

Using Biomimicry To Design Cities



Yesterday in a sunny corner of London, a select group of UK journalists, myself included, were treated to an enrapturing few hours in the company of biomimicry guru [Janine Benyus](#). The group was brought together by [sustainable business pioneers InterfaceFLOR](#), whose long standing working relationship with Benyus enabled them to arrange this exclusive press lunch at [raw food](#) restaurant Saf. It was appropriate that Janine spoke to us in the centre of the bustling metropolis as her latest work in the field of [biomimicry](#) is focused on using the discipline to inform the design and function of cities.

Biologist at the Design Table

Janine Benyus describes her job as being the "biologist at the design table", a career that she says didn't really exist 10-12 years ago. Since the publication of her book, [Bio mimicry: Innovation Inspired by Nature](#) in 1997, Benyus and her colleagues at the [Biomimicry Guild](#) have worked with some of the world's most successful companies including Walmart, Nike and Interface, helping them ask nature for inspiration on how to create more sustainable products and systems.

"After my book came out we expected environmentalists and conservationists to get in touch, but in fact it was big business who called. They wanted a biologist to come and talk about how

life works. People woke up to the fact that there is a sustainable world in nature that we hadn't been using as a model"



The City as an Ecosystem

When I asked Janine yesterday what she was currently most excited about, after all these years of working in biomimicry, her unequivocal answer was cities. The [Biomimicry Guild has teamed up with HOK](#), one of the largest architectural developers in the world, to work on city masterplans inspired by nature. "*A company like HOK has a massive impact on huge areas of land, due to the scale and breadth of their work. So the question we asked was how can you have a city perform like an ecosystem?*"

Ecological Performance Standards

Benyus and her team have been developing the concept of designing cities to an 'ecological performance standard', looking at the original topography of the locale and working out the metrics of how the natural environment should perform. "*How many millimetres of soil, how many tons of carbon, how much water stored, how much air purified? It is not enough to have green roofs and walls, we need to ask how a building will store carbon. We need cities to perform like ecosystems, not just look like them*"

Landscape Amnesia

Benyus is working with HOK on two very different city plans, one green field city in India and one retrofitting scheme in China. The city of Lang Fang is on the North China Plain, an area that Benyus describes as having '**landscape amnesia**'. The natural ecological system of Lang Fang was a mixed deciduous forest, but that was over 4000 years ago. Without the density of the forest the communities in this area haven't been able to effectively capture water, so have been drawing down their aquifer for years. Additionally they have to move water about using a pipeline that pumps water up from the Yangtze River in the south.

Water Self Reliance

The question for Lang Fang, Benyus says, is *"How can they be water self reliant so they can recharge their aquifer and be the first Chinese city to turn away the pipe?"*

" As she says, "

That would be something the city could celebrate

." According to Benyus this brief designed with HOK has completely changed the architectural plan of the city. Instead of concrete paths channelling potentially damaging storm water through the urban landscape, saving buildings but wasting this valuable resource, this city now has a plan to direct water back in the ground through strategically planted areas. "

The masterplan is now beautiful with green ribbons flowing through the city, tracking and echoing the paleo-channels of old rivers that used to be there

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The Right Questions Lead to Innovation

Janine Benyus explains why formulating ambitious nature inspired briefs for city masterplanning is important. *"If you're working in an area with dangerous levels of soil erosion, you should ask how can we have a policy of zero rainfall hitting bare ground? Then you can start designing a city with multiple green roofs, awnings and coverings. If on the other hand you are building in an area of severe water scarcity and the goal is to get 40% of water back in the ground, you should ask, how can we design permeable pavements?"* These are bold design briefs and Benyus is proud to say that their goals with HOK, *"have never been set so high or been so locally informed by ecological land types* ."

By asking the right questions designers can create uniquely demanding briefs which produce innovative solutions. Janine Benyus is a great believer in designers setting their sights as high as possible, "It's very powerful when companies have clear goals to work towards." And as [Ray Anderson](#)

, the radical CEO at the helm of [InterfaceFLOR](#)

, said when he first set out his ambition to create a sustainable road map for his company, "*You can't tell me that it can't be done* ."

Janine Benyus hearts TreeHugger

We're delighted to say that Janine declared herself to be a great fan of TreeHugger yesterday and had some effusive praise for our in depth coverage of biomimicry, name checking [Tim McGee](#)

for his

[great writing on the subject](#)

. And her parting words to us? "I really appreciate all the excellent work that you guys do. Keep

on rocking in the free world TreeHugger!"

<http://www.treehugger.com/files/2010/06/janine-benyus-using-biomimicry-to-design-cities.php>