies proved incapable of managing the complexity of rising population and agricultural environmental damage, before fossil fuels, monocultures, and industrial agriculture.

The role of permaculture practitioners is vital if we are to address our flawed agriculture, and I admire the level of global networking they have achieved amongst wonderful, caring, open-

minded people, helping one another with ideas and experiences and applying sound principles to crop and small animal production mainly.

I hope that I have been able to at least create an awareness of the need for the holistic framework in all management – from household and small farm, to government and international policies and development projects. We at Savory Institute are striving to get the holistic framework into international consciousness rapidly to avert tragedy beyond imagination. The road over the past fifty years has been rocky indeed, because as John Ralston Saul, studying our major global blunders since Voltaire and the age of reason, wrote, "The reality is that the division of knowledge into feudal fiefdoms of expertise has made general understanding and coordinated action not simply impossible but despised and distrusted."

The leadership the world desperately needs is never going to come from universities, experts, governments, major NGO's, or international agencies. It can only come from ordinary people like you and me. With this in mind, our institute is embarking on a strategy of having people around the world form learning hubs that SI will connect to one another through an Internet platform. All such hubs are to be locally-led and -managed and to involve some land base.

I sincerely hope that permaculture practitioners worldwide will begin to understand the need for management to be holistic and join in such collaboration. Only through massive collaboration between organizations and people of all cultures have we any hope of jointly beginning to reverse desertification and develop an agriculture that does produce more food than eroding soil to sustain civilization as we know it. I hope many of you will join us in creating this vast, practical network of people learning with one another and at least get our regular news through our website.

Managing holistically is management at any level in which objectives have a holistic context. This is a new concept, not previously in any branch of science, philosophy or in any religion, that ties people's deepest values and culture to their life-supporting environment.

Quotes for Positive Change

Please, all of you, feel free to use anything I wrote and distribute as widely as you like in any manner you can. We need to get greater understanding to billions of people, because our survival depends on a more informed citizenry in all nations and the commonsense of ordinary people.

Warmest regards,

Allan