

Bhoomi

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Smart Cities or Regenerative Cities?

Our Cities need Regenerating,
Our Villages must be Valued

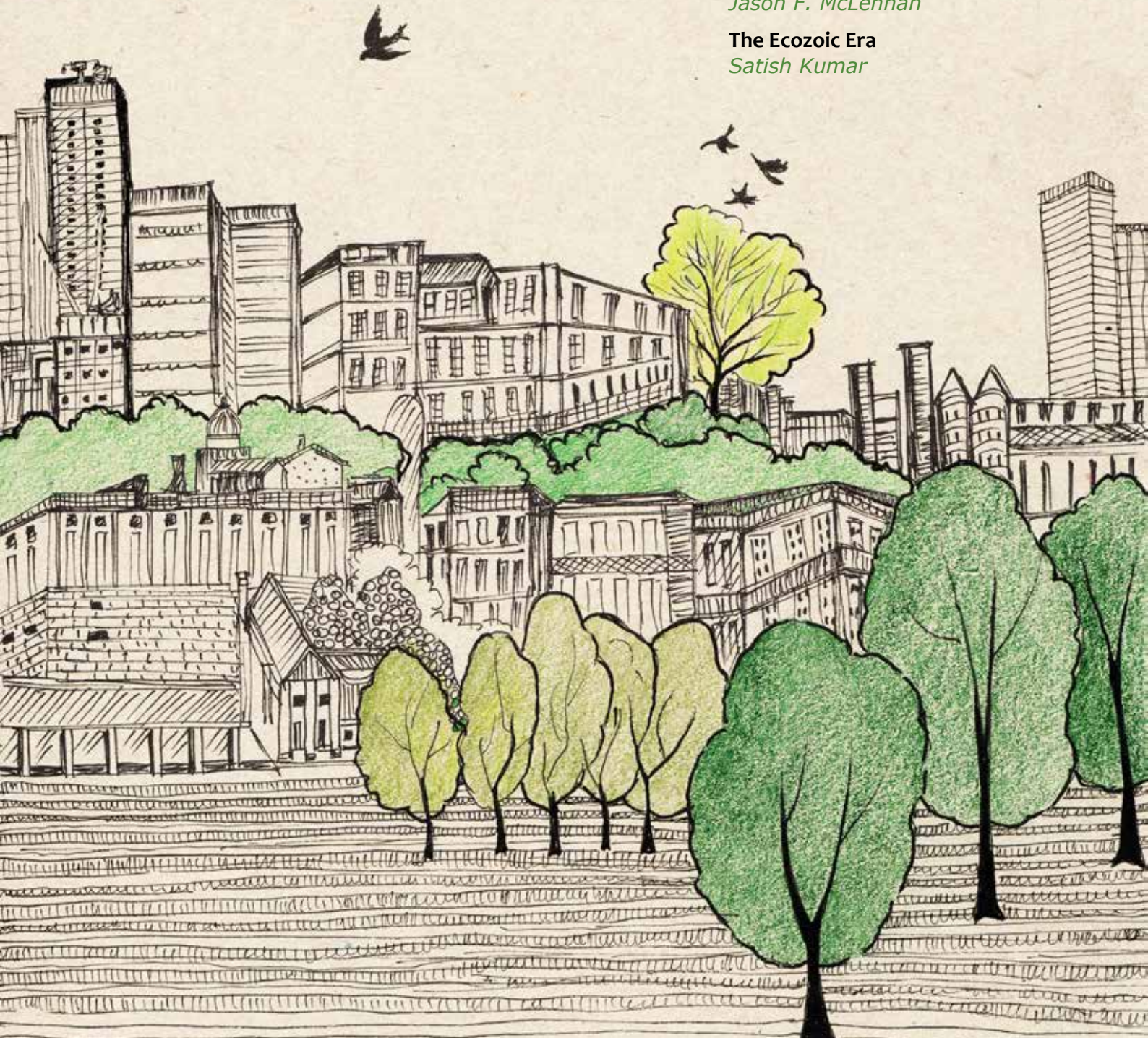
Herbert Girardet

To Save Our Cities, Put Children First

Jason F. McLennan

The Ecozoic Era

Satish Kumar



*A developed country is not a place
where the poor have cars.*

*It's where the rich use public
transportation.*

Gustavo Petro,
Mayor o Bogota, Columbia

What do we want? Smart Cities or Regenerative cities?



Photo Courtesy: Kinshuk Kashyap

Do we need 'Smart' cities or 'Regenerative' cities?

Very often a word, a phrase or an idea can mislead us, or mislead even several generations of human beings. We have many such words that are part of the colonisation of our minds, part of determining our world-view and our world today.

'Bacteria cause diseases' is one such idea – and we have a world today which gives very little importance to education for immunity building that can save us from diseases of all kinds and also prevent the breeding of many disease-causing bacteria in our bodies.

The words 'fertilizer' has come to mean man-made chemicals essential for agriculture – and made us forget that Nature has created natural fertilisers for millennia on which life has thrived amazingly well.

'Development' has come to mean progress, something promoted as undeniably good, while what we see today alongside the prosperity of a few, is the destruction of thousands of species, of forests, of human communities and possibly even our survival on the planet. Not real development at all.

The 'Smart Cities' idea seems to be yet another of these powerful words that when repeated often enough by political leaders and the media get accepted as, of course a good thing for all of us. 'Smart' conjures up ideas of slickness and quickness like the 'smart phone'; of fancy cars on smooth wide roads, of better connectivity for more smarter phones and computers, of slums tucked away out of sight, and hopefully more basics like water and electricity for all.

The common perception seems to be that the smart city mission addresses the largely urban elite's enchantment with 'world class' cities. The current model of 'development' focuses on development of infrastructure and consumerism with no thought given to the spatial context or the carrying capacity of the region the city exists in. It also neglects the needs

of rural India and encourages a constant migration from villages to cities. Will the smart city idea as a solution to the complex issues of life today work?

Perhaps the use of the words "Regenerative Cities" instead of "Smart Cities" can help unfold a whole array of changes which make for much more intelligent growth and wellbeing; a whole new way of bringing them about, involving those living in the city, transforming people, place and philosophies of living.

In this issue Herbert Girardet and the Resurgence Magazine have generously given us permission to use his article, "Our Cities need Regenerating, Our villages must be valued". His book "Regenerative Cities" was the inspiration for the theme of this issue - making us focus on regenerative cities for a better future.

Derrick Jenson has shared with us another article which again questions the term "development", which he says is nothing more than 'colonialism' applied to the natural world. We are thankful to all our contributors including members of our panel of advisors, Satish Kumar, Ashish Kothari and Devinder Sharma.

The idea of regeneration does not imply a denial of all that has been brought in by technology and capitalism. Truly regenerative processes will let die what is decaying and build on what has possibilities for aliveness and greater wellbeing.

On behalf of the Bhoomi team I wish you a wonderful new year. May 2016 find us spreading the idea of regenerative cities, regenerative schools, regenerative food system and so on. That is a really good word – it would be great if it captures our imagination!

Seetha Ananthasivan

(seetha.bhoomi@gmail.com)

Eternal Bhoomi is committed to bringing you holistic perspectives on Nature and sustainability from renowned writers and thinkers as well as practical ideas and examples of earth conscious living from people around the world.

Can our Cities Become Regenerative?

Why are our modern and modernising cities all over the world built the way they are, with the most importance given to roads and big buildings? The answer seems obvious, but can we imagine and work towards a future where our cities and rural areas are regenerative and synergetic?

Vantage Point

6 The Ecozoic Era

Satish Kumar

8 Sustainable Development is a Lie

Derrick Jensen

Regenerating our Cities

11 Our Cities need Regenerating, Our Villages Must be Valued

Herbert Girardet

14 To Save Our Cities, Put Children First

Jason F. McLennan

16 Green Cities and Smart Cities

Alexander Aylett

20 Should Bangalore Aim to Become a Smart City

Sumetee Pahwa Gajjar



Positive Action

Stories of people and city leaders bringing about changes in cities around the world

22 Bogota

23 Bologna

24 Denmark

25 Transition Towns

26 Cittaslow Movement

28 Indian Cities

Holistic Science

30 The Container of Life

Phillip Franses

Eco - wisdom

32 Resistance and Reconstruction

Ashish Kothari

36 What does a Sustainable Future Look like?

Todd Reubold



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Agriculture

38 How about Smart Villages, Mr. Modi?

Devinder Sharma

40 Keepers of the Seeds

Swetha Daga



Holistic Science

42 Urban Infrastructure - What would Nature do?

Nate Berg



Education

44 If children lose Contact with Nature they won't fight for it

George Monbiot

Expressions

46 Lessons from Boulders, Rivers and the Full Moon

Priyanka Raja

Health

48 Ordinary Moments Make You Happier as You Get Older

Dr Mercola

Food

50 Manga-Inji - to add zing to simple dishes

Preethi Narayanan

52 Announcements

54 Bhoomi Programmes

56 Bhoomi College

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The Ecozoic Era

We are not in the Anthropocene Epoch, but entering into the Ecozoic Era.

The first principle of ethical and ecological living is to live in harmony with oneself, with the fellow members of the human family, and with all the species of the Earth community. Unfortunately, rather than living in harmony, the industrial societies have been busy controlling, dominating and reshaping the natural world to suit the industrial design and financial greed of modern civilisation. Now it is being proposed that we should name our age 'the Anthropocene epoch', meaning 'the age of Man'.

The Nobel Laureate Paul Crutzen, who proposed this new name, has very good intentions. He believes that by highlighting human centrality and the impact of human activities upon the natural world we might wake up and do something to save the planet; we might develop a new sensibility for sustainability. However, many

ecologists and environmentalists are worried about this proposal and are asking a fundamental question: by naming a geological epoch after ourselves are we not committing the ultimate act of human arrogance?

There is a reason for such questioning. Human hubris has been in evidence before – even when intentions may have been good. For example, the Whole Earth Catalog once proclaimed that we are “as gods and might as well get good at it”. And more recently, Mark Lynas named the human species “the god species”.

One way or another the industrial societies possessing powerful technologies have come to believe that they can and have conquered Nature. Now Nature must be managed, manipulated and even looked after – but only so that it can better serve the

ever-increasing demands of industrial societies.

In this context even the well-intentioned idea of anthropocene could prove to be dangerous. Kathleen Dean Moore of Oregon State University says: “We should use words cautiously. Words are powerful, magical, impossible to control. With a single misguided phrase they can move a concept from one world into another, altering forever the landscape for our thinking.

“So no, not the ‘anthropocene’. That name completely muddles the message.

“Proud, solipsistic creatures that we are, we can convince ourselves that we are shaping Earth... The very notion that humans have become the shapers of Earth makes Earth guffaw in swirls of violence.”

Author Ginger Strand writes: “The idea of the anthropocene plays too



It is being proposed that we should name our age ‘the Anthropocene epoch’, meaning ‘the age of Man’.

The late eco-theologian Thomas Berry proposed another name, which is much more humble and hopeful. He suggested that we name the coming epoch the Ecozoic. He urged humanity to repair the damage it has inflicted on the Earth and to bring about an era that is respectful of Nature, self-renewing and ecologically sustainable.

The choice is ours. Either we can embrace the suggested Anthropocene epoch, or create a new Ecozoic Era.

slickly into the hands of the technopians who will argue that since we are at the helm, we might as well put our hands on the rudder and steer. The very word ‘anthropocene’ makes too little accommodation for anything else besides us; it’s not going to help us live with more grace in a world full of things we can’t control, things we don’t know, things we might never know... What we don’t need is another word that feeds our idea of the all-powerful controllers we dream – or fear – we are.”

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and all other species live in harmony with each other.

Once upon a time people believed in God; they believed that God would solve all their problems. Today we have a new god: the God of Technology. The industrial mindset has come to believe that we will find solutions to all our problems in technology, and somehow the name ‘anthropocene’ leads us towards that conviction, but in this issue of Resurgence & Ecologist Charles Eisenstein takes the view that technological fixes have severe limitations and that the problems created by technology cannot be solved by technology. He says we have to find other ways. Similarly other authors also highlight the need to reconnect with Nature and thus pave the way to the Ecozoic Era.

The choice is ours. Either we can

embrace the suggested Anthropocene epoch, or create a new Ecozoic Era.



***Satish Kumar** has been the guiding spirit behind a number of ecological, spiritual and educational ventures around the world. He is editor-in-chief of Resurgence & Ecologist magazine and co-founder of Schumacher College, UK. Satish is also on the panel of advisors of Bhoomi College.*

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Visit <http://www.resurgence.org> for more

Sustainable Development is a Lie

The term “development” is just colonialism applied to the natural world, says **Derrick Jensen**.

“Sustainable development” is a claim to virtue. The word “development” used in this sense is a lie.

The word “develop” means “to grow,” “to progress,” “to become fuller, more advanced.” Some synonyms are “evolution, unfolding, maturation, ripeness,” and some antonyms are “deterioration, disintegration.” And here is a real usage example from a dictionary: “Drama reached its highest development in the plays of Shakespeare.”

But here’s the problem: A child develops into an adult, a caterpillar develops into a butterfly, a stream harmed by (say) mining might possibly in time develop back into a healthy stream; but a meadow does not “develop” into white-box houses, a bay does not “develop” into an industrial port, a forest does not “develop” into roads and clearings.

The reality is that the meadow is destroyed to make the “development.” The bay is destroyed to “develop” it

into an industrial port. The forest is destroyed when the “natural resources” are “developed.”

The word “kill” works just as well.

Sustainable Destruction

Think about it. You’re going about your life, when someone comes along who wants to make money by “developing” the “natural resources” that are your body. He’s going to harvest your organs for transplantation, your bones for fertilizer, your flesh for food.

You might respond, “Hey, I was

using that heart, those lungs.”

That meadow, that bay, that forest were all using what you call “natural resources.” Those “natural resources” were keeping them alive. Those “natural resources” are their very body. Without them they die, just as you would.

It doesn’t help to throw the word “sustainable” onto the front of whatever you’re going to do. Exploitation is still exploitation, even if you call it “sustainable exploitation.” Destruction is still destruction, even if you call it “sustainable destruction.”

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One sign of intelligence is the ability to recognize patterns. We industrialized humans think we're smarter than everybody else. So I'm going to lay out a pattern, and let's see if we can recognize it in less than 6,000 years.

Greek Sustainable Development

When you think of Iraq, is the first thing that you think of cedar forests so thick that sunlight never reaches the ground? That's what Iraq was like before the beginnings of this culture. One of the first written myths of this culture was of Gilgamesh deforesting the hills and valleys of what is now Iraq to build great cities.

Oh, sorry, I guess he wasn't deforesting the region; he was "developing" the natural resources. Much of the Arabian Peninsula was oak savannah, until these "resources" were "developed" for export. The Near East was once heavily forested. Remember the cedars of Lebanon? They still have one on their flag. North Africa was heavily forested. Those forests were destroyed—I mean "sustainably developed"—to make the Egyptian and Phoenician navies.

Greece was heavily forested. Ancient Greek philosophers complained that deforestation was harming water quality. I'm sure the bureaucrats at the Ancient Department of Greek Sustainable Development responded that they would need to study the problem for a few years to make sure there really is a correlation. In the Americas, whales were so abundant their breath made the air look perpetually foggy and were a hazard to shipping. "Development" of that resource removed that hazard. Cod were so numerous their bodies slowed the passage of ships. "Development" of that resource fixed that, too. There were so many passenger pigeons that their flocks darkened the sky for days at a time.

Greece was heavily forested. Ancient Greek philosophers complained that deforestation was harming water quality. I'm sure the bureaucrats at the Ancient Department of Greek Sustainable Development responded that they would need to study the problem for a few years to make sure there really is a correlation.

Two hundred species went extinct just today. And 200 will go extinct tomorrow. And the day after that. And the day after that.

Every biological indicator is going in the wrong direction.

Why do we have such a hard time understanding that if you steal from or otherwise harm a natural community, that natural community will suffer harm?

Once again, "development" of that resource got rid of them. Do you know why there are no penguins in the northern hemisphere? There used to be. They were called great auks. A French explorer commented that there were so many on one island that every ship in France could be loaded and it would not make a dent. But that "resource" was "developed" and the last great auk was killed—oops, I mean "developed"—in the 19th century.

200 Species a Day

Two hundred species went extinct just today. And 200 will go extinct tomorrow. And the day after that. And the day after that.

Every biological indicator is going in the wrong direction.

And we all know why. The problems are not cognitively challenging. "Development" is theft and murder. "Development" is colonialism applied to the natural world. "Development" is kleptocracy—a way of life based on theft.

The reality is that the meadow is destroyed to make the "development." The bay is destroyed to "develop" it into an industrial port. The forest is destroyed when the "natural resources" are "developed." The word "kill" works just as well.

Here's another test of our intelligence: Name any natural community—or ecosystem, if you prefer mechanistic language—that has been "managed" for extraction, or that has been "developed"—by which is meant industrialized—that has not been significantly harmed on its own terms.

You can't, because managing for extraction is harmful, as we would all recognize if, as in the example above, it happened to us. We would all recognize

that if an occupying army came into your home and took your food and a couple of your relatives that your family would suffer.

So why, with all the world at stake, do we suddenly get so stupid when it comes to "sustainable development"? Why do we have such a hard time understanding that if you steal from or otherwise harm a natural community, that natural community will suffer harm?

Enslaving the Planet

Upton Sinclair wrote: "It's hard to make a man understand something when his job depends on him not understanding it." I would extend that to read: "It's hard to make people understand something when their entitlement depends on them not understanding it."

In the 1830s, a pro-slavery philosopher argued that slavery was necessary because without it the slave owners would not have the "comforts or elegancies" upon which they had become so accustomed.

The same is true here, when we extend the understanding of slavery to the natural world, as this culture attempts to enslave—read, "develop," oops, "sustainably develop"—more and more of the living planet.

In short, we're allowing the world to be killed so we can have access to ice cream 24/7. And we call it sustainable development so we can feel good about ourselves as we do it.

The good news is that there are a lot of people who see through the bullshit. The bad news is that this doesn't, for the most part, affect policy.

A story may help make this clear.

Before the big Rio Earth Summit in 1992 (and wasn't that a success! Things are so much better now, right?), the US ambassador to the United Nations sent out high level assistants across the country, ostensibly to get public input as to what should be the US position at the summit. One of the meetings was in Spokane, Washington, where I lived at the time. The hall was packed, and the line of people to speak snaked to the back of the building. Person after person testified that "sustainable development" was a sham, and that it was just an excuse to continue killing the world.

With all the world at stake, it's not good enough for us to paste the word sustainable in front of the deceptive word development when what we really mean is "continue this exploitative and destructive way of life a little bit longer." That destroys the words sustainable and development and, of course, contributes to the ongoing destruction of the world. It wastes time we do not have.



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They pointed out that the problem is not humanity, but this culture, and they begged the US representative to listen to and take a lead from Indigenous peoples the world over who lived well and lived truly sustainably on their lands, without "development." (In fact, they lived well and sustainably because they never industrialized.) They pointed out that "development" inevitably forces both Indigenous peoples and subsistence farmers off their lands. Person after person pointed out precisely what I'm saying in this article.

When we were through giving our testimony, the representative thanked us for our support of the US position and for our support of "sustainable development." It was as though he hadn't heard a word we said.

Sustaining the Exploitative Lifestyle

Here's the problem: The word "sustainable" has since been coopted to not mean "helping the real world to sustain," as in playing your proper role in participating in a larger community that includes your non-human neighbors, but instead to mean "sustaining this exploitative lifestyle."

Think about it: What do all of the so-called solutions to global warming have in common? It's simple: They all take industrial capitalism (and the colonialism on which it's based) as a given, and the natural world as that which must conform to industrial capitalism. This is insane, in terms of

being out of touch with physical reality.

The real world must be primary, with whatever social system you are talking about being secondary and dependent, because without a real world, you don't have any social system whatsoever. "Sustainable development" is a scam and a claim to virtue because it is attempting to sustain this exploitative, destructive culture, not the world on which it depends.

And that will never work. So many Indigenous people have said to me that the first and most important thing we must do is decolonize our hearts and minds. Part of what they've told me is that we must break our identification with this culture, and identify instead with the real world, the physical world, the living Earth that is our only home.

I want to tell one final story. In his book, *The Nazi Doctors*, Robert Jay Lifton asked how it was that men who had taken the Hippocratic Oath could work in Nazi death camps. He found that many of the doctors cared deeply for the health of the inmates and would do everything in their power to protect them. They'd give them an extra scrap of potato. They'd hide them from selection officers who were going to kill them. They'd put them in the infirmary and let them rest for a day. They'd do everything they could, except the most important thing of all. They wouldn't question the existence of the death camp itself. They wouldn't question working the inmates to death, starving them to death, poisoning them to death. And this failure to question the larger

framing conditions led these doctors to actively participate in the atrocities.

With all the world at stake, it's not good enough for us to paste the word sustainable in front of the deceptive word development when what we really mean is "continue this exploitative and destructive way of life a little bit longer." That destroys the words sustainable and development and, of course, contributes to the ongoing destruction of the world. It wastes time we do not have.

With all the world at stake, we need to not only do what we can to protect the victims of this culture, but we have to question the continuation of this death camp culture that is working the world to death, starving the world to death, poisoning the world to death.



Derrick Jensen has authored twenty-one books and is often called the philosopher-poet of the environmental movement. In addition to his published books, he writes for *Orion*, *Audubon*, and *The Sun Magazine*.

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Article originally published November 19, 2015 by Fair Observer.

Our Cities Need Regenerating - Our Villages Must be Valued



Herbert Girardet, author of “*Regenerating Cities*” warns that an unplanned, urbanising world could be a tragedy in the making

I live in a village, but my recent work has been mostly focused on cities. A contradiction in terms? Well, not really. I am not an urban planner, but a cultural ecologist, and a great concern of mine is to deal with the impacts of cities on the world's ecosystems, the atmosphere and the oceans. A recent very popular book by the American author Edward Glaeser was called *Triumph of the City*, subtitled *How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier and Happier*, but in my view an urbanising world, in which most people become city dwellers in ever larger cities, could actually be an environmental and social tragedy in the making.

As economic and consumer hubs, cities are characterised by a huge throughput of resources. They are the economic powerhouses of a globalising world, and whilst they currently hold just over 50% of the world's population,

80% of global GDP is produced in them. Apart from a near-monopoly on the use of fossil fuels, metals and concrete, an urbanising humanity now consumes nearly half of Nature's annual 'output' as well. All this has enormous consequences for all life on Earth.

It has become fashionable to claim that urban living is much more resource-efficient than rural living – country dwellers have to use their cars more, they tend to live in detached houses that require more heating than urban terraced houses, and many drive to nearby market towns to shop in the same supermarkets as city people. Yes, country people tend to grow more vegetables and fruit, but by and large their consumption patterns have come to closely resemble those of city dwellers. In Europe, villages close to cities are increasingly taken over by commuters, and the countryside in between has become a drive-through

agro-industrial landscape to which local villages are now barely connected.

All this is true for Europe as well as America and Australia, but what about China and India, which between them have a third of the world's population? Here village people make much more frugal use of resources than urban dwellers. But as Chinese villagers become city dwellers, they typically increase their per capita resource consumption fourfold. In recent years, hundreds of millions of people across Asia have moved from humble village dwellings to second homes in high-rise megacity tower blocks.

Whereas previously, as village people, they relied on biomass for heating and cooking, composted organic waste as crop fertiliser, and lived in family units, the move to the city tends to turn them into consumers, requiring a daily dose of fossil fuels and

many other non-renewable resources. Meanwhile in the depleted village communities back home, the remaining farmers are driven to adopt cultivation systems that depend on fossil fuels, fertilisers and pesticides.

UN statistics show that hundreds of millions of people in Asia have risen out of poverty in the process of becoming urban dwellers: hence the “Triumph of the City”. But the tragedy I have alluded to is particularly concerned with the aggregated environmental impacts of an urbanising humanity, and this is largely ignored by urban planners and decision makers. We need to face up to the systemic problem that modern cities take resources from Nature but give little back in return to help assure the wellbeing of ecosystems on which the long-term viability of cities ultimately depends.

As they currently function, cities are ‘entropy accelerators’ – they deplete and downgrade the resources they depend on in the process of using them. As fossil energy is used and raw materials are processed, their quality inevitably deteriorates. Cities are not just structures but also processes: they are vast interconnected systems designed for turning energy into ‘work’ or motion, flowing along their roads, rails, wires and pipes. The manufactured products that are used on a daily basis inevitably end up either dumped or burned, or recycled into lower-grade objects. Order, which is established and maintained in the form of cities, causes disorder elsewhere in Nature. This cannot continue.

The position of urbanists today is similar to that of astronomers before Galileo: cities are regarded as the centre of the universe, and the world’s ecosystems are seen as somehow revolving around them. And yet let us be clear: cities are only appendages of living systems. The Earth is a vast web of life of which urban life has to be a beneficial part, or no part at all.

We need to acknowledge that urban living currently requires vast inputs from natural systems, from farmland and forests, as well as from mining activities. Urban decision makers tend to ignore the fact that whilst cities are built on only 3–4% of the world’s land surface, their ecological footprints cover much of the productive land surface of the globe. Urban populations collectively use the bulk of the

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world’s resources and are also prime contributors to environmental damage, biodiversity loss, pollution and climate change.

The time has come to take stock of urban impacts and to assess how they can be dramatically reduced. Circular economy and cradle-to-cradle thinking have been making great strides in recent years. My own work on the metabolism of cities – turning linear processes into circular processes – is closely connected to these ideas. But we need to go further. If we really want an urban world, we’d better make sure that cities become environmentally benign organisms. For me that means trying to create not just liveable and sustainable cities, but regenerative cities.

There can be a long-term future for humanity only if we develop a proactive relationship between our cities and the world’s ecosystems – nurturing Nature’s dynamism and abundance whilst only drawing on its income. This is all about cities giving back to as well as taking from Nature – helping to regenerate the soils, forests and watercourses that they depend on, rather than just accepting that they are ‘sustained’ in a degraded condition.

Across the world, different cities invariably face different challenges. In Europe, North America and Australia, where urban growth is now very limited, the primary task is to undertake ‘ecological retrofits’ of urban systems. In rapidly urbanising countries in Asia, Africa and South America, urban development needs to be ‘smart from the start’: defined by high standards of resource efficiency, with renewable energy as a key component.

In my new book, *Creating Regenerative Cities*, I have case studies that illustrate the steps towards regenerative urban development that are being taken across the world.

Copenhagen, a city of over 3 million

people, is a remarkable example of green innovation. In its post-war urban plan of 1947, Copenhagen set out to develop along five ‘green fingers’, centred on commuter rail lines, which extend from the city’s ‘palm’, its dense city centre. In between the fingers, green wedges were created to provide land for both agriculture and recreational purposes.

Then, in 1962, as car traffic swamped the city, a radical redesign of the heart (or the palm) of the city was initiated. Copenhagen’s city council decided to establish a car-free pedestrian zone in the maze of narrow streets and historic squares. Today it is the largest inner-city pedestrian street system in the world. It has acquired a Mediterranean-style ambience, where markets, cafés, restaurants and green spaces proliferate.

In Copenhagen, initiatives on liveability, sustainability and regenerative development come together in a very effective way, with remarkable environmental as well as economic and social benefits. High levels of building energy efficiency, renewable energy and combined heat and power have become standard, and so has circular waste management. Due to a comprehensive network of cycle lanes, Copenhagen has more cyclists than most other European cities, and its public transport system is second to none. Offshore and onshore wind farms are much in evidence. The green economy in the capital region has grown dramatically in recent years, generating thousands of new jobs. But Copenhagen has further ambitions: it is working to become the world’s first carbon-neutral capital city by 2025!

Other cities have implemented similarly impressive measures, and in my book I have also highlighted Adelaide for its tremendous achievements in moving towards regenerative development.



Mahatma Gandhi said: “The future of India lies in its villages.” While the sheer pace of urbanisation is running counter to the sentiment of Gandhi’s statement – in India and elsewhere – it is becoming clear that the revival of villages needs to be undertaken with a clear sense of purpose. Even as the world continues to urbanise, the village has a vital role to play as the quintessential human habitat.

In the UK, smaller towns such as Totnes and Stroud are pioneering citizen-led green initiatives. Larger cities such as Bristol are also showing great promise. In 2015 Bristol is European Green Capital and, under the leadership of independent mayor George Ferguson, vigorous new initiatives are being taken to put Bristol on the fast track to regenerative urban development.

But what about villages? Until recently they were the primary habitat of humanity, and they are at the traditional heart of human culture. Many villages across the world have sustained themselves over thousands of years in a continuous give-and-take with their local countryside. Across the world, there are about 2 million villages, but many now face a precarious future. The magnetism of the modern city and the loss of rural employment due to the mechanisation of farming and other factors have taken their toll. In rapidly industrialising countries such as China, pollution from factories and power stations has poisoned irrigation water and soils, forcing even more farmers off the land. And then there is the simple fact that the bright lights of ‘Petropolis’, the fossil-fuel-powered city, can’t easily be countered by the candle lights or paraffin lamps available in remote villages.

Britain exemplifies the global trends towards urbanisation in a particularly vivid manner. With some 80% of people living in cities, only a tiny fraction of the population is still engaged in farming and other aspects of the rural economy.

Urban-rural migrants may contribute to the emergence of pretty-looking old-world villages with fast internet connections, but the link to the soil has largely been lost.

In some developing, urbanising countries, governments have initiated measures aiming to counter rural-urban migration, and to improve living conditions in villages – through rural education and health programmes, improved water supplies and sanitation, road construction, electrification and investment in rural economies. But such policies also tend to introduce urban cultural norms into rural areas. The spread of satellite dishes and multi-channel TV to remote rural communities can increase the fascination of local people, especially the young, with urban living.

Whilst villages have drawn the short straw in the competition with cities, it is time to define new opportunities for making them a viable part of the future, particularly in developing countries. Many NGOs across the world are trying to ensure that, despite the pressures of urbanisation, villages retain their relevance as a human habitat.

Foremost among these is the Global Ecovillage Network (GEN). Since the 1970s, many attempts have been made to create new ecovillages in Europe, North America and Australia. GEN aids these efforts. It consists of not only intentional communities created by refugees from the stresses of urban life, but also existing villages in the global South that want to exchange experiences about how to upgrade

traditional practices with new ideas on permaculture farming, efficient crop irrigation and renewable energy systems.

Mahatma Gandhi said: “The future of India lies in its villages.” While the sheer pace of urbanisation is running counter to the sentiment of Gandhi’s statement – in India and elsewhere – it is becoming clear that the revival of villages needs to be undertaken with a clear sense of purpose. Even as the world continues to urbanise, the village has a vital role to play as the quintessential human habitat.

The ‘environmental boomerangs’ of an urbanising world are increasingly in evidence. Inhabiting planet Earth in a manner that enhances rather than degrades its ecosystems has become a primary challenge for humanity. Let us trust that we recognise what is at stake, and that we are able and willing to deal with it.



Herbert Girardet is a cultural ecologist. His new book, *Creating Regenerative Cities*, is published by Routledge.

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To Save Our Cities, Put Children First

What's the universal design principle that can regenerate our cities, make them great? Kid-friendliness, says architect **Jason McLennan**.

This article talks largely about American cities and the failed American Dream. But with some adjustments for the way the Indian culture and socio economic realities play out in our cities, the message offered by the author applies to Indian cities as well.

"We know a lot about the ideal environment for a happy whale or a happy mountain gorilla. We're far less clear about what constitutes an ideal environment for a happy human being. One common measure for how clean a mountain stream is, is to look for trout. If you find the trout, the habitat is healthy. It's the same way with children in a city. Children are a kind of indicator species. If we can build a successful city for children, we will have a successful city for all people."

- Enrique Peñalosa

Change is coming to our cities in the next 10-20 years, whether or not our culture is ready for it. As cheap oil disappears and we firmly enter the age of 'extreme energy' and additional finite resources diminish to scarce levels, we will be forced to adjust to new ways of building and living with a global population approaching eight billion—almost entirely in urban settings. Even as our cities mushroom in size, the very mega-infrastructure projects that built them—created in a world where cheap energy was substituted for common sense and ethical planning—become obsolete.

We exchanged a sense of community for take-out and parking lots. We converted the scale of our communities from a human to a highrise level. The scale of the child has been left behind in most of America.

During the post-World War II era we redefined and recreated communities of all sizes to support the transition to an automobile age within the span of only three decades. The North American landscape was changed forever—and its about to change just as radically, over just as short a timeframe yet again. The types of infrastructure and planning that separate us within our own communities—urban sprawl, big box retail, interstate freeways, mega powerplants, centralized sewage treatment systems, and

absurdly tall skyscrapers will suddenly become impossible to sustain. In their place will emerge a new urban landscape supported by new kinds of infrastructure responding to the new reality of energy, food, water, and population.

That we'll remake civilization is guaranteed—how we'll do it is the only question. Will we simply spiral towards the visions found in many science fiction novels and Hollywood movies? Will our cities become versions of an unhealthy, ecologically depleted, crowded, dirty Blade Runner future? Or will we use this opportunity for change as a course correction to create a healthy, vibrant and beautiful living future?

How do we begin to create a future that brings out the best of humanity and safeguards the planet's fragile ecosystems?

Putting Kids First

As simplistic as it may sound, the best way to plan our cities to function as nurturing, dynamic communities for all people is to design them well as places for children first. Regardless of function or location, all re-development and new planning should be grounded by asking the questions, "Is this good for children?" "Does it relate to a scale that children relate to?"

Why is it that so much of the built environment is unfit for our most sensitive and vulnerable citizens? The disturbing answer is that other than dedicated school yards and some city parks, children are mere afterthoughts in the 'serious business' that is city and community planning. For the last sixty years we've designed our communities

Many people have a hard time believing that we can redesign our cities within the span of a few decades, but the truth is it will happen regardless of our intentions.

first around the scale of the automobile, and secondarily around the scale of adult men and women. By leaving children out, we have left out the best of humanity—and the chance to connect our future leaders with functioning workable urbanism. Whole generations now have no experience with how fantastic well-done urbanism can be. The best cities in the world have a walkable, relatable scale that children and adults alike can relate to. They tend to be safer, more accessible, and more culturally rich. They give us greater opportunities for social interaction as well as chance encounters and educational opportunities.

By catering our infrastructure to those among us who have the least control, we actually usher in greater opportunities across multiple demographic segments.

Think about what makes a place great for kids: a focus on sound learning, personal interactions with others, opportunities to interact with nature and natural systems (water in particular), right-sized designs that aren't intimidating and automobile-based, a city with an all-around gentle touch. Now consider a city that extended such considerations to everybody. If communities were built in ways that nurtured children rather than worked around them, all ages would be the better for it. By catering our infrastructure to those among us who have the least control, we actually usher in greater opportunities across multiple demographic segments.

It's bad enough that typical futuristic images of our cities are ecologically impossible; what's also crazy is that they never appear to be very nice places for children. It seems that the visionaries who craft these plans of soaring buildings and concrete landscapes—or even present-day housing developments with endless rows of identical homes—have forgotten the importance of what it

means to just go outside and play.

Even many much-heralded “eco-developments” seem to contain few genuine child-friendly opportunities, unless one counts the occasional recycled plastic slide in a fenced-in play area. It’s time to turn our attention back to our children and do what makes sense for them, for us, and for the environment. The good news is that child-centered city planning is not simply generous; it’s practical.

Doing what we do best - A super quick history

While it’s very easy to feel defeated and pessimistic by the overwhelming evidence of energy and water scarcity, climate change, and worldwide economic upheaval, I consider it more useful to look at these significant challenges as opportunities to re-imagine civilization in a way that ensures our long term place in it. Many people have a hard time believing that we can redesign our cities within the span of a few decades, but the truth is, it will happen regardless of our intentions. The question is whether we will steer things towards the best possible outcomes or see impacts continue to move in the wrong direction.

Stealing from the Innocent

Children in every neighborhood—have been robbed of opportunities as we’ve drained the life out of our cities and created vast sprawls of bland and unhealthy suburbia. Most profoundly, kids across all strata have lost a sense of freedom. City children have sustained a figurative loss as their neighborhoods’ vitality and relevance has faded, leaving many without hope for the future. Suburban kids spend an unhealthy amount of time in the car getting from one spot to another in their over-bland environment, leaving many bored, unengaged, and overweight. When schools are built on inexpensive land on the edge of a community, kids from all segments of the population spend more time on buses than in their own residential surroundings.

The fact is that we’ve been sucking the youthful life out of our children because of the way we’ve designed our communities. With automobiles in dominant roles, it is less safe for children to bike, walk, or play outside. Our increased isolation and lack of



connection to our neighbors has made us increasingly paranoid (egged on by irresponsible, fear-mongering media), prompting us to restrict our children’s ability to enjoy unstructured time outdoors. Children spend more time in front of screens, substituting virtual connections for personal interaction.

The Tyranny of the Big, the Beauty of the Small

Admittedly, we have all suffered. But kids feel the disconnection more acutely not just because they are more vulnerable, but also because many of them know nothing else. Are we raising a whole generation that does not have a chance to learn naturally what it means to be both a functioning citizen of a community as well as the natural world? Are we in fact robbing our youth of key experiences needed for future maturity?

Adjusting to the Inevitable

The good and bad news is this: the age of cheap oil is almost over. The days of the suburban experiment are numbered. People simply won’t be

able to afford driving everywhere and communities won’t be able to sustain the miles of sprawl that were built on speculation in an era of both cheap energy and cheap labor. We now have neither. The only possible response is to return our focus on the urban core and responsible density, and in so doing, bring back the beauty that is also possible in great cities.

It will take a commitment to maintain the values necessary to support truly regenerative neighborhoods. Most importantly, it should usher in a new commitment to our children.

Jason McLennan serves as the CEO of the Cascadia Green Building Council, a chapter of both the US Green Building Council and the Canadian Green Building Council. He is the author of the *Living Building Challenge* and co-creator of *Pharos*, the most advanced building material rating system in North America. He is a former Principal at BNIM Architects, one of the founders of the green design movement in the United States, where he worked on LEED Platinum, Gold, and zero energy projects.

Green Cities and Smart Cities:

The potential and pitfalls of digitally-enabled green urbanism



Image Credit: androver / Shutterstock.com

The Vancouver Convention Centre in Vancouver, BC, Canada was the world's first LEED Platinum-certified convention center. It also has one of the largest green roofs in Canada.

The definition of “urban sustainability” overlooks key facets of a city’s ecological footprint (such as food systems, resource consumption, production related greenhouse gas emissions, air quality, and the urban heat island effect). It also ignores the ability of non-state actors to contribute meaningfully to the design and implementation of urban policies and programs.

But if employed properly, new information technologies seem like ideal tools to address some of urban sustainability’s most persistent challenges, says **Alexander Aylett**.

National Institute for Scientific Research, Canada

Since its early days, the discourse around “smart cities” has included environmental sustainability as one of its core principles. The application of new digital technologies to urban spaces and processes is celebrated for its ability to increase the well-being of citizens while reducing their

environmental impacts. But this engagement with sustainability has been limited to a technocratic focus on energy systems, building efficiency, and transportation. It has also privileged top-down interventions by local government actors. For all its novelty, the smart cities discussion is operating with a vision of urban sustainability that dates from the 1990s, and an approach to planning from the 1950s.

This definition of “urban sustainability” overlooks key facets of a city’s ecological footprint (such as food systems, resource consumption, production related greenhouse gas emissions, air quality, and the urban heat island effect). It also ignores the ability of non-state actors to contribute meaningfully to the design and implementation of urban policies and programs. But that doesn’t need not be

the case. In fact, if employed properly, new information technologies seem like ideal tools to address some of urban sustainability's most persistent challenges.

Progress and Lasting Challenges in Local Climate Governance

Let's take a step back. Often discussions of smart cities begin with an account of the capabilities of specific technologies or interfaces and then imagine urbanism – and urban sustainability – through the lense of those technologies. I'd like to do the opposite: beginning with the successes and lasting challenges faced by urban sustainability and interpreting the technologies from within that context. To understand the role that “smart” technologies could play in enabling sustainable cities, it's useful to first look at what we have managed to accomplish so far, and what still needs to be done.

For those of us working on sustainable cities and urban responses to climate change, the past two decades have been a period of both amazing successes and enduring challenges. In the early 1990s a handful of cities began promoting the (at that time) counterintuitive idea that local governments had a key role to play in addressing global climate change. Since then, the green cities movement has won significant discursive, political, and technical battles.

Global inter-municipal organizations like ICLEI or the C40 now have memberships that represent thousands of cities. Two decades of work have created planning standards and tools and an impressive body of “best practice” literature. Through the sustained efforts of groups like ICLEI, cities are now recognized as official governmental stakeholders in the international climate change negotiations coordinated by the United Nations.

But – crucially – real urban emissions reductions are lagging well below what is needed to help keep global CO₂ within safe limits. Looking at the efforts of individual cities and the results of a global Urban Climate Change Governance survey that I conducted while at MIT (Aylett 2014) shows why. Apart from a small contingent of charismatic cities like Vancouver, Portland, or Copenhagen,

cities are struggling to move beyond addressing the “low hanging fruit” of emission from municipal facilities (i.e., vehicle fleet, municipal buildings, street lighting – known as “corporate emissions”) to taking action on the much more significant emissions generated by the broader urban community (i.e., business, industry, transportation, and residential emissions).

This problem has been with us since the early days of urban climate change responses. But how we understand it has changed significantly. Where some cities used to inventory only their corporate emissions, this is now rare. Current guidelines cover community-wide emissions and work is underway to create a global standard for emissions inventories that will also engage with emissions produced in the manufacture of the goods and services consumed within cities (see Hoornweg et al. 2011).

Built on the increased scope of our technical understanding of urban emissions, is a change in how we understand the work of governing climate change at the local level. A top-down vision of climate action focused on the regulatory powers of isolated local government agencies is being replaced by one that is horizontal, relational, and collaborative. This approach transforms relationships both inside and outside of local governments, by linking together traditionally siloized municipal agencies and also forging partnerships with civil-society and business actors (Aylett 2015).

The increased prominence of non-state actors in urban climate change governance has led to growing calls for partnerships across the public-private divide (Osofsky et al. 2007; Andonova 2010; Bontenbal and Van Lindert 2008). These partnerships play an important role in overcoming gaps in capacity, translating the climate change impacts and response options into language that is meaningful to different groups and individuals, and accelerating the development of solutions. Follow-up analysis of the 2014 MIT-ICLEI Climate survey shows that these partnerships have an important positive impact on the scope of concrete emissions reductions. Cities with stronger partnerships appear to be more able to create concrete emissions reductions outside of areas directly controlled by the municipality.

This evolution in approaches to climate change planning follows a broader current in urban planning more generally which, since the 1960s have moved away from expert driven and technocratic processes and created increasing amounts of space for participatory processes and facilitative government.

In a nutshell, an increasingly complex and holistic technical understanding of urban emissions is being matched by an increasing horizontal and networked approach to governing those emissions. (A similar shift is taking place in the more recent attention to urban adaptation and resilience.)

But plans and programs based on this understanding quickly run into the significant barriers of institutional siloization and path dependency, a lack of effective information sharing, challenges of data collection and analysis, and difficulty mobilizing collective and collaborative action across multiple diverse and dispersed actors (Aylett 2014). The strength of collaborative multi-stakeholder responses is also their weakness. While effective climate change action may not be possible without complex networks of governance, coordinating these networks is no simple task. The subject of urban climate change governance has been the focus of an expanding body of research (Aylett 2015, 2014, 2013; Betsill & Bulkeley 2004, 2007; Burch 2010; Burch et al. 2013; Romero-Lankao et al. 2013.)

“Smart” Urban Climate Governance

Seen from this perspective, the allure of “smart” approaches to green cities is precisely the fact that information technology tools seem so well suited to the challenges that have stalled progress so far. Collecting, sharing and analysing new and existing data, and coordinating complex multi-scalar social networks of collaborative design and implementation are precisely what has drawn attention to new technologies in other sectors.

Disappointingly, current applications of a data-driven and technologically enabled approach to urban sustainability are far from delivering on this potential. Reading through the literature shows that the many interesting works that address the impacts of new technologies on



Image Credit: Shutterstock.com

The street car in Portland, Oregon, USA.

urban governance (for example Elwood 2010, Evans-Cowley 2010, Goldsmith and Crawford 2015, Moon 2002) have nothing to say about the governance of urban sustainability. Work that does address environmental sustainability is dominated by a technocratic focus on energy systems, building efficiency, and transportation that privileges top-down action by municipal experts and planning elites (The Climate Group 2008, Boorsma & Wagener 2007, Kim et al. 2009, Villa & Mitchell 2009). This literature review is ongoing, and I continue to hope to find a body of work that combines a developed understanding of urban sustainability with a detailed reflection on digital governance. As it is, we seem to be working with outdated approaches to both urban sustainability and planning.

How to update this approach, and use the full potential of data-driven, technologically enabled, and participatory approaches to spur accelerated transitions to sustainable cities is a key question. This research is necessary if we are going to unlock the full potential of the “smart” urbanism to address the necessity of building sustainable cities. It is also important that we avoid rolling back the clock on two decades of “green cities” research

by basing our digital strategies around outdated understandings of the urban sustainability challenge.

Conclusions

Cities are responsible for as much as 70% of global greenhouse gas emissions and consume 75 percent of the world’s energy (Satterthwaite 2008). These figures are often repeated. But taking action at that scale requires both technological and socio-institutional innovations. Efforts to reduce urban emissions are challenged by the complexity of coordinating broad coalitions of action across governmental, private, and civil-society actors, and the need to effectively collect, share, and analyse new and existing data from across these traditionally siloized sectors.

These complexities have played an important role in limiting actual urban emissions reductions far below what is needed to stabilize global emissions within a safe range. Interestingly, these complexities are also the very strengths of emerging information and communications technologies (ICT) tools and Geoweb enabled approaches to urban planning and implementation. Currently, the use of “smart” approaches

to address the urban climate challenge has been limited to narrow and technocratic initiatives. But much more is possible. If effective bridges can be built between the ICT and Urban Sustainability sectors, a profound shift in approaches to the urban governance of climate change could be possible. It is important to increase both sustainability and digital literacy among those involved. Only then will innovations in urban sustainability benefit from a deep understanding of both the new tools at our disposal, and the complex challenge to which we hope to apply them.



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Where the miracle that is earth is celebrated...

Rabindranath Tagore's poem 'Where the mind is without Fear' has been a great source of inspiration to many, to take responsibility to co-create a world which we desire.

A poem honouring Tagore's classic, written with a wish to co-create a saner world...

Where the miracle that is earth is celebrated...

*Where there is reverence for the tenuous web of life that supports all beings,
Where there is a deep appreciation of the place we are in - be it wetland,
desert or forest,
Where we respect every eco-system, don't push it beyond its limits,
Where people see themselves as custodians of life-giving soil, seeds, water
and air.*

Where the miracle that is earth is celebrated...

*Where people live with difficult questions and yet don't give up seeking
answers or taking action,
Where the young spend time clueing in with the complexity and magnificence
of life and living,
Where consumption and acquisition does not define a good life,
Where connectedness with all earthlings defines us.*

Where the miracle that is earth is celebrated...

*Where we see ourselves as a part of the fabric of life and not apart from it,
Where treading gently on Earth becomes a way of life,
May we awaken to realize our limitations,
May we challenge ourselves to regain this paradise that we don't seem to have
anymore...*

- Rema Kumar





Pedestrians and commuters negotiate their ways to work on a wintry Dec morning in North Bangalore

Should Bangalore Aim to Become a Smart City?

Sumetee Pahwa Gajjar

There is growing recognition that cities, which house more than half the world's population already, require increased policy and development attention. India's policy response to the need for sustainable, resilient and low-carbon cities is the Smart Cities Mission. This article argues that Bengaluru requires a much broader and deeper vision than the one captured in the Mission agenda.

Urbanisation: a new SDG

UN-Habitat, in its 2011 Cities and Climate Change global report on human settlements, has recognised urbanisation as one of the biggest challenges facing humanity in the 21st century. India is experiencing rapid urbanisation (annual rate of 2.3%), according to the UN Department of Economic and Social Affairs, in 2011, with urban population set to account for 50 % of the country's population by 2040, as stated by the Ministry of Urban Development, Government of India (MoUD), in 2011. Cities concentrate not only people but, also economic assets and generate, in the case of India, 40% of the country's GDP.*

Globally, cities are considered engines of economic growth, with the potential to help address challenges of social and economic inequality. Cities are also considered sites where

*S. Anand, A. Arakali, A. Jana, J. Koduganti and N. Sami, "Manufacturing Cities: Industrial Policy and Urban Growth," 2014, The Indian Institute for Human Settlements and the Rockefeller Foundation, Bengaluru

**Sumetee Pahwa Gajjar, Rohit Jigyasu and Garima Jain, UNDP-IIHS Joint Working Paper: Poverty and Vulnerability Reduction, Disaster Risk Reduction and Climate Change Adaptation with a Human Development Focus, 2013, Indian Institute for Human Settlements, Bengaluru and the UNDP in India, New Delhi.

disaster and climate risks faced by people, their assets and city infrastructure are concentrated, note Pahwa Gajjar and her team**, in their working paper on climate adaptation and disaster risk reduction.

Understandably, international efforts are converging to guide urbanisation, i.e. setting limits to growth, surmounting governance challenges and addressing social inequalities.

Seventeen new global goals – sustainable development goals (SDGs), defined by 169 targets – have been formulated after a widely participatory consultation process hosted by the UN. For the first time, there is now an urban development goal to "make cities and human settlements inclusive, safe, resilient and sustainable."

The international context

Let us consider how this goal frames the developmental challenges faced by cities all over the world and the propositions it puts forth in the form of dedicated urban targets. The goal emphasises equitable access to affordable housing, basic services, transport and public spaces for all urban citizens. Dedicated targets within it focus on:

- Integrated planning and management of cities where cultural and natural heritage is protected
- Strengthening of links with national and regional development planning
- Designing of urban buildings for resilience

Several environmental sustainability concerns are incorporated,

including reduction in the ecological footprint of cities, inclusion and resource efficiency. Integrated policies that address climate change mitigation and adaptation, as well as disaster risk management at all levels, are encouraged. Special focus is recommended for the needs of those in vulnerable situations, including women, children, persons with disabilities and older persons.

The Indian context

However, in this conception of the urban agenda and unavoidable rationalisation of a global goal into measurable targets, the need for building capacity in urban officials and for enhancing their agency in city matters have been left out. Especially in the Indian context, we find that numerous governance challenges exist whereby cities and urban local bodies lack the skills, resources and authority to achieve many of the goal's targets.

Is the Prime Minister's Smart Cities vision India's response to the global challenge of climate change, poverty, inequality and unsustainable development? Or is it an answer to the national call for economic growth, employment creation, world-class cities, better living standards and municipal reform?

Let us consider the fiscal and implementation aspects of the Smart Cities Mission, as shared on a Web site of the MoUD. With an initial budget of Rs 7,000 crore in 2014, 100 satellite towns of larger cities were meant to be developed as smart cities. The initial allocation has been hiked by more than two and half times and several incentives have been provided to encourage foreign investment in

the programme. The institutional mechanism for implementation is a special purpose vehicle (SPV) that would be run like a private company for the duration of implementation and have representation from all levels of government.

Numerous lacunae

The strategy document admits that there are many interpretations of “smart city” the world over and even in India and that their implementation and adoption will vary across states and local bodies. The MoUD’s illustrative 2015 list of what constitutes smart cities has a mixed bag of infrastructure and governance elements. The core elements cover adequate basic services, efficient urban mobility, affordable housing, robust IT connectivity, health and education. Sustainable environment, good governance, safety and security of women and children, and citizen participation have been thrown in for good measure. Smart solutions that sometimes overlap with these elements include egovernance for a score of basic services.

A long list of desirables

The gaping hole in the list is regarding how an SPV would enable these wide-ranging elements and solutions with participation and support from the affected communities. The questions that arise include the following:

- Would citizens be engaged when designing smart city solutions?
- Would participatory governance go beyond issuing death / birth certificates in response to e-requests?
- Would lakes and urban forestry be revived to provide critical ecosystem services alongside new infrastructure?
- Would access to public spaces improve for the underprivileged?
- Would the new smartness integrate with the history and heritage of many of India’s smaller cities?

The answers to these questions indicate that these lacunae are ostensibly not being filled:

- The Ministry has adopted an area-based approach, which means that strategies such as retrofitting, redevelopment, greenfield applications and pan-city endeavours will be applied to pre-determined geographical areas specified by urban local bodies.
- There is a complete lack of

Bengaluru requires a much broader and deeper vision than the one captured in the Smart Cities Mission agenda. It is better off channeling the intelligence of its citizens into community-led, locally embedded initiatives, in response to particular societal challenges.

understanding of cities as deeply connected social and ecological systems that may not be conveniently divided into geographical areas.

- There is no understanding of how city systems of food, water, energy and waste interact and overlap through resource flows and people movement. Cities’ resource and sink needs extend far into their surrounding regions, which is why a region-based approach is recommended when seeking sustainable solutions.
- In each document and every articulation of the Mission, whether it is smart strategies or smart solutions, there is little evidence of which environmental or economic problems Indian cities need to address and what kind of future such strategies will take us towards.
- Issues of social cohesiveness, community engagement and cultural identity find no mention.

The one challenge that is featured on the MoUD Web site, which smart cities apparently face and should address, is ways of involving smart people in the planning phase and garnering city leadership to ensure programme success.

The road ahead for Bengaluru

Bengaluru is the fifth largest and one of the fastest growing metropolitan cities in India. The population of the city has grown by more than 40 percent during 2001-11. This has obvious implications for the ability of the city’s ecosystem to provide for the numerous resources required to support the exponential growth in the city’s population, which is not always accompanied by expansion in city services and infrastructure. Bengaluru faces an array of interlinked challenges such as air pollution, water scarcity, urban flooding, food insecurity, waste mismanagement and loss of urban natural capital. As the primary city of Karnataka, Bengaluru has followed a development pathway marked by disappearing and dying lakes,

numerous gated communities and high levels of social and economic inequity.

In pursuing smartness, will Bengaluru be able to address the challenges it has accumulated over 30 years of unsustainable urban growth? Will it instead be able to pursue smartness, if it were to adopt an integrated social-ecological frame? If yes, what does it require to become a sustainable, smart, socially and ecologically integrated city?

Needed: a nuanced approach

The Smart Cities Mission has a very narrow focus that does not address the risks that a city of the size and development trajectory of Bengaluru faces. The pursuit of smartness, as defined by the Mission, may help achieve better traffic management and extend IT services to under-served sections of society. However, the larger and more complex challenges of providing bulk infrastructure to service a rapidly expanding urban population, and the need to manage a morphing urban geography in the context of climate change, will require a more nuanced approach and much longer engagement with practitioners, city leaders and city managers.

City development strategies need to be informed by a comprehension of cities as systems where citizens draw resources from their urban ecology via a network of natural and manufactured water, energy, and transport and communication infrastructure and are exposed to locational, disaster and climate risks. Bengaluru is better off channeling the intelligence of its citizens into community-led, locally embedded initiatives, in response to particular societal challenges.



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This article originally appeared on *The Nature of Cities* (thenatureofcities.com)

While there is much that seems like a free fall to disaster when we think of our madly urbanizing world, there are also some inspiring stories of hope from so many cities around the globe.

Some of these examples of positive action arose with people getting together and working with simple ideas for wellbeing – like walking safely, park benches or slowing down and enjoying their lives. Other stories are about intensive work with factories and public utilities supported by the Government.

In this section we feature several cities and their citizens who offer examples for others to follow.



Bogotá

Successful Sustainable Transportation

Bogotá (population 7.5 million), like Colombia's other cities, has the highest income disparities in Latin America. In the late 1990s, Bogotá's quality of life – and lack of infrastructure, security and safety problems, and pessimism – was reportedly one of Colombia's and Latin America's worst.

In 1998, Bogotá's mayor Enrique Peñalosa tried to change that by tackling crippling Bogotá traffic congestion and social inequality together. It was tough. Bogotá's 1,500 public buses were then private-run, reckless and dangerous. Traffic congestion was out of control.

Bus Rapid Transit

But, for a fraction of the cost of other alternatives proposed, Peñalosa put in one of the world's most advanced bus rapid transit systems (BRTs) of the time – 1,300-plus large intra-city buses with a 160-passenger capacity and smaller feeder buses for outlying areas.

The buses had dedicated lanes, were disabled- and child-friendly. People

paid fares at stations (rather than pay drivers), saving time.

It wasn't easy. The earlier system was mafia-controlled. But Peñalosa's negotiations worked well.

Besides, since taking the bus had always been considered something for the poor, they also re-branded the bus system as "Transmilenio" – going from one millennium into the next.

To up accessibility, Transmilenio ran free feeder buses from low-income communities to the main stations and had a uniform ticket price regardless of distance travelled.

Fossil Fuel-free

Peñalosa provided additional options for low-income groups and those who wanted to forego their cars. He initiated the construction of over 300 km of bicycle lanes, increasing bicycle use 500-plus percent. The bike paths ran through both low-income and wealthy areas, to promote integration, and dovetail with Transmilenio routes.

Seventy percent of Transmilenio users cycle or walk to the stations and there park their bikes safely and securely for free. Now, a citizens' group, La Ciudad Verde ("the Green City") has taken up the cycling cause in Bogotá.

On Sundays, Peñalosa closed 120 km of main highways during 7 am to 2 pm – and those roads, says Peñalosa, became "a wonderful place for integration, the safest place in the city."

Peñalosa also doubled city parking fees, used vehicle number plate-based segregation and renovated streets to be more pedestrian-friendly. Today, one day, annually, entire Bogotá goes car-free.

A Different Way of Life

These changes have made a huge difference to Bogotá's quality of life. At 1.9 million-plus passenger capacity per day, Transmilenio is clearly a global leader in high-capacity BRT systems. Traffic fatalities are down 89 percent and CO₂e emissions, by over 60,000 tons annually. Two-hour commutes now take 55 minutes. A 2012 study showed a correlated 85 percent decrease in crime and an increase in land values and employment.

Bogotá has been transformed. Affirms Peñalosa, "we started making a city more for people and not so much for cars."

Jerome Roos is a PhD researcher in International Political Economy at the European University Institute, and founding editor of ROAR Magazine.

Credit: <http://www.greenbiz.com/blog/2014/07/21/how-bogota-creates-social-equality-through-sustainable-transit>

Bologna

Bold Experiments in Urban Commoning

The most extraordinary social innovations can begin in ordinary places with a simple wish. This was such a place, and it was beautiful to me for that reason. All of us gathered on one of the benches for a picture to commemorate the pioneers of Bologna's urban commons.



Until 2014, in Bologna, Italy, it was illegal for citizens to contribute improvements to the city. To donate even park benches, you had to be the government!

But all that's changed now, thanks to Bologna's Regulation for the Care and Regeneration of the Urban Commons, a historic law that enables Bologna to operate as a collaborative commons. Today, over 100 citizen-led projects collaborate with the civic authorities on urban improvement projects.

One project has moved neighbourhoods from being mere social networks to forming actual human communities. Another has mobilised the local community to fight waste and improve the lives of children and the poor. A third is using public-private partnership to restore schools. Yet another involves fighting graffiti, renovating the city's famous arcades, using green lighting in public spaces, and better social housing. Bologna has created an intelligent city – one based on great relationships – as opposed to a merely smart city.

Bologna's citizen groups have painted buildings in the city's historic centre. (Painting is a big deal there because of an abundance of graffiti and the need to maintain the ancient buildings, which is crucial for quality of

life, not to mention the tourist trade.) I saw multi-stakeholder collaboration in action. The painting crew was a non-profit, Lawyers at Work. The painting kit – paint that met the city's historical code, brushes, smocks to protect clothing, cones to mark off the work area, and more – had been provided by a municipal waste management company, Hera, which had also cleared the project with the building owner and the city. The city hosted an online map that showed all the projects active that day and their location. Citizens tracked and joined projects online or did so spontaneously. Neighbours also shared project activity on social media, which sparked more activity and civic pride.

My idea of placemaking was radically upgraded by witnessing the regulation in action. No longer was placemaking for urban design experts, but for everyone in a real-time multi-stakeholder dance that included both planned and spontaneous elements. I began to see possibilities for an entirely new way to live in a city – more creative, enlivening, and social than what cities already offered.

A new era is dawning where citizens are active co-managers of the resources they use in cities instead of passive recipients of services. Also, the old idea of commons needs an upgrade in the urban context. Most academic

studies of commons revolve around relatively isolated natural resource commons like forests, fisheries and pastures. Urban commons must by necessity be embedded in a dense weave of institutions. They can't be as independent of the market and government as the natural resource commons that Elinor Ostrom was famous for studying. Room must be made for urban commons in a city's administrative law and processes. In addition, they must be productively linked to other sectors of a city.



Neal Gorenflo is the co-founder of *Shareable*, an award-winning news, action, and connection hub for the sharing transformation. He has consulted with Institute for the Future, Stanford University, and numerous start-ups.

His writing is featured in *YES! Magazine*, *7x7 Magazine*, *The Urbanist*, and the anthologies *The Wealth of the Commons*, *Open Design Now*, and *Enabling City*. He is co-editor of the books *Share or Die: Voices of The Get Lost Generation in the Age of Crisis* and *Policies for Shareable Cities*, the first sharing economy policy guide.

Denmark

Near-zero-waste wonder



Has this Danish community found the formula for environmentally friendly industries? Is the Kalundborg Symbiosis developed here enough of a systemic solution to make it truly sustainable?

Coral reefs, rainforests and other natural systems demonstrate mutually beneficial relationships and energy flows among their various elements, such as air, water, rocks, soil and plant and animal life. If we emulate these relationships in our cities and in our industrial infrastructure, we can vastly improve the sustainability of natural resources and energy use.

That's exactly what the municipality of Kalundborg, 64 miles west of Copenhagen, is doing. For over 50 years, Kalundborg has been home to the first and most advanced example of this concept: the Kalundborg Symbiosis. Anchored originally by a power and district heating plant, this innovative industrial complex has grown to include some large and profitable enterprises, including the biggest oil refinery in the Baltic Region; an insulin-producing plant with 2,700 employees; factories making enzymes for use in everything from bio-energy to textiles, and gypsum for lightweight building materials; and the largest sewage treatment plant in northern Europe. Heat, water and a host of other resources that would otherwise be treated as waste, now supply some of the energy and much of the feedstock for these operations and the surrounding municipality, including farms.

Throughout the site, input and output is interwoven together like strands of thread, creating a 'tapestry of efficiency'. "The way it works in Denmark is that old houses and new factories have to find a way to live and work next to each other. And they've found co-existence without much conflict.

The DONG Energy power plant provides electricity to the grid, steam to four industrial plants and heat to the local municipality and a fish farm. In return, it receives

water from a refinery and the municipality, and gas from the refinery. It also sends its fly ash for processing to the cement industry and its gypsum for building materials. The energy company has a biomass gasification plant and a project that converts municipal solid waste to bio-fuel, recyclables and refuse-derived fuel. Working with partners, it is advancing the Kalundborg Integrated Energy Concept, which aims to substitute biomass for coal at the Kalundborg power station. Annually, 30,000 tons of straw come from local farmers as a major feedstock for ethanol, which then goes to the power plant. Meanwhile, yeast slurry goes from the insulin plant to nearby farms, where it is used as pig feed.

Another initiative moving forward is Cluster Biofuels Denmark, an advanced research project using algae for removing and incorporating nitrogen, phosphorus and carbon from industrial wastewater, and as part of a process to create oils, enzymes and pigments for commercial use.

With support from the central and municipal governments and the European Union, along with the companies, Kalundborg has attracted the attention of business people and investors, policy makers and students from all over the world "In 2006, 85 percent of our production was coming from 'black' fossil fuels, the rest from green sources," says Niels Christian Kjær, a top executive at DONG Energy and past president of the Kalundborg Symbiosis. "By 2040, we will switch that number: 85 percent will be green energy."



William F. Hewitt has been involved with the environmental movement for nearly 30 years as a writer, public official, teacher and activist. His book, *A Newer World: Politics, Money, Technology, and What's Really Being Done to Solve the Climate Crisis*, came out late in 2012. He is an adjunct assistant professor at New York University's Center for Global Affairs.

Credit: <http://ensia.com/articles/denmarks-near-zero-waste-wonder/>

"In 2006, 85 percent of our production was coming from 'black' fossil fuels, the rest from green sources," says Niels Christian Kjær, a top executive at DONG Energy and past president of the Kalundborg Symbiosis. "By 2040, we will switch that number: 85 percent will be green energy."

Transition Towns

In 2008, Rob Hopkins in his bestselling *"The Transition Handbook"* suggested a model for a community-led response to peak oil and climate change. Since then the transition idea has gone viral across the globe, from Universities and London neighbourhoods to Italian villages and Brazilian favelas. Transition focuses on solutions, on community scale projects and positive results. A short extract from Rob Hopkin's book makes it clear that it is not a panacea to all ills today, but it is often the best we can do:

"A Cheerful Disclaimer : Transition is not a known quantity. We truly don't know if Transition will work. It is a social experiment on a massive scale. What we are confident of is this:

- If we wait for governments, it will be too little too late
- If we act as individuals, it will be too little
- But if we act as communities, it might just be enough, just in time.

Stories and experiences of people acting together travels around the world. People who are learning by doing, and learning all the time. People who understand that we can't sit back and wait for someone else to do the work. People like you, perhaps."

Today there are over 1009 registered Transition Towns in the world and over 100 active ones. Sources: *Transition Network, 2012* and *The Transition Handbook, by Rob Hopkins*



Fujino

The Japanese town of Fujino with 10,000 residents is a prime example of Transition Town Movement. Established in 2008, Fujino launched its own currency - the *Yorozuya* (meaning "general store" in Japanese) - to strengthen community links and to make them economically independent. Local networking started with 15 members in 2009 and has now grown to include 150 households. Those participating can exchange goods and eat at restaurants using the currency. The network also thrives by targeting local needs, such as providing pet care, weeding vegetable gardens, and picking up children. It further serves to connect those in need with those who can give a hand.

Following the nuclear disaster in 2011, many in Japan began thinking about where their electricity came from and other energy issues that they had ignored until then. The power failures following the earthquake had a huge impact on the daily lives of people used to living in homes with plenty of electrical gadgets.

Many began to realize the importance of energy self-sufficiency and diversity and started to take an interest in systems that can generate electricity at home, such as solar power. Fujino holds monthly workshops where participants learn how they can build and install a home solar system.

Frankfurt

About Solar Energy

The City of Frankfurt is well on track to shifting to 100% renewable electricity by 2050. The German city has reduced emissions by 15% since 1990, while its economy grew by 50% for its approximately 700,000 inhabitants. Further energy efficiency measures have saved Frankfurt €100 million in energy costs, a number that is projected to rise.

In fact, Frankfurt is not alone. In Germany, a network consisting of about 140 100% RE regions already includes more than 80 regions and municipalities that have reached 100% renewable energy targets.

The rural Rhein-Hunsrück District with about 102,000 inhabitants living in 137 settlements, is also a member of this network. In early 2014, it was estimated that Rhein-Hunsrück already produced over 230% of its total electricity needs, exporting the surplus to the regional and national grid, or redirecting it into local transportation, hydrogen or methane production. Within 15 years, Rhein-Hunsrück District's CO2 emissions were reduced by 9,500 tons, the cost savings amounting to €2 million.

Source: <http://www.worldcommercereview.com/publications/article.pdf/998>



CITTASLOW

To SlowDown, Stress Less and Be Happy

From New York City to Barcelona, cities across the world are turning to “slow living” to make their communities happier and healthier in the face of increasing urbanization.

The industrial city of Wenzhou, China, (population 2 million) is currently known for its rapid development as an economic hub, but some residents hope it may someday be known as a “slow city.”

Recently, a delegation of Wenzhou citizens visited the Tuscany headquarters of Cittaslow, an organization credited with starting the slow cities movement. The delegation was concerned about the side effects of a hyper, fast-paced life and wanted to learn more about how living slow might preserve cultural heritage in China. The delegation visited local markets and artisans’ studios, including a shop where the Italian art of handmade shoes is still practiced. The artisans they met emphasized the role Cittaslow has played in preserving the value of crafts, like shoemaking, that are only possible with a great deal of time invested and a strong local economy. Every city has a unique personality that can be preserved and a local community that can be strengthened.

The United Nations projects that nearly 70 percent of the world’s population will live in cities by 2050. And indeed, the industrial and economic hubs of the world may be the last places that evoke ideas about living slow. But with inevitable population growth in urban areas on the horizon, many city governments are trying to make their communities more enjoyable to live and be less destructive to the environment.

The beginning of slow cities

Cittaslow grew out of Slow Food, a local food movement founded in 1986 to counter the rise of fast food in Italy. Thirteen years later, Cittaslow became a way to expand Slow Food concepts.

“The ‘slow’ philosophy is applied to not only what you eat and drink, but to all aspects of life in a town,” said Paolo Saturnini, Cittaslow’s founder. Slow city principles stress the importance of things like eating local, in-season food, shopping at locally owned businesses, and preserving cultural heritage and small-operation craftsmanship. Supporters of the movement also emphasize the value of a life where the importance of making room for natural environments can help residents to experience the rhythm of the seasons. Over the years, Cittaslow has sought to prove every city has a unique personality that can be preserved and a local community that can be strengthened.

One of Cittaslow’s core values is utilizing today’s technological innovations to recreate the slower lifestyle of the past.



Denver and New York

What: Micro Apartments

Slow Principle: Downsizing

Denver and New York are about to cut ribbons on new micro-apartment complexes, akin to the efficiency apartments that were commonplace decades ago. For people looking to slow down their routine, affordable apartments in downtown Denver and New York City give those who would normally have to commute the ability to walk or bike to their offices. The units, which tend to average a compact 330 square feet, include a kitchen, bathroom, balcony, and in-house bike and car-sharing.

Living slow to build community

After spending a year living on the third story in New York City, Powers and his wife have moved to Bolivia and taken the slow habits they learned in one of the world’s biggest cities with them. Beyond cutting expenses and reducing the amount of hours he had to work, Powers designed his routine so he interacts with the people more.

Instead of rushing past people every day, he now stops to engage with his neighbors. Of all slow city principles this is perhaps the most important one: reconnecting with your surroundings. Powers talks about the day’s catch with the fishmonger at the restaurant below his apartment. He has become a regular fan of the jazz group that plays in the park near his house. And he has learned the names of the pigeons from the man who feeds them every day.



Jerome Roos is a PhD researcher in International Political Economy at the European University Institute, and founding editor of ROAR Magazine.

Credit: <http://roarmag.org/2015/10/housing-crisis-quantitative-easing-protest/>



Barcelona

Population: 1.6 Million

What: Urban Agriculture

Slow Principle: Green Urban Sanctuaries

Barcelona's mayor and the city's chief architect have both been working with Cittaslow for years, spearheading the organization's new project, "Cittaslow Metropolel." He announced the city's ambitious goal at the 13th Biennale of Architecture in Venice, saying he wants Barcelona "to be a city of productive neighborhoods at a human pace, making up a hyper-connected city of zero emissions."

Inspired by a lecture given by Olivetti on slow living principles, students at the Institute for Advanced Architecture of Catalonia (IAAC) were recently challenged to imagine each neighborhood in Barcelona as a slow city, with all pieces connecting as one giant "smart city." One idea that emerged from IAAC was to transform typically under-utilized urban spaces, like pedestrian bridges, as urban agriculture sites that double as green sanctuaries for citizens, keeping nature within reach.

Tokyo

Population: 13.4 Million

What: Voluntary Blackout

Slow Principle: Minimizing Environmental Impact

Tokyo, one of the largest cities in the world, is home to its own slow-living organization called Sloth Club. Founded more than 15 years ago, the club's mission includes minimizing "our destructive impact and finding joy in our life without consuming an endless chain of meaningless things." In admiration of the sloth's slow style, the club also works to save sloth forest habitats in Ecuador.

Back in Tokyo, members of Sloth Club follow principles like eating slow, supporting local businesses, up-cycling (repurposing something that could have been thrown out), and walking or using public transport. One of the club's main initiatives is a national campaign calling for residents of Tokyo to turn off electric lights for two hours in the evening during the summer and winter solstices to promote an appreciation of natural light and minimal use of electricity.



Providence, RI, and Columbia, MO

Population: 178,000 and 115,000

What: Walking School Bus

Slow Principle: Community Organizing

The "walking school bus," an original tenet of Cittaslow, is gaining popularity in places like Providence, Rhode Island, and Columbia, Missouri, where thousands of schoolchildren walk to school en masse, guided by an adult volunteer. Last year Molly Rusk wrote an article for YES! Magazine, about how the trend benefits student's health and builds strong community ties.



A few Indian Cities are waking up...

Gradually, in a few cities in India, citizens' groups and city corporation / municipalities are beginning to show the way through projects of the regenerative kind.

Top-down work on smart cities can only be expected to work through more capital investment in infrastructure, connectivity etc. While some of this, especially for some aspects of water and waste management may be needed, without participation by citizens true regeneration may never happen.

Featured here are the happenings in a few cities through citizens' initiatives and public-private partnerships. Calamities like the Chennai and Mumbai floods, the Uttarkhand disaster, the waste disposal crises in Bangalore etc., hopefully will wake us up to participate in making our cities livable.

Credit: McKay Savage (www.flickr.com)



Biogas plant

Kolar

Bio-energy

The depletion of natural resources due to increasing energy demands, alongside pollution, have caused a trend in a switch to alternatives. Scientists from Energy & Wetlands Group, Center for Ecological Sciences, IISc Bangalore, have promoted the use of bio-energy for environmental sustainability. A shift from firewood systems to biogas based energy resources can improve energy efficiency, according to Dr. T. V. Ramachandra & Dr. Pramod Dabrase. In rural areas of Kolar district, 0.7 tons of fuel-wood can be saved per head per year, relying on more efficient sources of energy such as bio-methanation. Biogas has an energy efficiency of 60% whereas dry wood is only 10% efficient, most of its calorific value being diverted to light energy, ash residues & combusted gases. Biogas being less polluting, and aiding in reuse of agricultural and livestock wastes, is a sustainable approach to conservation of bio-resources.

Domestic Energy requirements of more than 60% of the population in Kolar is met by biogas plants.

Credit: http://wgbis.ces.iisc.ernet.in/energy/paper/energy_and_environmental_sustainability/bioenergy.htm

Surat

Sanitation

With rising populations and expanding cities, intensified urban development comes along with a heavy price on sanitation. Upgrading sanitation standards to improve public health in Surat has been internalized, post the incidence of plague in 1994. The local authority and municipal commissioner ensured regular cleaning of markets and roads on alternative days. The city was divided into 52 sanitary wards, with stringent measures on hygiene & sanitation. The modification of already existing policies while planning development of cities is key to successful implementation mitigating any externalities. Public-private partnerships were launched to improve waste collection in a decentralized approach. With modern sewage treatment plants, and a computerized water distribution and drainage system, it has become a model city for others to replicate. It has also become one of India's cleanest cities, with a focus on city cleanliness and people's health.

Credit: <http://www.smartcitieschallenge.in/casestudy/surat-upgrading-sanitation-standards-to-improve-public-health>



Children in an unsanitary slum in India

Credit: Christine Werner (www.flickr.com)



Pune

Sanitary Waste

Sanitary waste, disposed in domestic garbage, causes more sickness than pure organic kitchen waste. There is an urgent need to prevent the spread of diseases via proper disposal of sanitary waste, sewage containing millions of fecal coliforms. Pune's sanitary waste is being managed by SWaCH, a cooperative of self employed waste-pickers. Waste segregation is key here, with an additional step in promoting reusable sanitary napkins. The message to people is "Use your freedom responsibly in disposing your waste". Community organization and mobilization result in net positive benefits to societies, with an added employment opportunity to deprived sections of society.

Preethi Sukumaran writes about the use of sanitary towels and reusable cloth diapers. According to her estimates "Only 12% of the 355 million women of menstruating age in India can afford disposable sanitary napkins. But, conservatively, these 42.6 million women will throw 21.3 billion sanitary napkins into a landfill in their lives". The irony behind this is that we are running out of landfill area, but does buying costly products solve the crisis of enormous waste generation?

Credit: <http://www.thealternative.in/lifestyle/how-punes-segregating-its-sanitary-waste-effectively/>

Nagpur

Door-to-door Collection of Municipal Solid Waste

The issue of municipal solid waste persists from the point of generation - a household, upto the end point of disposal - a landfill. With rodent & pest menaces, airport incidents of bird kills, and stench during collection, all possible solutions come with a certain effort and cost. Dr. Vivek Agrawal of Nagpur, writes about a sustainable waste management approach that Indian cities need to adopt. According to him, it has created livelihoods for the deprived, ensured a cleaner environment via door-to-door collection of garbage, and entrusted a public-private-peoples' partnership in the process. Use of ergonomic tools and appropriate technologies has improved the efficiency of waste recycling. "Swachata Doot Aplya Dari" is an innovative approach, with socio-economic benefits, improving public health and quality of living. It scientifically builds into a self sustainable service for urban communities

http://www.seas.columbia.edu/earth/wtert/sofos/Vivek_Sustainable%20Waste%20Management-%20Case%20study%20of%20Nagpur%20INDIA.pdf



Coimbatore

Happy Streets



There is something for everybody at Happy Streets, Coimbatore – for youngsters to play games, cycling enthusiasts, antakshari singers, for housewives and senior citizens to hang out and more. On the whole, space for community, which possibly a commercial city like Coimbatore was thirsting for.

Certain main streets are closed to vehicles on Sundays – a very simple device supported by the Coimbatore Police and a popular Newspaper– to bring about a veritable transformation in people's lives at least once a week. The streets are very empty at 6:30 am when at the start of the event there are just a few sports crazy youngsters happy to have the run of the empty streets with their cycles and skateboards. But soon it gets really busy. Children especially have a great time, running around, shooting balloons etc in addition to drawing on the streets. The Happy Streets also provides economic opportunities for small business people who rent cycles and sell balloons and also some small refreshments. The atmosphere truly is of a bustling Indian mela.

Container of life

What is Holistic Science and its relevance to today's world?

Philip Franses

Holding our stories

What is the container of our life today? For some of us the container may be a trust in science and our progress in understanding and control of nature. For others the container may be belonging to a religious or spiritual tradition. For others the container may be working for the good of society. Yet all these containers no longer seem to hold what is true, valuable and precious to us.

Science seems to widen its areas of expertise and increase its mountains of data, without offering any more depth to us, in terms of how to live. Questions of science are decided by and for experts. Spiritual leaders like the Dalai Lama, address this lack of spirit and meaning, but there is no unity in a message that would globally reawaken trust. Even the earth now is seen as a complex system of interactions, such that we are on the point of tipping into some other climate state, maybe in the extreme case, one uninhabitable by ourselves.

It is clear from this picture, that what we are looking for, a Holistic Science, is something that can interpret the understanding of science, within a wider whole picture of who we are. The aim of Holistic Science is to add myth to explanation, and meaning to experience. We seek to discover the compass of the four ways of knowing, able to hold our seeking in the world.

Journey

Holistic Science cannot be considered something new. For every indigenous society and ancient civilisation up to Pythagoras and the Greeks, science was embedded in a story of the world. For the Greeks, mythos and logos were reflections of each other, the spiritual encounter with the unknown supported by the knowledge of the ways of the world. Science of harmony, ratio and proportion mirrored the nature of mythic reality, as told through the ancient stories. The container of life was this unity between what we felt and what we knew.

The change to this contentment with seeing the world as a reflection of our natures and our participation in its stories came with the philosophical tradition, begun by Plato and Aristotle. It became the norm to first question the logic of existence, as an abstract question, and then secondly to ask for our particular role and value within our conceptual, rather than lived, understanding. For instance the dialogues of Plato seek to locate the good values within the context of people arguing about different reasoning until the clear path was revealed.

A bright spark in assimilating this new emphasis on knowledge was provided in Islamic Spain under enlightened Islamic leadership in the 10th to 12th centuries. The container of knowledge was the inspiration to address God in a new way, through all possible means, philosophical, mathematical, poetic, religious - Jewish, Christian, Islamic all giving valid input to this one aim. The beauty of the buildings, poetry and scholarship that this era left behind gives testimony to the success of this endeavour of providing a rich container for life.

In the scientific revolution in Europe from the 16th century, a curious phenomenon acted itself out. With each great discovery of mathematics, calculus, electromagnetism, relativity and quantum theory, there seemed to be two quite distinct interpretations or stories that could be told.

One set of scientists, wanted to see science break down the old claims of divine purpose and put in its place a world that was reduced, drilled through and penetrated to the very bedrock of ultimate understanding. But alongside there was another more holistic approach, that wanted to situate the discovery and the mathematics in a new guide for living. This perspective provided a whole story of origination, experience, and meaning, as a container to the process of life, through the mathematics.

This great vision of a truly Holistic

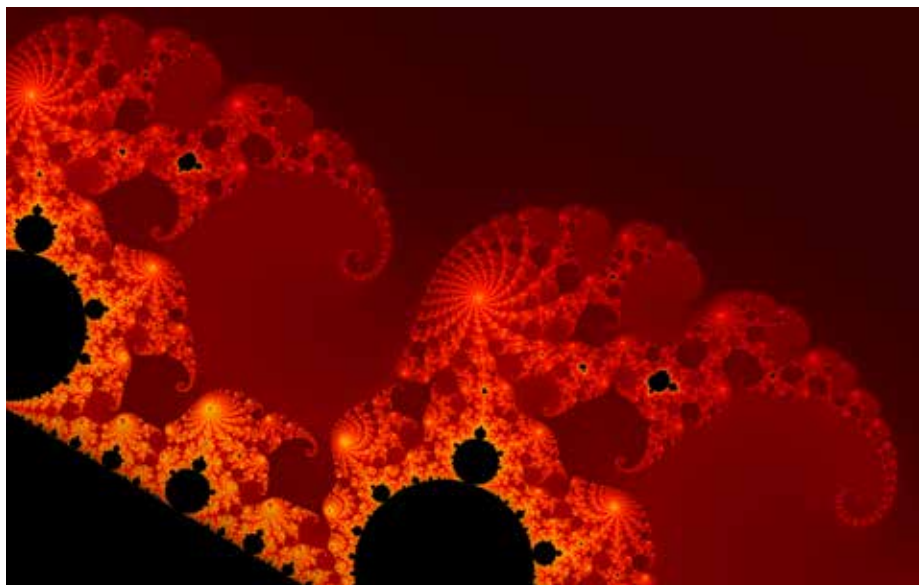
Science, that which told the basic tale of our existence, was always present and developing, right up to Einstein, who, in 1915, combined the mathematics and the intuition in the most brilliant and gentle way, to turn our view of the universe inside out.

The real separation between stories came with the discovery of the atom in the 1920s. For materialists, the ultimate container of existence would be the knowledge of the atom. But when technology became available in the 1900's to penetrate into the basic particle world, what they found was far from straightforward. The atom for instance was almost entirely empty space and yet had the strength to underpin all structure. In the 1920's Bohr and his colleagues came up with the Copenhagen interpretation. This suggested that we could no longer expect to see reality as it was directly. Instead we had to see reality through a mirror. The mirror that Bohr erected was between possibility and measurement. Provided we looked through this particular mirror we could understand how emptiness of the atom, seen from one side, was actually unmatched strength, when seen in its reflection of measured reality.

Einstein never accepted this mirror reality of Bohr. It separated the container of science - the mathematical and intellectual reasoning in which was described the working of this mirror, from the actual experience of life.

Pauli, a colleague of Bohr, after a series of emotional traumas, had a nervous breakdown at the University of Zurich where he was working on quantum theory. He went to see Jung who lived in the same town. Under Jung's guidance, from 1934, Pauli began having dreams of the renaissance of spiritual value through the terms and concepts of atomic science. His first such dream was of a world clock, a beautiful golden disk, supported by monks, portraying the harmony of the world. He felt he was seeing a mythical renewal being born in the very ashes of the separation science had brought.

[Modern] Science from the start wanted to see itself as the new container for the story of modernity. And this container could be seen in two ways. Either it could be the short term container of materialism, holding an increasingly fragmented basket of things, or it could be the long term container of wisdom, gleaned from the long path of learning, of breakdown and healing, on which we have come.



Pauli was the first modern Holistic Scientist!

Further after the War, where the splitting of the atom made its destructive contribution, David Bohm continued to question the mirror analogy Bohr had introduced. One of the people working with Bohm was Henri Bortoft. Bortoft realised that you could not understand wholeness separate from the experience of life. Bortoft went into the study of Goethe and phenomenology that became the foundation of Holistic Science.

As I say in my book, *Time, Light and the Dice of creation*,

‘Bortoft’s understanding of wholeness came from the attempt after the war to have a new understanding of what quantum theory was about: to get beyond the point of destruction. It was Pauli’s vision of the world clock. Is there, underlying the phenomena of quantum theory, a totally new understanding? Can the mathematics of the atom be one instance of a broader dynamic that has been explored elsewhere in terms of philosophy, language, and meaning? Can the physics allow us to see deeper into a truism about life itself, to discover who we are in a new light? And in order to let wholeness rediscover itself, re-imagine itself, we have to come out from the shadows [of an objective explanation], wherein Bohr’s interpretation was concealed, to reveal through our experience, the meaning of who we are. We have to examine what is wholeness? what is life? all over again.

Bortoft breaks with a science of concealment, that threshold where

abstraction encloses existence within a cave of darkness, in which you can hide whatever you want. Bortoft’s approach is to discover the process that gets to the light of understanding, the revelation of a dynamic process of whole/ part behind nature. He understands wholeness, to arrive at the underlying process, to meet the world in its own terms.

Quantum theory looks at that shore where the world disappears and attention brings structure into being. Bortoft looks at the other shore, seeing wholeness can participate in the journey and show something of essence. So, it is like having two different shores that we are looking at: one, this dark shore of fixed existence, and the other, this living understanding of seeing the coming-into-being of something in its essential form. This is what our inquiry [Holistic Science] is all about, this journey from this incredibly dark and hidden place the world got into, into this very light, and very bright, and very living revelation of our true nature.’ (Franses, 2015)

Completing the cycle

The container that Holistic Science offers, especially in the MSc of Holistic Science at Schumacher College, begun by Brian Goodwin that I now teach with Stephan Harding, is to offer a perspective of meaning in the journey of science. Science has taken us in an exploration of the world of separation. But this journey into separation, gives us a vision of completing the cycle of knowing wholeness anew. The course is thus aimed at holding the individual journeys of transformation of the students within this wider context

of the struggle of science, between reductionism and wholeness.

Holistic Science is novel, because it does not start from the separation of science and mythology and try to sew these back together. The container of our journeys becomes a much longer and vaster process than just our own experience. The container of our lives, is not just now where everything is fragmented in consumerism and narrow specialisation, but is that whole journey that arrives at the shore of the appreciation of wholeness in where and who we are.

[Modern] Science from the start wanted to see itself as the new container for the story of modernity. And this container could be seen in two ways. Either it could be the short term container of materialism, holding an increasingly fragmented basket of things, or it could be the long term container of wisdom, gleaned from the long path of learning, of breakdown and healing, on which we have come.



Philip Franses, a scholar and teacher of Complexity Science at Schumacher College, UK. Academia’s dull explanation of the world inspired Philip on a counter-journey into the depths of experience, travelling and a re-sensitisation to quality. Philip edits the *Holistic Science Journal* and is also the convener of a successful inquiry forum called *Process and Pilgrimage*.

RESISTANCE and RECONSTRUCTION

DDS is transforming the lives of villagers around Zaheerabad, in Telangana. **Ashish Kothari**, who visited the place recently, writes about how DDS has worked successfully with Dalit farmers to spread ecologically sustainable farming, women empowerment and community-led communications.

The seeds of revolution

She does not shout slogans or sit on dharnas and is unlikely to have heard of Marx. Armed rebellion is nowhere on her horizon. Her revolution is embedded in the basics of life: soil, seeds, water, sun and the knowledge born of generations of living with these natural elements.

On just three acres of rain-fed land in one of India's driest regions, she has grown 45 crop varieties, produced enough to feed her family for the whole year and earned Rs 2 lakhs selling the

surplus out of which, having spent Rs 18,000 on her farm, she has a hefty profit of Rs 1.8 lakhs. And this, in a year in which the region has seen 40 percent less rainfall than normal and with no chemical inputs whatsoever. She has turned Green Revolution logic on its head.

Nadimidoddi Vinodamma, ably helped by her husband Vinayappa, is modest about her achievement. Surrounded by a bewildering array of jowar, bajra, ragi, red gram, green gram, til, sama, korra and other food

crops on their land, Vinodamma talks quietly about how she is merely using knowledge handed down over generations, trusting the land, and traditional seeds.

Some colleagues from Kalpavriksh and I are in Nagwar village, near Zaheerabad in Telangana, visiting Vinodamma, after hearing her remarkable story.

Continuing with tradition is not the only reason for Vinodamma's success. Another major factor is the presence of the organisation she belongs to,



Nadimidoddi Vinodamma with her jowar crop.

the Deccan Development Society (DDS). Over almost three decades now, DDS has been quietly working with Dalit women farmers, all small or marginal land-holders, to point the way to food sovereignty, sustainable agriculture, women's empowerment and community-led communications.

But more on this in a bit.

Vinodamma and Vinayappa

As we walk through Vinodamma's and Vinayappa's farm, they point out five varieties of jowar (sorghum), telling us how one grows quite fast and with very little water (and is, therefore, called the "poor person's jowar"), while another is good for diabetics, a third has high productivity and so on. They tell us how the harvesting will be staggered over a few weeks, as different crops have different maturing periods.

We ask them if their output this year has been enough to feed the family the whole year; beaming, Vinodamma says yes, adding that there is surplus to sell. The only groceries they need to buy are salt, sugar (of which they consume very little), coconut oil, soap and detergent; and, during February-April and drought years, some vegetables.

We notice some trampled jowar and bajra; Vinayappa tells us that wild pigs sometimes get into the field but that even after the pigs, birds and other creatures have done their damage or taken their share, there is enough for the family!

"What fertiliser do you use?" we ask. Nothing artificial, they reply; only vermicompost, cowdung powder and dried neem powder.

What about pests? What do you do when they attack a crop? We spray jaggery water on crops, they say. It attracts ants that feed on the pests. They use neem oil and other natural products if the pest attack is greater. But, for the past several years, there has been no serious pest problem.

Noticing that the neighbouring farm has only cotton growing in it, we ask why that farmer is not doing what Vinodamma and Vinayappa have done. They say he was enticed by the incessant advertisements, often featuring famous Andhra celebrities, that promised bumper cotton harvests and instant wealth. But, despite repeated application of fertilisers and pesticides, his yield this year was so



Inauguration of a DDS-Organised Event "Organic Medak"

bad (with input costs being as high as ever) that he has suffered a financial loss.

Is he, then, attracted by their way of farming? Will he switch to millets and pulses? Apparently, he will drop cotton next year; but whether or not he will try out yet another promised miracle with sugarcane, or emulate the Nadimidoddis, they are not sure.

What about rice – do they not need to buy it? (It does not grow here.) Vinayappa grins. He says that hardly anyone here likes rice. They do eat it occasionally because it is available free or very cheaply, as part of government welfare schemes; but millets have significantly higher priority.

A collective endeavour

Vinodamma is part of a "sangham," a collective of Dalit women from her village. It's one of several such, in 45 villages affiliated to DDS, which has about 3,000 women members.

Through seed exchange, fund collection and management, knowledge-sharing, collective labour and other joint activities, the sanghams have overcome the barriers and limitations that individual marginal farmers – especially women – face.

As an umbrella organisation, DDS has helped in many ways: arranging credit for and linking women to banks; conducting participatory natural-resource documentation and planning exercises; overcoming resistance from men and the upper castes; getting women ownership over (or, alternatively, rights to) land they cultivate; dealing with hostile or indifferent government officials and bringing in helpful ones; providing information on the dangers of chemicals and hybrid and genetically modified (GM) seeds; helping build capacity to understand policies and laws; marketing organic produce through a cooperative, Sangham Organics; and

DDS has helped in many ways: getting credit and linking women to banks, conducting participatory natural resource documentation and planning exercises, overcoming resistance from men and upper castes, trying to get women ownership over or rights to lands they are cultivating, dealing with hostile or indifferent government officials and bringing in helpful ones.

Also providing information on the dangers of chemicals and hybrids and genetically modified seeds, helping build capacity to understand policies and laws, marketing of organic produce through a cooperative called Sangham Organics, and in many other ways facilitating the empowerment of women to take back control over their lives.

in many other ways facilitating the empowerment of women to take back control over their lives.

DDS has also been trying to get the area it operates in declared a biodiversity heritage site (a status under the Biological Diversity Act that could possibly make the move towards sustainable farming more secure). Though legally unclear, such a status could, for instance, be used to check the entry and spread of GM crops here. (DDS has actively documented the ill effects of Bt Cotton, already introduced in the region; see the video gallery at www.ddsindia.com). Unfortunately, the State Biodiversity Board has been delaying a decision on the Bt Cotton issue.

One of DDS's most important innovations is a parallel PDS. Loans given to poor Dalit women farmers by DDS are repaid in kind – a specified quantity of jowar – which is then made available to the poor in each village, at cheap rates. People thus have an alternative to the government-run, corruption-ridden PDS (which supplies only wheat and rice, frequently of poor quality). This has also helped localise the food economy, reducing dependence on external forces over which farmers have no control.

The demand for biodiversity heritage site status is partly an outcome of DDS's involvement with national networks and campaigns. These include the Millet Network of India (MINI; which DDS has initiated), the Campaign on Community Control of Biodiversity, to highlight the need for democratisation of the governance of biodiversity, which ran for a few years; and the National Biodiversity Strategy and Action Plan (NBSAP; during 2000-03) that helped formulate a farmer-centred biodiversity action plan for the district.

It was during this process that DDS introduced the idea of biodiversity festivals, which has since spread to many parts of India. DDS conducts

these month-long annual mobile festivals during January-February, with decorated bullock carts that showcase local seed diversity and traditional dishes and discussions in dozens of villages on the importance of organic, sustainable, biodiverse farming and the dangers of corporate control over food. These processes and the sheer success of farmers like Vinodamma are used for advocacy with the district, state and national governments.

The day before our visit to Nagwar, we had participated in the inauguration of a programme titled "Organic Medak," organized by DDS. The aim was to build on what the Dalit women had achieved, spread the message of going organic and focus on millets across Medak district as a whole. The function's chief guest was the district collector, (DC) D. Ronald Rose. Also present was the Superintendent of Police (SP), B. Sumathi. Both DC and SP appeared genuine in their assurance of help to DDS to make such a vision come true. Several Dalit women whose stories were like Vinodamma's were also honoured at the function.



Kandakamkadi Mogalamma at a programme in Pastapur

One of DDS's most important innovations is a parallel public distribution system (PDS), which Tuljemma, of Pastapur, explained in detail. Loans given to poor Dalit women farmers by DDS are repaid in kind – as a specified quantity of jowar. This jowar is then made available to the poor in each village, at cheap rates. The people thus have an alternative to the official government-run PDS (which supplies only wheat and rice and that, too, frequently of poor quality), which is often riddled with corruption. The DDS PDS also helps localise the food economy, reducing dependence on external forces over which farmers have no control.

The example has been used to advocate fundamental changes in the official PDS system across India, including its decentralisation (in terms of democratic control) and localisation (in terms of diverse foods relevant to local ecologies and cultures).

Perhaps, as a result of this and advocacy by other groups, the Food Security Act 2013 states that “the Central Government, the State Governments and local authorities shall, for the purpose of advancing food and nutritional security, strive to progressively realise the objectives specified in Schedule III...”. The schedule includes:

(a) Incentivising decentralised procurement, including procurement of coarse grains

(b) Geographical diversification of procurement operations

(However, without any mandatory time-bound provision, it is not clear if this part of the Act will get implemented in the near future, or at all!)

Another DDS achievement worth emulating is the way the local Krishi Vigyan Kendra (agricultural science centre) is run by DDS women with help from government-appointed scientists. The Kendra is one of the few in India where the curriculum is set by farmers.

Also, to make local organic food popular, DDS has set up Café Ethnic and a Sangham Organics shop in the town of Zaheerabad, where millet-based products and dishes predominate.

Not restricting itself to agriculture and food, DDS has also facilitated skill development of the women in film-making, community radio, teaching

DDS has also facilitated skill development of the women in film-making, community radio, teaching and other vocations. In films like *In the Lap of Pachamama*, *Bhootali* and *Mother Earth*, they have documented a fascinating exchange programme with farmers from Peru.

Now, many women can speak confidently about not only their crops, soil and cuisine but also about the national and global politics of food and agriculture.

and other vocations. India's first rural community radio station, Sangham Radio, was started here in 2008. The area's Community Media Trust is run by women farmers who double as film-makers.

Perhaps most importantly, all this has also dramatically altered their triple marginalisation as Dalits, women and small farmers. The respect they have gained in their own communities, with the government and in national and global circles is palpable.

Several women have also been able to travel to other parts of India and abroad; film-maker-farmer Narsamma has been to about 20 countries, showing her films and exchanging experiences with similar movements. Thirteen-year old Mayuri, under the mentorship of P.V. Satheesh, one of DDS's founders, has also become a film-maker, documenting the wisdom and knowledge of her elders and of how her family's farms are also her school.

A fascinating exchange programme with farmers from Peru has been documented in the films *In the Lap of Pachamama*, *Bhootali* and *Mother Earth*. (For this and other films by Mayuri, Narsamma and other DDS women, visit the video gallery at www.ddsindia.com.) With such exposure, several women can speak confidently about not only their crops, soil and cuisine but also about the national and global politics of food and agriculture.

There is much else that can be said about the DDS women – their successes, weaknesses, failures and what more needs to be done. Of the latter, Satheesh, for instance, laments that DDS, despite having its own alternative school, Pachasaale, which has students mostly from the Lambada community, rather than local farmers' families, has not been able to do much about the education system which, with increasing privatisation

and English orientation, is creating students alienated from their cultures and ecologies.

The larger context of the urban job market, the attractions of the city and other factors act against the sustainability of agriculture-based livelihoods. A holistic revival of rural areas that covers the entire range of needs and aspirations, including those for secure livelihoods and jobs as much in manufacturing and services as in agriculture and pastoralism; good learning opportunities; health services; and so on are beyond the scope of any single organisation.

DDS's forays into media and communications, education and health are providing partial solutions. Notwithstanding this, the women of DDS have shown that amazing transformation in well-being based on ecologically sustainable and culturally rooted processes is possible within a generation.



Ashish Kothari is a well-known biodiversity expert and a founder-member of Kalpavriksh, a 30-year-old environmental research and action group. He has been a member of people's movements against destructive development projects, including the Narmada dams. He coordinated the Technical and Policy Core Group to formulate India's National Biodiversity Strategy and Action Plan.

Ashish is also a member of the panel of advisors of Bhoomi College.

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What does a sustainable future actually look like?

Are we aiming for a Jetson's version of the future rather than a truly sustainable one?

If sustainability is going to succeed, it's time to talk specifics, says **Todd Reubold**.



If sustainability is going to succeed, it's time to talk specifics.

"Roads? Where we're going we don't need ... roads."

Wild-haired scientist Emmet "Doc" Brown famously uttered those words at the end of the 1985 classic *Back to the Future* — at the time, just the latest representation of a decades-long fantasy society has held of a future filled with servant robots, floating cities and a flying car in every spaceport.

In recent years among the environmental community, a parallel vision of the future has emerged. Everyone, from CEOs of progressively minded companies to activists on the street, is talking about "building a more sustainable future." Often, though, it feels like we're closer to the Jetsons' version of the future than to a sustainable one. That's because, unlike dinner in a pill and jet packs, sustainability still often feels like an amorphous topic discussed mostly in vague declarations. It's like peace or hope. Everyone wants it, but no one really knows what it looks like.

The most common definition comes from 1987's Brundtland Report: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

But this leaves a lot of room for interpretation. Whose "needs of the present" is this referring to? The needs of a family of four in a United States suburb are quite different than those of a similar-sized family in sub-Saharan Africa. And regarding the needs of future generations, a world with 10.8 billion people in 2100 is drastically different

than our current world of 7 billion. Figuring out how to meet our needs while simultaneously considering the uncharted territory of such a large future population is a massive undertaking.

Most importantly, though, this definition doesn't tell us what sustainability actually looks like in practice. How can we motivate people to move toward more sustainable lifestyles if they can't envision what they're moving toward?

The Many faces of Sustainability

Further complicating the topic of sustainability are the myriad aliases it operates under — sustainable development, resilience, sustainable entrepreneurship, Triple Bottom Line, corporate social responsibility, etc. Looking closely at the last of these, Dutch researcher Marcel Van Marrewijk wrote back in 2003, "Too often, CSR is regarded as the panacea which will solve the global poverty gap, social exclusion and environmental degradation."

That's a lot to hang on one underdefined term, which Van Marrewijk recognized when he went on to write, "more specific definitions matching the development, awareness and ambition levels of organizations" should be developed. And yet more than 10 years later we continue to speak in sustainability generalities.

Steps Forward

As communications expert Matthew Nisbet previously suggested in this magazine with regard to climate change, perhaps it's more effective to break the issue into smaller, more manageable chunks than to speak of sustainability in grand pronouncements.

To that end, here are four suggestions to help advance the "global sustainability" narrative.

1. Break sustainability down by sector

When throwing around phrases such as "building a sustainable future," it's critical to identify the sector you're talking about. The sustainability of the transportation sector obviously presents a different range of challenges and opportunities than, say, the sustainability of global agriculture. And if one becomes more sustainable while the other becomes less sustainable, are we truly moving toward a more sustainable future overall?

Even within sectors there are challenges. If your goal is to create a more sustainable energy system, does that mean reducing carbon emissions — thus including nuclear energy — or are you referring to "clean" sources

Unlike dinner in a pill and jet packs, sustainability still often feels like an amorphous topic discussed mostly in vague declarations. It's like peace or hope. Everyone wants it, but no one really knows what it looks like.

of renewable energy such as solar and wind? Once again, details matter greatly.

2. Speak in specifics

Ask a hundred people if they're interested in living in a "more sustainable world" and I bet the vast majority would respond, "Yes." The trouble is, they'd probably all have a different idea in their heads of what that meant. We need to start talking about a sustainable future in specifics. Sustainability over what time frame? Where? For whom? Which brings me to my next point...

3. Clearly identify who benefits

We need to clarify who benefits from sustainability efforts. For example, does sustainable apparel benefit someone making dollars a day? If so, explain how. Does sustainable energy help the millions living without access to electricity? Are we talking about sustainability for humans, animals, plants and/or other natural systems? If humans are living "more sustainable lifestyles" while the extinction rate for plants and animals continues its upward trajectory, can we call that a success?

4. Paint a picture

What does sustainability look like in practice? How does it actually work? What's different from the world we live in today? And, perhaps most importantly, what are the trade-offs? Walking and biking might be the most sustainable forms of transportation, but they're probably not the most time-efficient if you need to drive 10 miles across town for work or an appointment. No matter how different we want the future to be, we can't simply ignore the way people actually live today. We cannot simply wish for a world we want.

The most cogent vision of the future I've seen actually comes from a work of fiction (let's hope it becomes nonfiction!) published last year by environmentalist and writer Jonathon Porritt. In *The World We Made* Porritt's lead character Alex McKay reports back from the year 2050 and explains how we managed to overcome the "wasted decades" of the early 2000s to arrive at the narrator's vision of a more sustainable future.

While the book at times paints a "green utopian" vision of the future, writing in the postscript Porritt himself acknowledges "the gap between what is actually happening [in terms of moving toward a more sustainable future] and what needs to happen remains deeply disturbing. Windows of opportunity don't stay open forever — and this one does seem to be closing fast."

Still, for anyone wishing to peek into the future and explore a hopeful vision of what sustainability in action might actually look like over the next 36 years, I highly recommend picking up a copy of *The World We Made*.

What we talk when we talk about sustainability

Part of the problem with designing a vision of sustainable future is that the future is so darn hard to predict or imagine. Raise your hand if you grew up in, say, the '70s or '80s thinking someday you'd walk around with a mini supercomputer in your pocket. See what I mean?

That's why it's good to know that people such as Jamais Cascio and organizations such as the Institute for the Future are busy mapping out future scenarios for the planet, while the U.K.-based Forum for the Future is working directly with businesses, governments and others to put sustainability into action today while outlining possible visions of tomorrow. Whether predictions from organizations such as these and others hold true is obviously to be determined, but at least they're providing a collection of possible road maps with time for course correction.

It's also good news that there's a movement afoot to get more specific about sustainability. For example, "The Future We Want," a road map for the future of sustainable development, was an official outcome of the 2012 Rio+20 U.N. Conference on Sustainable Development. And in 2015 the U.N. will convene member states to outline Sustainable Development Goals aimed at building upon the earlier Millennium Development Goals.

Meanwhile, the not-for-profit organization The Natural Step has long touted the concept of "backcasting," or imagining a more sustainable future, and then asking, "What do we need to do today to reach that vision of success?" The organization has worked with thousands of companies, academic institutions, thought leaders and others to move sustainability from idea to implementation.

Looking ahead, we need to start an honest conversation about what sustainability actually looks like in day-to-day life today and in the future. So, why not get started right now: What does a sustainable future look like to you? And please be specific.



Todd Reubold is the publisher, director and co-founder of Ensia. In this role he is responsible for overall leadership of the Ensia media platform; which includes Ensia's award-winning print and online magazine, live events and more.

Credit: <http://ensia.com/voices/what-does-a-sustainable-future-actually-look-like/>

BUDGETING FOR AGRICULTURE:

How About Smart Villages, Mr Modi?



For over two decades now, agriculture has suffered neglect, as successive governments, led by World Bank-prescribed growth models, have issued disproportionate doles to industry.

While current allocations do not spell much hope, **Devinder Sharma** suggests what the Modi government can still do to reverse the trend.

I have never understood why Indian farmers are ignored. Even with a meagre outlay every year, they produce bountiful harvests. If only they were given a much-needed economic stimulus package, I'm sure they would flood the country with food, fruits and vegetables and India would certainly emerge as one of the biggest exporters of agricultural commodities.

During 2013-14, farmers produced a record harvest of 264.4 million tonnes of foodgrains. Production of oilseeds reached the record high of 34.5 million tonnes, with a jump of 4.8 percent. Maize production increased by 8.52 percent, to reach 24.2 million tonnes. Pulse production also reached

an all-time high – 19.6 million tonnes – an increase of 7.10 percent over the previous year. Cotton production, too, touched a record high.

However, in the same year, when farm production recorded a quantum jump, agriculture received Rs 19,307 crore of the annual budget – less than 1 percent of the total budgetary outlay! This year – which promised to be the harbinger of “achche din” – saw Finance Minister Arun Jaitley allocating only Rs 22,652 crore to the agriculture and cooperation departments! Clearly, the apathy towards agriculture continues.

Agriculture in India employs 60 crore people, nearly 82.2 percent of whom are

small and marginal farmers. Despite meagre land holdings and virtually no financial support, this majority segment has somehow managed to survive. Studies have shown that nearly 60 percent of farmers go to bed hungry. With agriculture deliberately being made economically unviable, more than 42 percent farmers would quit farming, given a choice.

Mainstream economists appear keen to push the farming population to the urban centres. With the World Bank viewing rural-to-urban migration as the ultimate indicator of economic growth, Indian economists have been parroting the same prescription. The Economic Survey

2013-14 points in the same direction. Raghuram Rajan, the governor of the Reserve Bank of India also echoes the same argument.

Rising food inflation comes in handy to up the ante against the minimum support price (MSP) being paid to farmers. The government is recommending that Agricultural Produce Market Committee (APMC) *mandis* be dismantled. Farmers are being pushed to accept the market doctrine, which means that distress sale will now become a norm.

In Bihar, which has had no APMC since 2007, markets have failed to infuse any confidence by way of economic prosperity among food growers. But that's what the markets like. They want to source farm commodities ever more cheaply and further increase their profits. What happens to farmers, as a result, has never been their concern, nor will it ever be.

The neglect of agriculture has become more pronounced since economic liberalisation was introduced in 1991. I recall the famous budget speech of then Finance Minister Manmohan Singh, when he showered all the bounties on industry and, in his very next paragraph, *said that agriculture remained the mainstay of the economy!* Since agriculture is a state subject, he left it to the state governments to provide the crucial impetus to farming.

What he forgot was that, by the same logic, industry too, being a state subject, should have been left to the state governments. The bias was clearly visible.

Although agriculture grew at an impressive rate of 4.1 percent, in the 11th Plan period (2007-08 to 2011-12), it

Maybe Prime Minister Modi will reverse the trend and make historic corrections. During his election campaign, he had repeatedly emphasised the dire need to make farming economically viable. He has also been talking about providing modern amenities in the villages.

A beginning can be made by revitalising agriculture in a manner that brings back the smile on the face of farmers. In addition to creating 100 smart cities, Mr Modi should also focus on creating smart villages.

received the dismal financial support of Rs 1 lakh crore. For a sector which directly and indirectly employs 60 crore people, an outlay of Rs 1 lakh crore for five years was peanuts.

In the 12th Plan period (2012-13 to 2017-18), agriculture is projected to receive Rs 1.5 lakh crore. Compare this with the Rs 5.73 lakh crore tax exemptions showered on the industry in 2014-15 alone. This clearly reflects the state's priorities and, in fact, as I have been saying for long, farmers have disappeared from the economic radar altogether.

Along with such low budgetary allocations for agriculture and the fact that public sector investments have been drastically falling in rural areas, there is no visible intention of the government resurrecting the farm sector, reeling as it is under terrible economic distress. As if this were not enough, all the noise in TV studios is over demands to cut down on subsidies meant for the poor – food, fertiliser, diesel, gas and the Mahatma Gandhi National Rural Employment Guarantee (MNREGA). But there is not even a whisper in favour of the removal of tax exemptions for Indian industry.

Since 2004-05, Corporate India has been showered with tax exemptions to the tune of Rs 31 lakh crore. This was expected to boost industrial output and create jobs. But while only 1.5 crore jobs were added in the past 10 years, industrial production has not shown any significant jump.

To add to it, Corporate India is sitting on a cash surplus exceeding Rs 10 lakh crores and has also defaulted on bank payments (these are called “non-performing assets,” or NPAs, for short) by another Rs 10 lakh crores or so. This clearly shows how the poor are being denied legitimate economic support, while resources are very conveniently diverted for the rich and elite.

However, I still expect Prime Minister Narendra Modi to reverse the trend and make historic corrections. During his election campaign, Mr Modi had repeatedly emphasised the dire need to make farming economically viable. He has also been talking about providing modern amenities in the villages. A beginning can be made by revitalising agriculture in a manner that brings back the smile on the face

A smart village will automatically link local production with local procurement and distribution. A smart village will not only bring Internet connectivity to the rural hinterland, but also support sustainable agricultural practices.

A network of small-scale industries linked to agriculture and a strong network of rail and road corridors, with civic amenities such as education and health for all, including farmers, will transform the face of real India.

of farmers. In addition to creating 100 smart cities, Mr Modi should also focus on creating smart villages.

A smart village will automatically link local production with local procurement and distribution. A smart village will not only bring Internet connectivity to the rural hinterland, but also support sustainable agricultural practices. A network of small-scale industries linked to agriculture and a strong network of rail and road corridors with civic amenities such as education and health for all, including farmers, will transform the face of real India.

That's the kind of change India expects. That's the big-ticket reform the country has been waiting for for 67 years. Smart villages will not only reduce the growing inequality but also bring *acche din* to the last person in each and every corner of the country. It will, at the same time, reduce the burden of influx to the cities and help tackle environmental challenges.



Devinder Sharma is a Food and Trade Policy analyst. He chairs the New Delhi-based Forum for Biotechnology & Food Security. His blog Ground Reality can be read at devinder-sharma.blogspot.com. He is also a member of Bhoomi Advisory Board.

Women: Keepers of the seeds



Like other women have done for generations in Rajasthan, Chamnibai Meena too has been saving local seeds and preserving indigenous knowledge. **Sweta Daga** writes about the indomitable spirit of a seed keeper.

Chamni Meena can't quite remember her age, but she does remember that food tasted better in her younger days: "It tastes different now. You don't get the same flavours any more. There are no desi [indigenous] seeds left. It is so difficult to find varieties."

Living in Ghati village on the outskirts of Udaipur town in Rajasthan, Chamnibai, who reckons she is somewhere in her 80s, has been saving seeds since she was a little girl. Chamnibai recalls how she and her husband built their home and farm, and how much work went into simply surviving. Yet, she says, life and food were better when they were young.

For years, Chamnibai and her family have preserved dozens of local varieties of seeds. She has now passed on her knowledge to her daughters-in-law. "Women save seeds better," she said. "They care for them, and remember to replenish them. This process is all about the details."

When they got married, Chamnibai's daughters-in-law, Champabai and Dollybai, did not know how to maintain and preserve seeds. Over the years, they observed their mother-in-law and drew on her traditional knowledge and skills. Now, after a decade of experience, they were keen to show me all that they had learned.

The family uses large mud and clay vessels for storage. These vessels, made from natural and local materials, keep the seeds cool.

To keep the seeds dry, they plug a big hole in the vessel with old corn husk. A coat of kerosene, neem and ash is applied on the outside to keep pests away.



Many of India's farmers are women, but they are not recognised for their work. In parts of rural India, seeds are sometimes identified as "male" or "female" based on their economic value. Male seeds are more viable, including those for cash crops like cotton, tobacco and coffee. Vegetables and some legumes are considered female seeds, because they nourish the family.



The Meena family also saves large gourds that contain seeds. Sometimes, they tuck the seeds away behind specially made walls called kothi. This is where the seeds remain protected.

"I remember the time our village was hit by a flood," Chamnibai recollected. "It was 1973, and all the houses in the village were ruined. All our things were destroyed, but I was most concerned about our seeds. That was my priority, and those are the seeds I have now. They are the most important part of a farmer's life."

Several years ago, the family started a seed saving and swapping initiative, which allowed them to share the dying varieties of seeds with local farmers. The farmers, in turn, would pay back their debt in the form of one-and-a-half times as many seeds.

While Chamnibai's family still practices organic farming for their own household needs, the pressures of current market trends are mounting. "Most of the other farmers in the village ask me why we don't take the free seeds or fertilisers offered by the government. They call me a fool. But those crops are not the same. We don't eat them at home," said her son, Kesaram Meena.

For decades, the family has been practicing multi-cropping. Even today, they rotate their crops every three months. However, a growing dependence on the market has had a negative impact on the village. Families are unable to grow enough food for their own needs, and turn to the markets to supplement their diets. Chamnibai said

that when she was young, everything was grown on their farm. They went to the market only to buy salt.

When her husband was alive, she says, her surroundings were very different. "We had better rains then, so we didn't have a shortage of water. Now, it is a struggle. To make things worse, it has got hotter."

Many of India's farmers are women, but they are not recognised for their work. In parts of rural India, seeds are sometimes identified as "male" or "female" based on their economic value. Male seeds are more viable, including those for cash crops like cotton, tobacco and coffee. Vegetables and some legumes are considered female seeds, because they nourish the family.

Pannalal Patel, a farmer and activist, has been working with women farmers in the Mewar region on seed saving methods and farming collectives. He explained how difficult it is to survive on organic farming. "We supported women's groups in Mewar who made value-added products from their crops to sell in the market. But production was difficult to maintain. We had challenges with cash flow and crops. It's harder for women to make the business work because they don't always have support at home. They are trying to manage their families and finances all at once. Local seeds are being lost."

Fortunately, Chamnibai's grandchildren want to continue the family tradition of organic farming. They see value in their grandmother's work



and knowledge, but concede that it's getting tougher for them to succeed.

Meanwhile, the push to introduce genetically modified seeds in Rajasthan, which many activists and farmers resist, could add to the farmers' struggle to decide what happens in their own fields. It may force them to adapt to new policies that kill their ability to sustain themselves and their families.



Sweta Daga is a Bangalore-based writer and photographer. She is working on several multi-media projects, including fellowships with the People's Archive of Rural India, and the Centre for Science and Environment.

This piece originally appeared in the People's Archive of Rural India (PARI): www.ruralindiaonline.org



Urban Infrastructure: What would Nature do?

When urban infrastructure meets nature's designers, amazing things can happen, says **Nate Berg**...

We humans are problem solvers. We're doers. We encounter challenges and complicated situations and we find ways to surmount them—crafting tools, erecting bridges, programming computers. We've innovated and designed our way out of countless predicaments and, dammit, we will forevermore. We are also hopelessly arrogant.

See, we humans sometimes forget that we are not the only innovators and designers out there. We're not the only ones able to creatively adapt our way through tricky or threatening conditions. We forget about nature.

Long before we showed up on the scene, there were wetlands that made dirty water clean, prairies that grew

sustainable food crops and termites that built living spaces capable of maintaining a nearly steady internal temperature year round. These and other natural systems, developed over thousands or millions of years, are amazingly adept at dealing with the sort of logistical concerns humans face every day—whereas many of the workarounds we've found for the problems of our lives are inefficient or overly expensive or carry on the oh-so-human tradition of causing more problems than they solve.

Luckily, we've also managed to learn that sometimes the best way to solve a problem is to borrow somebody else's good idea.

Enter biomimicry—the idea of

emulating strategies nature has perfected. By looking closely at natural processes and organisms, we can identify and learn from some of the ways nature solves the problems that challenge us. And the closer we look, the more of these solutions we find. Many of these nature-inspired solutions have implications for that most human of habitats: the city. From stronger building materials to more intuitive water systems, biomimicry has applications in urban infrastructure that can dramatically improve the way we live in cities.

Cities as Ecosystems

In her landmark 1997 book *Biomimicry: Innovation Inspired by Nature*, biologist Janine Benyus

presents elegant examples of ways in which the natural world offers very clear hints about how to improve elements of our human world, such as how spider silk can inform the engineering of super-strong materials and how plants can teach us better ways to harvest energy from the sun. That book is now required reading for engineers, environmental scientists, industrial designers and practitioners of countless other disciplines.

“Nature is really a master example of making different things work one to the other and eliminating things that don’t fit with the picture.”

To spread these ideas into the real world, Benyus created a consulting firm now called Biomimicry 3.8—as in 3.8 billion years of research and design done for us already by nature. Biomimicry 3.8 biologists and designers work with groups and companies all over the world to try to inject some of the lessons of nature into their products and services. They’ve helped major apparel companies, airplane makers, hospitals and furniture designers.

The lessons of nature, Benyus says, apply widely across the spectrum. Even to entire cities.

“Actually, architects and city planners were the first audience to really embrace the book,” Benyus says.

That might seem surprising at first. But in many ways, urban areas are like ecosystems. They have interconnected components such as buildings, streets and sewer systems that are themselves complex—like birds, orchids and insects all living within the framework of a tree. This sort of systems thinking is crucial for cities. Running cities that are efficient and equitable requires being able to see, for example, how water systems react to population growth or how the extent of a transportation

By looking closely at natural processes and organisms, we can identify and learn from some of the ways nature solves the problems that challenge us. And the closer we look, the more of these solutions we find. Many of these nature-inspired solutions have implications for that most human of habitats: the city. From stronger building materials to more intuitive water systems, biomimicry has applications in urban infrastructure that can dramatically improve the way we live in cities.



network determines energy use and development patterns. Like nature, all these elements are connected.

More and more, biomimicry is being thought of as a way to reconsider the ways we build and operate cities.

“You don’t design a set of roads in isolation but in relation to buildings, but also to the sewer system below or to the cabling,” says Ilaria Mazzoleni, an architect and professor at the Southern California Institute of Architecture who’s been teaching and working with the concept of biomimicry in architecture for nearly 10 years. “There are a lot of invisible elements that go

into it. And nature is really a master example of making different things work one to the other and eliminating things that don’t fit with the picture.”

Mazzoleni says this type of thinking is becoming more prevalent. True biomimicry, she argues, considers an object or building or infrastructure as part of a much larger system. Cities, therefore, are the perfect arena for biomimetic design. And given the vast amounts of aging and crumbling infrastructure in urban areas around the world, there’s plenty of work to be done.

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Nate Berg is a writer who covers cities, science and design. He’s a former staff writer at *The Atlantic Cities* and his work has appeared in publications such as *The New York Times*, *Wired*, *Discover*, *Fast Company* and *Domus*. He is based in Los Angeles.

Credit: <http://ensia.com/features/urban-infrastructure-what-would-nature-do/>



If children lose contact with nature they won't fight for it

George Monbiot

'One woe doth tread upon another's heel, So fast they follow'. That radical green pressure group PriceWaterhouseCoopers warns that even if the present rate of global decarbonisation were to double, we would still be on course for 6C of warming by the end of the century. Confining the rise to 2C requires a sixfold reduction in carbon intensity: far beyond the scope of current policies.

A new report shows that the UK has lost 20% of its breeding birds since 1966: once common species such as willow tits, lesser spotted woodpeckers and turtle doves have all but collapsed; even house sparrows have fallen by two thirds. Ash dieback is just one of many terrifying plant diseases, mostly spread by trade. They now threaten our oaks, pines and chestnuts.

So where are the marches, the occupations, the urgent demands for change? While the surveys show that the great majority would like to see the living planet protected, few are

prepared to take action. This, I think, reflects a second environmental crisis: the removal of children from the natural world. The young people we might have expected to lead the defence of nature have less and less to do with it.

We don't have to disparage the indoor world, which has its own rich ecosystem, to lament children's disconnection from the outdoor world. But the experiences the two spheres offer are entirely different. There is no substitute for what takes place outdoors; not least because the greatest joys of nature are unscripted. The thought that most of our children will never swim among phosphorescent plankton at night, will never be startled by a salmon leaping, a dolphin breaching, the stoop of a peregrine, or the rustle of a grass snake is almost as sad as the thought that their children might not have the opportunity. The remarkable collapse of children's engagement with nature – which is even faster than the collapse of the natural world – is recorded in

Richard Louv's book *Last Child in the Woods*, and in a report published recently by the National Trust. Since the 1970s the area in which children may roam without supervision has decreased by almost 90%. In one generation the proportion of children regularly playing in wild places in the UK has fallen from more than half to fewer than one in 10. In the US, in just six years (1997-2003) children with particular outdoor hobbies fell by half. Eleven- to 15-year-olds in Britain now spend, on average, half their waking day in front of a screen.

There are several reasons for this collapse: parents' irrational fear of strangers and rational fear of traffic, the destruction of the fortifying commons where previous generations played, the quality of indoor entertainment, the structuring of children's time, the criminalisation of natural play. The great indoors, as a result, has become a far more dangerous place than the diminished world beyond.

Since the 1970s the area in which children may roam without supervision has decreased by almost 90%...

The collapse of children's engagement with nature is because of parents' irrational fear of strangers and rational fear of traffic, the destruction of the fortifying commons where previous generations played, the quality of indoor entertainment, the structuring of children's time, the criminalisation of natural play.



The rise of obesity, rickets and asthma and the decline in cardio-respiratory fitness are well documented. Louv also links the indoor life to an increase in attention deficit hyperactivity disorder and other mental ill health. Research conducted at the University of Illinois suggests that playing among trees and grass is associated with a marked reduction in indications of ADHD, while playing indoors or on tarmac appears to increase them. The disorder, Louv suggests, "may be a set of symptoms aggravated by lack of exposure to nature". Perhaps it's the environment, not the child, that has gone wrong.

In her famous essay the Ecology of Imagination in Childhood, Edith Cobb proposed that contact with nature stimulates creativity. Reviewing the biographies of 300 "geniuses", she exposed a common theme: intense experiences of the natural world in the middle age of childhood (between five and 12). Animals and plants, she contended, are among "the figures of speech in the rhetoric of play ... which the genius in particular of later life seems to recall".

Studies in several nations show that children's games are more creative in green places than in concrete playgrounds. Natural spaces encourage

fantasy and roleplay, reasoning and observation. The social standing of children there depends less on physical dominance, more on inventiveness and language skills. Perhaps forcing children to study so much, rather than running wild in the woods and fields, is counter-productive.

And here we meet the other great loss. Most of those I know who fight for nature are people who spent their childhoods immersed in it. Without a feel for the texture and function of the natural world, without an intensity of engagement almost impossible in the absence of early experience, people will not devote their lives to its protection. The fact that at least half the published articles on ash dieback

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have been illustrated with photos of beeches, sycamores or oaks seems to me to be highly suggestive.

Forest Schools, Outward Bound, Woodcraft Folk, the John Muir Award, the Campaign for Adventure, Natural Connections, family nature clubs and many others are trying to bring children and the natural world back together. But all of them are fighting forces which, if they cannot be turned, will strip the living planet of the wonder and delight, of the ecstasy – in the true sense of that word – that for millennia have drawn children into the wilds.



George Monbiot is an author and regular contributor for *The Guardian*. He is the author of the bestselling books *The Age of Consent: A Manifesto for a New World Order* and *Captive State: The Corporate Takeover of Britain*, as well as the investigative travel books *Poisoned Arrows*, *Amazon Watershed* and *No Man's Land*.

Website: www.monbiot.com

Lessons from Boulders, Rivers and the Full Moon

My Hampta Pass Trek



In this part of the world, the silence of Nature is never really quiet. The Beas roared and rushed with primal energy. A hot spring emerged from the earth. The crickets echoed deeply. It was a resounding *panchavaadyam*, says **Priyanka Raja**

My journey started, in Manali, from a little cottage that stood precariously perched on an incline of rock and mud, overlooking apple and chikoo (sapodilla) trees that grew wild and were laden with fruit in an abundance unknown to the city-bred. The trees covered the slopes down to the River Beas, which roared and rushed with a primal energy and intuition unknown to ‘manufactured’ city living. A little trail on the side of the cottage led up the mountain to the Valmiki mandir (shrine), where a hot spring emerged from the earth. There was poetry in the mist that settled on me. It was an August evening and, ringing in my ears was the gush of the Beas – flow! flow! flow! – mixed with the deep echoing of crickets.

In this resounding *panchavaadyam* (literally, “orchestra of five temple instruments”) – in this part of the world – is a silence of Nature that is never

really quiet. And here, in the ascending and descending of a journey – on my first ever Himalayan trek, the Hampta Pass trek – I learnt some of life’s biggest lessons.

Nature is within

The trek started at Jobri, an hour and a half by car from Manali. Jobri is at a 9,800-foot altitude, covered with tall pine trees, and the terrain is mostly rocky, dotted with flocks of goat grazing on the slopes. We walked along the Rani nallah (stream). The first day, my feet unsure of the rocky terrain, I found myself stumbling around boulders and over stones, clumsy and slow.

Dinesh *bhaiyya*, our guide, watched me for a while and then came up and gently offered his wisdom: “Everything that is outside you is within you. You know this; you’ve just been away for too long. Your gut knows and has faith in every step you take, so root your step

in faith, not fear.” And it didn’t take even a second for me to realise that my days so far had been rooted in the fear of failure and of loss!

Neither was the fear inborn or primal to my being, but acquired over time through my interactions and way of living. Nature plays an integral role in our being; the closer we are to it and the more we understand its ways of functioning, the more we understand the wilderness inside ourselves. And the more we trust our gut and intuition, which are all-knowing.

Deep magic

We were five in our trekking group. After the first day along the Rani, we reached our campsite at Chika, located in a lovely valley overlooking the snow-clad Dhauladhar range. By the time we got to Chika, it was 4.30 in the evening and, in August, there’s a chill in the air,



Hampta Pass connects two beautiful valleys, Kullu and Lahaul.

At 13,000 ft, I pondered on what really mattered. Far from civilisation, immersed in something untouched by humans and without any means of communication with the rest of the world, I began to gain a certain clarity.

anyway. So we pitched our tents and got down to making dinner. By 6.30 pm, the sun had set and a deep darkness settled around us.

It was the eve of my birthday. Having grown up in a city, birthdays had meant cake-cutting, phone calls, parties and gifts. Now, I sat in my tent, wondering how this birthday would be like. I was in the Himalayas, with no phone connection and no family, save for one friend who was accompanying me on the trek. I sat there, engulfed in the quiet darkness, looking out at the Dhauladhar range.

And then, from behind the mountain, we saw the moon rise... first a sliver of silver, then a crescent and, finally, a ball of white, waiting, as it were, to be plucked from the sky! It seemed fuller than the full moons I'd seen in the city. I had seen sunrises and sunsets but now, for the first time, I had witnessed the moon on its rising path with a clarity I'd never before! It was magical – that feeling of the soul recognising something without really being able to explain it. This birthday, I was being gifted magic and wonder from the universe. It was a gift I'd never received before.

Clarity

The next morning, we continued along the Rani to Balu ka Gera (literally, "Heap of Sand"). It took us about six

hours – effectively, the entire day – and involved a steep ascent but, Balu ka Gera, at 11,000 feet above sea level, was beautiful!

The following day, we set out early in the morning. This was the most difficult day of the trek, being through snow (over which I tumbled, bruising myself) and calling for ice-cold river crossings – as challenging as the last leg before reaching a summit! The steep ascent was followed immediately by a steep descent. What was more, while we were descending, post-lunch, there was a hailstorm; but we had to keep going.

By the time we reached Siagoru, I was physically totally spent. My head pounded from altitude sickness and my muscles gave way. It had been four days since I had heard from home. At an altitude of 13,000 ft, that night I pondered on what really mattered, for it is only when you are far from civilisation, immersed in something untouched by humans and without any means of communication with the rest of the world that you begin to gain a certain clarity. In that rare air, you know exactly what and who matter to you – and what (or who) doesn't. It was the same clarity the universe gave me that other night, when I watched a sky dotted with a million sparkling stars, which I could see in such clear detail. I felt the universe, too, was thinking

about clarity.

I came back from the trek sunburnt and physically exhausted – but changed. It was like something to the very fabric of my being had been added, ever so subtly, like an invisible layer. The boundaries between me and Earth seem to have dissolved into nothingness. *I am Nature and, in Nature, I am*, I marvelled.

The wind roars dissent

among leaves, prayer flags whisper
what will be, will be.

River flows unbound

the basin drenched in delight
ah! the long wait has passed.



Priyanka Raja is a post graduate from Mudra Institute of Communications, Ahmedabad. Her work experience includes a stint with Teach for India and Darpana Institute, Ahmedabad. She is currently based out of Bangalore and runs a community culture cafe, Chavadi and is working on her first book of fiction. An avid reader, backpacker, seeker and storyteller she believes that a deeper connect is essential for engagements to be meaningful.

Ordinary Moments Make You Happier as You Get Older



Photo: Wisegeek, Flickr.com

One of the best parts of being happy is that the feeling of happiness – whether you equate it with optimism, joy, well-being, personal achievement, or all of the above – goes hand-in-hand with healthier habits, says **Dr. Mercola**.

For most adults, happiness doesn't just happen automatically. Yet, many of us expect it to be that way. You may dutifully plan out virtually every aspect of your life from your career to what to eat for dinner, and in so doing assume that it will bring you happiness. This assumption would be incorrect in most cases, however. Because unless you actively pursue it, happiness can be quite elusive. Part of the problem adults have is that, as a child, your parents will ensure your happiness by planning entertainment and making sure you have fun.

Barbara Fredrickson, PhD, a social psychologist, director of the Positive Emotions and Psychophysiology Lab at the University of North Carolina at Chapel Hill, and author of *Positivity*, pointed out in *TIME* that even in college, your relationships with friends tend to continue to drive the happiness you experienced as a child.

"But after that, the scaffolding of having a good day is taken away, and nobody is telling you how to provide that for yourself," she says. And therein lies the problem. Left to your own devices (be honest), your day probably consists primarily of what has to be

done, with very little, if any, time left for what you want to do. And that's not a recipe for happiness.

Ordinary Moments...

You hear a lot in the media about people ticking items off of their "bucket lists..." i.e. the list of experiences you wish to have before you "kick the bucket." Such lists usually consist of extraordinary experiences, like world travel or completing a marathon, but are these really the moments that will make you happy?

One study published in the *Journal of Consumer Research* suggests that while younger people tend to value extraordinary experiences, as people get older they tend to place more value on ordinary moments, such as drinking a good cup of coffee or "having a long and fun conversation with my son." The researcher explained: "Younger people, who view their future as extensive, gain more happiness from extraordinary experiences; however, ordinary experiences become increasingly associated with happiness as people get older, such that they produce as much happiness as extraordinary experiences when individuals have limited time remaining.

Self-definition drives these effects: although extraordinary experiences are self-defining throughout one's life span, as people get older they increasingly define themselves by the ordinary experiences that comprise their daily lives."

This is good news, because it suggests that learning to savor the small things in life can make a big difference in your level of happiness.

Ways to Become Happier

In many ways happiness is a choice, and you can create it by following a certain routine. In fact, happy people tend to follow similar habits that set them apart from their sad and stressed-out peers. If you'd like to join them, read on. These are the top tips positive psychologists have to offer to, as *TIME* put it, "infuse your days with more pleasure."

Make Happiness Your Goal

It's thought that genetics account for about 50 percent of your "innate" happiness while life circumstances make up another 10. The rest is under your control, and the first step to harnessing it is to choose it and believe you can be happy.

Research shows, for instance, that when people were told to attempt to feel happier when listening to music, they were (as opposed to those who were told to simply relax). It was the intention to become happier that made a difference.

Know What Makes You Happy

If it's been awhile since you've felt truly happy (that carefree joyous state you probably had as a child), you may have forgotten what it is that gets you there. Take time to reflect on what gives you joy (and not just the "obvious," like your family, but also little things, hobbies, and interests).

Savor the Pleasant Moments

People who take the time to savor pleasant moments report higher levels of happiness, regardless of where the day takes them. If you don't already do this, keeping a daily diary of pleasant moments and whether or not you truly savored them, might help.

You might be surprised at how much happiness is to be had in your everyday life. Try appreciating the scent of your coffee or enjoying the sunrise before you start your day.

Think Happy Thoughts

Simply thinking about a positive event, and smiling as a result, can make you happier and more upbeat (more so than simply fake smiling). A genuine smile includes the facial muscles around your eyes, and can actually prompt brain changes linked to increased mood.

Spend Money on Experiences, Not 'Things'

Research suggests experiences make us happier than possessions; the "newness" of possessions wears off, as does the joy they bring you, but experiences improve your sense of vitality and "being alive" both during the experience and when you reflect back on it. However, experiences won't make you happy either if you're only doing them for bragging rights... and not because you really want to.

Have a Backup Plan

When you're having a bad day and your mood is sinking, have a plan in place to lift it back up. This could be calling a close friend, watching a comedy, or going out for a jog – you know what works best for you.

learning to savor the small things in life can make a big difference in your level of happiness.

In many ways happiness is a choice, and you can create it by following a certain routine. In fact, happy people tend to follow similar habits that set them apart from their sad and stressed-out peers.

Find Your Sense of Purpose

Happiness isn't only about pleasure; it's also about having a sense of purpose. The term "eudaimonic well-being" originated with Aristotle, and describes the form of happiness that comes from activities that bring you a greater sense of purpose, life meaning, or self-actualization. This could be your career or it could be gleaned from volunteering or even taking a cooking class.

Socialize, Even with Strangers

Having meaningful social relationships is important for happiness, but even people who engage in "social snacking" report greater happiness. Social snacking describes the little ways you connect with others, including strangers, on a daily basis. In general, the more you mingle and chat with the people around you, the more cheerful and brighter your mood is likely to be.

Get Away

Taking time away from the daily grind is important for helping you recharge. And while even a weekend getaway can give you a boost, a longer trip is better to help you create meaningful memories. These memories can be tapped into later to help boost your happiness. Experts recommend a two-week vacation, ideally, even if it's to a locale close to home.

Do Acts of Kindness

When people make a point to conduct three to five acts of kindness a week, something magical happens... they become happier. Simple kind acts – a compliment, letting someone ahead of you in line, etc. – are contagious and tend to make all of those involved feel good.

Happiness Is Good for Your Mind and Body

One of the best parts of being happy is that the feeling of happiness – whether you equate it with optimism, joy, well-being, personal achievement, or all of the above – goes hand-in-hand with healthier habits. People who are in good spirits tend to eat better, exercise more frequently, and get better sleep than those who are not. This could be, in part, because leading a healthy lifestyle helps you achieve your goals, leading to happiness.

It could also be that such habits lead to better health, which in turn lends itself to a better mood and happiness. Positive thoughts and attitudes are able to prompt changes in your body that strengthen your immune system, boost positive emotions, decrease pain and chronic disease, and provide stress relief. It's even been scientifically shown that happiness can alter your genes!

A team of researchers at UCLA showed that people with a deep sense of happiness and well-being had lower levels of inflammatory gene expression and stronger antiviral and antibody responses.⁹ This falls into the realm of epigenetics—changing the way your genes function by turning them off and on. So try out the happiness tips above. You don't have to do them all, of course. Even a few will likely make a difference in your feelings of happiness and also, as a result, boost your physical health.



Dr. Mercola finished his family practice residency in 1985 but was trained by the conventional model. Initially, he treated many symptoms with prescription drugs and was actually a paid speaker for the drug companies. But as he began to experience the failures of this model, he embraced natural medicine and over the last thirty years has applied these time tested approaches successfully.

Mercola, J. "Pope Francis, Neil Young, and 100,000 Beekeepers Take a Stand Against Toxic Agriculture" Retrieved July 1st, 2015, from <http://articles.mercola.com/sites/articles/archive/2015/06/30/beekeepers-genetically-modified-crops-toxic.aspx>

Manga Inji - to add zing to simple dishes

Preethi Narayanan



Manga inji, or mango ginger (*Curcuma Amada*) is a seasonal rhizome that most south Indians are familiar with. It is a 'ginger' without its sharp astringent taste but with a lovely flavour of mango. It is good to reduce cholesterol levels.

Manga inji Chutney (Mango Ginger Chutney)

This is a chutney that goes well with idly, dosa and many other savories.

Ingredients

- Mango ginger - 2 x 3 inch Pieces or 3 spoonfuls
- Tamarind - 1 Lemon size ball
- Grated Coconut - 1 cup
- Red Chillies 1-2 and Salt – to taste

Seasoning

- Oil - 1- 2 teaspoon
- Mustard - 1 teaspoon
- Urad Dal - 1 teaspoon
- Asafoetida - 1 Pinch and Curry Leaves



Method

- Peel the skin of the manga inji and wash it thoroughly to remove the mud and roots. Chop the Manga inji (Mango Ginger) into small pieces so that it can be ground easily.
- Soak the tamarind in hot water for 5 minutes. Grind the Manga inji along with tamarind water, salt , grated coconut and red chillies
- Add water if the chutney is too thick; at the same time it should not be too watery
- Season the chutney with mustard, asafoetida, urad dal and curry leaves in some oil.

Gourd salad with manga inji

You can experiment endlessly by adding this delicious inji with various kinds of salads. This gourd salad can have a variations with coarsely powdered groundnut or coconut.



Ingredients:

- Capsicum - 1
- Cucumber / Snake / Ridge Gourd - 1
- Tomato and onion - 1 each
- manga inji - 1 two inch piece

For the dressing: one lime, one chilly, a pinch jaggery and salt to taste

Method:

- Chop all the vegetables and mix them together with Manga Inji. Mix salt, finely chopped green chilly, salt and a half teaspoonful of jaggery with a little water, and use as dressing. Garnish with some coriander or tulsi leaves.
- If you are using mango inji pickle instead of whole pieces, you can reduce chilly to suit your taste.

Manga inji Pickle

This is a very simple pickle but needs to be refrigerated from the day it is made since it is not cooked and does not contain oil or too much salt as preservatives. The great pay off is that it can give many other dishes a zing without much effort. The manga inji pickle makes a delicious combo with rice dishes, especially with a simple curd rice.

For two of the recipes given in this article, you can use some of this pickle instead of mango inji pieces. It is better not to use it for the soup, since the lime juice in the pickle when heated can turn bitter. In fact the pickle can also be made without lime and refrigerated.

Ingredients

- Manga inji - 4 big pieces
- Lime - 1
- Green chillies - 2
- Mustard - optional
- Asafoetida (Hing) - optional
- Salt about 1 to 2 teaspoons.

Method

- Chop the manga inji. You may chop them into tiny cubes or into long thin pieces.
- Cut the green chillies and mix with manga inji pieces and some salt.
- Cut the lemon in half and remove the juice and pour it over the mango ginger
- Season it with mustard and hing



Tomato soup flavoured with Manga Inji

This idea of adding manga inji to soup came from Meenu Lalwani, a friend of my aunt. I am sure if you think out of the box you can make chitranna, herbal juices, raitas and much more with this great flavouring agent. Send your recipes back to Bhoomi, and we can have a Manga Inji recipes sequel to this one!

Ingredients – for 4 generous servings

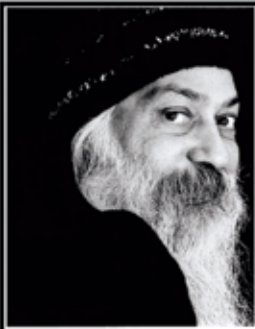
- Tomatoes - 4
- carrot - 1
- onion - 1 medium sized
- Manga inji - 1 inch piece, chopped.
- Two teaspoons of butter (or oil); green coriander a few sprigs.

Method

- Chop all the ingredients separately. Use a steamer preferably with just enough water, so that the temperature is controlled and the vitamins and enzymes in the vegetables are better preserved. (they are lost in temperatures above 116 degrees C)
- Put in the carrots into the steamer first since they need more cooking; then add the onion pieces, tomatoes and manga inji
- Cool a bit and add the remaining water in the steamer into the steamed vegetables, since they will contain some of the nutrition as well. Remove peels from tomatoes.
- Blend the cooked vegetables in a mixer
- Add chopped coriander leaves and serve hot.



Preethi Narayanan was a research assistant with Bhoomi for many years. Quite recently she has begun adventuring in the kitchen, and hopes to continue sharing recipes of delicious food made simple.



34th Annual Osho Meditation Camp

Date : April 14th to 17th 2016

Venue :

Ecumenical Christian Centre (ECC)

White Field, Bangalore-560 006

From :

Osho Paramartha Meditation Centre

“Raj-yog”, 7/10 A-15, Chabbria Layout,

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The Bhoomi College

Calendar of Weekend Programmes *January - March 2016*

- January 23 **Basics of Organic Farming**
by Raghu Rao and Pushpa
- February 13 **Localising our Food Economy**
by Seetha Ananthasivan and Rema Kumar
- February 13 **Food n Music @Bhoomi**
by Bhoomi Team
- February 20 **Charcoaling with Nature**
By Nidhi Aggarwal
- February 20 - 21 **Maha Yoga Sessions**
by Yoga Guru Ram
- March 5 **Relating to and Learning with the “Whole Child”**
by Farah Khan and Rema Kumar
- March 19 **Yugaantar: Towards Inner and Outer Transitions**
by Bhoomi Team
- March 26 **Introduction to Home Remedies**
by Pushpa

For enquiries and registration please contact: bhoomi.programmes@gmail.com



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NAVDANYA

Bija Vidyapeeth Courses 2015

Gandhi, Gross National Happiness and Well Being for All

1 April - 10 April, 2016

Exploring the exciting convergence between Gandhi's legacy of nonviolence and Ahimsa and the GrossNational Happiness paradigm - a holistic nature centred, human centred measure for well being and happiness. With Satish Kumar, Dr Saamdu Chetri, Madhu Suri Prakash and Dr Vandana Shiva.

**For further information, contact at: bija@navdanya.net
Tel: +91 11 268 532 772**

Sharavathi Valley Adventure

Trek through the Sharavathi Valley

The Western Ghats is one of the Bio-diversity hotspots of the world - an area for all of us to experience, explore and cherish. The trek through Sharavathi Valley will include breathtakingly beautiful routes along the Sharavathi River.

Gudlugundi and Dabbe Falls

Take in these magnificent untouched waterfalls hidden deep in the mountains of the dense forests of the Western Ghats.



For registration: bhoomi.programmes@gmail.com



Remembering Parvathi, *who did tread gently on Earth...*

With deep sadness the Bhoomi Team shares the news of the sudden and unexpected demise of K. G. Parvathi, a member of our editorial team and one of our strongest supporters through the years. She enjoyed the stimulus every issue of the Bhoomi magazine provided and valued what it brought to students as the Principal of the Prakriya Green Wisdom School. A quiet presence in our campus she always exuded a sense of commitment and cheerful contentment.

She was a keen Botany teacher who communicated her immense love for plants and deep understanding of her subject effortlessly to her students. Her students enjoyed her outdoor classes tremendously. She was also a keen gardener whose interest found expression in the form of a herb garden in Prakriya where she worked tirelessly along with the children during community service time. The produce of her own garden she generously shared with all of us. Cooking was one her other interests where the artist and scientist in her came together seamlessly. She used culinary techniques that preserved the nutritive value of food to the maximum. Traditional recipes were her forte and she shared recipes and the delicacies she made freely. It is a strange coincidence that in the food section of our last issue she had contributed her recipes.

An ardent follower of Sri Ramakrishna Paramahansa and Swami Vivekananda, she had an earthy presence, stoicism and reverence for life. She was the kind of person on whom one would learn to depend upon easily because she would solidly 'be there' for you. Despite her busy schedule as the Principal, she filled in so many gaps for us whether in terms of tips/suggestions or patiently proof reading /editing for us or making contributions whenever required.

Parvathi breathed her last on the banks of a beautiful lake, amidst children playing around her. Her spirit lives on amidst us, even as we miss her presence with us in so many ways.



Join us for **Food n Music@Bhoomi**

- a special subscribers' event

on February 13th 2016, at Bhoomi Campus, Bangalore

Time: 4 pm to 8:30 pm

Dinner at 7:30 pm



To celebrate 8 years of Bhoomi Network and 6 years of the Bhoomi magazine

With local food, soul stirring music and dance, Sufi singing workshops and idea-share sessions

The theme of the festival is the age old Vedic shloka –

"Loka samastha sukinoh bhavanthu..."

"Let there be wellbeing in the whole world"

RSVP: Contact: bhoomi.college@gmail.com Or call at 09449853834/080 28441172

The Bhoomi team wishes you

A Fulfilling and Happy New Year!

Thank you, dear reader, for your support and encouragement which helps us keep going – to work towards education and action for ecological wisdom and wellbeing for all.



Gift a subscription for the Bhoomi magazine to friends and relatives...

Get a free gift of two back copies for every 3 year subscription!

To subscribe, log onto www.bhoomimagazine.org

For Latest Updates: <https://www.facebook.com/BhoomiCollege>

Yugaantar

Think Space for Young India

The Bhoomi College | Bangalore | 10 April 2016

The word 'Yugaantar' in Sanskrit means the tough transition period between two historical ages. It appears that today, with the crises created by the industrial information age, the imperatives of an ecological era are increasingly apparent. Ours is indeed a 'Yugaantar' period.

Invite yourself to the **Yugaantar Conference** to share your values and concerns and learn from pioneers who have dedicated themselves to find solutions for ecologically wise living. Also meet others who care to invest in holistic thinking about Foundations of Sustainable Living and co-create 'Think Spaces' for the youth of our country.

The thinkers, activists and scientists invited to speak and engage with us during this conference include: Shri Satish Kumar, Helena Norberg Hodge, Dr. Vandana Shiva, Jon Rae (from Schumacher College, UK), Fritjof Capra, Dr. David Orr, Samdhong Rinpoche, Aseem Shrivastava, Ashish Kothari and Shri Devinder Sharma

Note: A few of the above may participate via skype / video conference facilities.

For more information about Yugaantar, log onto www.bhoomicollege.org

The Bhoomi College announces:

One Year Post Graduate programmes for 2016 - 2017

For those who are keen on green careers or engaging in education for a new age, where the learning is experiential, intensive, participative and dynamic...

Holistic Education

This programme includes conceptual understanding of philosophies of education, holistic learning processes and how the way we learn impacts our world view. There will be a strong focus on self-exploration, systems thinking, learning actively rather than passively and creating empowering learning communities. Participants may concurrently working for a BEd degree from an open university if they so wish. Hands-on sessions will be held at Prakriya Green Wisdom School, Bangalore.



Unique Features of these programmes include:

- Great teachers and earnest facilitators
- Eco friendly and serene campus
- Enriching learning processes
- Opportunity to co-design learning activities and real-life projects
- Internships with NGOs, schools and other organisations.

Science and Management for Sustainable Living

This programme is being offered for the fourth year and has been designed for those who wish to become green entrepreneurs or take up green careers with NGOs and other organisations. In areas ranging from food and agriculture to activism, economics, development, climate change, education for sustainability etc. The programme will focus on root level issues and on positive initiatives that are actionable.



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