

supplement to Volume #18

**GAG** was created by Andrea Brennen and Zachary Lamb

# GAG

# Green Architecture Guide

2009

**Green :** from the Old English verb growan “to grow,” it is used to describe plants and nature, or someone who is inexperienced, jealous, or sick; the symbolic color of environmentalism, associated with political parties emphasizing ecology, grassroots democracy, nonviolence, and social justice; a slang term for money.

**Sustainable :** a process or state that can be maintained at a certain level indefinitely (Wikipedia, 2008); a process or act that meets the needs of the present without compromising the ability of future generations to meet their own needs. (Brundtland Report, 1983); integration of environmental, social, human and economic goals; conservation of ecological integrity (Hargroves+Smith 2005).

## Letter from the editors

Sustainable Design. Everyone’s doing it...or says they’re doing it. And there’s definitely an over-riding sense that everyone should be doing it, given the threat of global environmental catastrophe and the world-wide economic melt-down and all.

But what, exactly, are the proponents of “sustainability” doing? If the whole system is broken...what, really, are we trying to “sustain”?

Knowing that the construction and operation of buildings is a substantial consumer of energy and resources, how do we, as young designers, know where we fit in to this sustainability debate? Where are the opportunities for intervention? What are some tactics we can use? And what if we don’t want to engage in the debate at all...is this even an option?

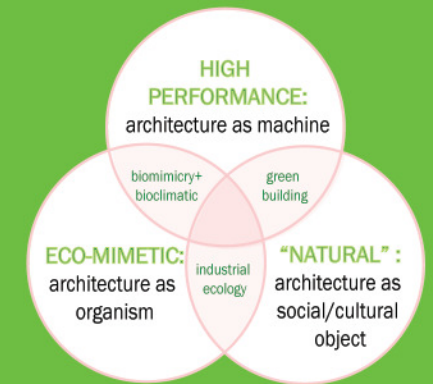
The solutions being offered are often vague and contradictory...and there’s surprisingly little critical evaluation of these various “solutions.”

For example...there’s still no consensus on density of development, with regards to sustainability. City dwellers argue that dense high-rise development is more sustainable because it decreases transportation needs (between people and their work). People who live in rural areas argue that widely dispersed “off-the-grid” development is more sustainable because it allows people to live closer to natural systems and it decreases transportation needs (between people and their food).

This lack of consensus is good, except each of these “solutions” is supported by a moralistic rhetoric claiming to be the most “responsible,” “just,” and “ethical” answer. In other words, the terms of debate are making debate really difficult – how do you critique something when the primary supporting evidence is someone’s assertion that it is the “most moral” alternative?

**Sustainable Design:** the art of designing so as to reduce the use of non-renewable resources and minimize environmental impact.

**Greenwashing :** the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service. (Mother Jones 1991).



Plus, sometimes it seems like a lot of people are just interested in sustaining their own unsustainable lifestyles...design methodologies...business practices...etcetera.

In researching and writing GAG, we were not interested in finding the “right answer.” In fact, we have a hunch that there probably isn’t a right answer, only better or worse tactics for confronting any particular situation. What we are interested in is trying to understand the playing field — Who is arguing for what kind of sustainability? What aspects of a given strategy are based on innovative thinking, which are full-on greenwashing, and which are old arguments, with a new green label.

We are skeptical of any cause that is framed in such a way that you can’t oppose it. Seriously, who isn’t for sustaining life on earth? But blindly accepting the premise doesn’t help us to evaluate potential solutions.

So, that’s why we put together this guide: to begin to outline the underlying ethics and assumptions of the different camps within the Sustainable Design Movement, and to confront some familiar critiques of those camps.

We hope you enjoy the guide. If you like it...or if you don’t...please let us know at [greenornot.com](http://greenornot.com).

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**Andrea Brennen** and **Zachary Lamb** are graduate students in architecture at the Massachusetts Institute of Technology. Frustrated with the glossy spin of corporately-sanctioned greenwashing, they are hungry for a critical discussion about the role architecture has to play in the increasingly important environmental debate. They would like to thank **Mark Jarzombek**, **John Fernandez**, **Ana Miljacki**, and **Yung Ho Chang** for helping them with this project.

## Confused about where you fit in?

Take this sustainable architecture quiz to identify your green leanings...

## green quiz

### What motivates you to be green?

- a) I like cutting edge technology
- b) The world is in crisis
- c) We have to respect nature
- d) There is a growing market opportunity

### What's your favorite sustainability word?

- a) Performance
- b) Metabolism
- c) Natural
- d) Opportunity

### What's your least favorite architecture word?

- a) Traditional
- b) Disposable
- c) Artificial
- d) Theoretical

### Where would you go to meet a member of the opposite sex?

- a) A black tie clean energy gala
- b) Whole Foods
- c) A Contra Dance
- d) Green Build conference

### What profession other than your own would you like to attempt?

- a) Industrial designer
- b) Environmental policy-maker
- c) Organic farmer
- d) Developer

### What do you typically wear to work?

- a) A nice black suit
- b) Corduroy and tweed
- c) Carharts and chacos
- d) Khakis, blue shirt

### What kind of car do you drive?

- a) A BMW
- b) A Volvo
- c) A biodiesel pickup
- d) A hybrid SUV

### What is your favorite example of a "sustainable" building?

- a) Benisch and Benisch's Genzyme Building
- b) Bill Dunster's Bed ZED
- c) A traditional adobe home
- d) Rafael Pelli's 20 River Terrace

## What kind of green architect are you?

Tally your score by giving yourself 1 point for each time you answered "a", 2 points for each "b", 3 points for each "c", and 4 points for each "d".

If you scored...

### 9- 14...high-performance green

You're a technophile who knows smart engineering can solve our environmental woes without compromising your high-design aesthetic.

### 23- 29...natural green

Mud, rocks, and sticks... it's back to the woods for you. You're a natural builder who knows that a natural home is an essential part of a healthy life.

### 15- 22...eco-mimetic green

You're a "metabolism junky" who knows that the best way to make sustainable architecture is to understand and emulate nature's super-cool cycles and systems.

### 30 - 36...green builder

If you LEED, they will follow. you are a green builder and you know that responding to the market is the only way to sustainability...(and to grow your business!)

Read on, for more about each of these profiles...



# High Performance GREEN



get this high performance look!

Avant-garde yet conservative, black ANYTHING, sleek yet unadventurous. BMW and green tie a plus!

## Beliefs to hold:

Observed and projected quantitative data can be used to optimize various technological systems. These can be integrated into the design of a whole building in order to minimize the amount of energy needed for the building's operation.

## People + Projects to admire:

Richard Rogers, Behnisch and Behnisch, Norman Foster, Ove Arup, Genzyme Building (Cambridge), Commerzbank Tower (Frankfurt)...

## Things to like:

Steel and glass, double skin facades, "new" high performance materials, diagrams with red and blue arrows, really big corporate projects.

## Books to read:

*High Performance Building*  
(Vidar Lerum)

*The HOK Guide to Sustainable Design*  
(Mendler, Odell, Lazarus)

*Facade Construction Manual*  
(Thomas Herzog)

*In Detail: Building Skins*  
(Christian Schittich)

*The ASHRAE GreenGuide*  
(ASHRAE Press)

*Window Systems for  
High-Performance Buildings*  
(Stephen Selkowitz)



## Lingo to use:

"new" "assessment" "performance" "systems" "thermal comfort"  
"facade" "skin" "new technology" "new materials" "cutting edge"  
"envelope" "commissioning" "hvac" "energy" "efficiency"  
"controls" "user" [as opposed to "person" ] "metrics" "regulate"

## Questions to consider:

Your approach suggests that there is a "right answer" for the design of any given building. How do you reconcile this with the inherently subjective nature of any design process?

Your reliance on the latest technologies and materials all but ensures your buildings' rapid degradation and obsolescence. Doesn't the huge amount of embodied energy of your buildings make them a part of the industrial throw-away culture that is at the root of the environmental crisis?

Your approach requires expensive and complex technologies and materials that are not available or suitable for use in many contexts. How would you make design decisions in these contexts?

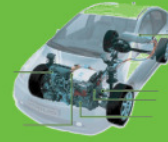
How can you be sure that your climate and energy modelling tools accurately and precisely represent a building's function?

One could argue that your approach reduces architecture to a combination of high-tech industrial products. Isn't there more to architecture than optimizing function?

How do your quantitative methods of data analysis account for all of the immeasurable and intangible aspects of architecture?

Where are all the women?

# Eco-Mimetic GREEN



## get the eco-mimetic look!

Contemporary yet unfashionable, dark colors and earth tones.  
Optional accessories : bow tie, tweed coat, flannel, hybrid car.

### Beliefs to hold:

Buildings should be thought of as integrated systems, designed to minimize (and ultimately eliminate) waste.

### People + Projects to admire:

Bill McDonough, Bill Dunster, Ken Yeang, Sim van der Ryn  
BedZED (Wallington), The Lewis Center for Environmental Studies  
(Oberlin College)

### Things to like:

Green roofs, recycled materials, wastewater treatment ponds,  
rain water collection, louvers, overhangs, solar panels,  
composting toilets, and working for "progressive" corporations.

### Books to read:

*Cradle to Cradle: Remaking the Way We Make Things* (McDonough, Braungart)  
*Natural Capitalism: Creating the Next Industrial Revolution* (Hawken, Lovins + Lovins)  
*Society's Metabolism* (Fischer-Kowalski)  
*The Green Skyscraper: The Basis for Designing Sustainable Intensive Buildings* (Yeang)  
*Industrial Ecology* (Graedel, Allenby)  
*Eco-Urbanism: Sustainable Human Settlements, 60 Case Studies* (Ruano)  
*Sociable Cities: The Legacy of Ebenezer Howard* (Hall and Ward)  
*Design with Nature* (Ian McHarg)  
*Sustainable Architecture White Papers* (Brown, ed.)  
*Biomimicry: Innovation Inspired by Nature* (Benyus)  
*Ecological Design* (van der Ryn)



### Lingo to use:

"eco-effectiveness" "ecosystem" "natural systems" "life cycle"  
"organism" "embodied energy" "natural capital" "metabolism"  
"waste" "industrial ecology" "flows" "triple bottom line"  
"equilibrium" "resource management"

### Questions to consider:

You act as if "nature" is something that we can easily understand and emulate. Do you have a background in biology? Ecology? Any kind of science? Are you interested in the actual functionalities of biological systems or, rather, the use of biological metaphors?

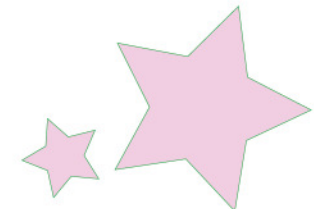
What makes you so sure that "nature" is a good model for buildings?

You assume that "nature" is characterized by tidy systems in perfect balance and equilibrium. One could just as easily argue that nature is defined by violence, conflict, feast, famine, and flux. Does this type of "nature" ever appear in your architecture? Why or Why not?

What is "nature" anyway?

Your design methods often involve an in depth systems analysis, motivated by an attempt to maintain equilibrium. Where do you draw the boundaries of this resource flow analysis?

What is with the totalizing "everybody on-board" message? How can innovative architecture ever come out of such a stifling and moralizing grand narrative?





# Natural GREEN



get this natural look!

Carharts, Birkenstocks, flannel, work boots, tool belt, hand-me-downs...and check out [www.backwoodshome.com](http://www.backwoodshome.com) to learn how to make your own biodiesel!

## Beliefs to hold:

Buildings should be healthy and comfortable, designed to incorporate "natural" materials and pre-industrial methods of building.

## People + Projects to admire:

Design-Builders, Carpenters, Rural Studio, Rudolf Steiner, the Cob Cottage Company, and "traditional" buildings everywhere.

## Things to like:

Timber frame, straw bale, earthen homes, cob, reclaimed ANYTHING, pitched roofs, anthroposophical forms, and working for him or herself (or his/her neighbor).

## Books to read:

*A Timeless Way of Building* (Alexander)  
*Shelter* (Kahn, Easton)  
*The Good Life* (Nearing + Nearing)  
*The Art of the Commonplace* (Wendell Berry)  
*Permaculture: A Designer's Manual* (Mollison + Slay)  
*The Hand-Sculpted House: A Practical and Philosophical Guide to Building a Cob Cottage* (Evans, Smith, Smiley, Bednar)

(and, while we're at it...)

*Architecture Without Architects* (Rudofsky)  
*Architecture for the Poor* (Fathy)  
*Building, Dwelling, Being* (Heidegger)



## Lingo to use:

"craft" "organic" "vernacular" "permaculture" "off-the-grid"  
"healthy living" "homesteading" "place" "local" "self-sufficiency"  
"rural" "energy" [as in "this place has great energy"]

## Questions to consider:

You seem to be operating under a static and simplistic understanding of "nature" and the relationship between people and nature. Is it really possible today to make such clear distinctions between what is "natural" and what is "artificial"?

Your design approach presumes that pre-industrial methods and materials were better for people and for the planet, when, in fact, such ways of building were much less efficient than many modern practices. How do you decide which modern practices to embrace and which to disregard?

You operate as if the best and most sustainable building has already been built. Doesn't this neo-traditional bias preclude you from reaping the benefits of new (green) building technologies?

You assume that we can return to pre-modern lives. But isn't your rejection of modern culture itself a modern reaction?

Most natural building methods do not scale well; you can't build cities out of timber frame and mud. How then, would a natural builder approach the design of large-scale urban typologies?

It seems that 'natural building' is as much about living a wholesome rural lifestyle as it is about embracing certain methods of building. Is it possible to be a 'natural builder' and still live in the city?



Tom

Sam



# GREEN

## Builder

help shape the green builder look!

Current options include: neat but casual, high-tech but conservative, preppy but rugged. Hard hat and SUV a plus!

### Beliefs to hold:

Buildings should incorporate a suite of products and features that increase resource efficiency, recycled material content, non-toxic components, and general 'green-ness,' thus appealing to the growing sector of people who are concerned with these issues.

### People + Projects to admire:

20 River Terrace (New York), Malachite LLC (Real Estate investment), and other developers who make things happen.

### Things to like:

Bamboo flooring, green roofs, dual flush toilets, high-efficiency appliances, low-VOC paint, luxury condos, and anything non-toxic.

### Books to read:

*Green Building Products: The Greenspec Guide to Residential Building Material* (Wilson)  
*Green Building: Project Planning & Cost Estimating* (Means, ed.)  
*Green Building Materials: A Guide to Product Selection and Specification* (Spiegel, Meadows)  
*Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage* (Esty)  
*Marketing Green Building: Guide for Engineering, Construction, and Architecture* (Yudelson)  
*Green Buildings Pay* (Edwards)  
*2006 International Energy Conservation Code* (International Code Council)  
*LEEDPass - Study Material* (Shahfar)  
*Sustainable Construction: Green Building Design and Delivery* (Kibert)



### Lingo to use:

"low-e windows" "products" "LEED" "green features" "HVAC"  
"low-voc" "green roofs" "USGBC" "non-toxic" "high efficiency"  
"recycled content" "flyash concrete" "dual flush" "low flow"

### Questions to consider:

*Buildings (not to mention architecture) cannot be conceived of as a checklist of desirable features. How do you make design decisions for which there is no associated green product?*

*Would you still be interested in building 'green' if it weren't in vogue with the popular press?*

*How do you assess whether or not your 'green' building is actually better for the environment than a conventional building? (for example, what is the aggregated impact of spec'ing bamboo floors rather than traditional hardwood floors?)*

*How does your company's green marketing budget compare to its green research and design budget?*

*Do you have an opinion about TerraChoice's December 2007 study on the "six sins of greenwashing?"*





# Green SKEPTIC

## Who are the skeptics?

it's not just the oil-loving, global warming deniers...there are also those who see sustainable design as moralizing grand narrative, threatening to destroy architecture's critical discourse and capacity for formal invention.

### Common sustainability critiques:

#### too preachy

*"Given that we've spent so long trying to rid architecture of universalizing agendas, how can we accept a new one?"*

#### too nostalgic

*"There's no way to return to pre-industrial times; why insist on neo-traditional solutions?"*

#### too quantitative

*"Sustainable architecture is overly-technical and obsessed with quantification; how much do all the models, measurements, and red and blue arrows really have to do with architecture?"*

#### too consumer-driven

*"Sustainability has already been co-opted by capitalism and political correctness. We must consider the implications of jumping on a bandwagon with the likes of Ford, BP, and the US Army (see [www.sustainability.army.mil](http://www.sustainability.army.mil))"*

#### boring

*"It's like plumbing. Let the engineers take care of it."*

#### ugly

*"If I see one more louver, I might be sick."*

#### not critical

*"The crisis-laden tone of the debate, which places moral imperatives above critical inquiry, is threatening to the very existence of architectural theory."*

### Skeptic's reading material:

*Toward a critique of Architectural Ideology* (Tafuri)

*Log 8* (on Sustainability)

*"Molecules, Money, and Design"* (Jarzombek)

*Between Distopia and Utopia* (Doxiadis)

*Taking Shape* (Hagan)

*"A Post-Apocalyptic View of Ecology and Design"* (Ingersoll)

*Green Architecture* (Wines)

*The Skeptical Environmentalist* (Lomborg)

*Sustaining Architecture in the Anti-Machine Age* (Abley, Heartfield)

*Marx's Ecology: Materialism and Nature* (Foster)

### Counter critiques:

*Blindly and non-critically accepting modern technologies and ways of living is what got us into this environmental mess in the first place!*

*Energy and resources are finite and can be quantified; certain aspects of design actually do have objective measures.*

*If architects refused to engage with any idea or form that was embraced by moneyed and powerful interests...NOTHING would ever be built. Besides, this is exactly why architects need to be involved in the unfolding sustainability debate – so there's a voice of resistance to purely corporate agendas.*

*Isn't it the jobs of the architect to give form to all the functional requirements of a building, even the less interesting ones?*

*Any theory that can be threatened by the need of survival of mankind...seems suspect. Besides, isn't it the task of the architectural theorist to help develop a discourse where there isn't one?*