



Jerry Yudelson

# If it doesn't perform, it can't be green!

A former engineer, Jerry Yudelson is one of the USA's foremost thinkers about ecologically sustainable design. A consultant, speaker and author, his message is about the business case for building and developing in a sustainable manner. Ecolibrium caught up with him at the Green Cities conference held in Melbourne earlier this year.

**Ecolibrium:** In your talk you said that we can take care of the human side while looking after the Earth side. What did you mean by that?

**Jerry Yudelson:** There's been a tendency in the green building arena, because of the focus on carbon, to really just make energy the sole focus. But the real lesson of the green building movement is that you have to look at things holistically. You have to look at water, energy, materials that go into buildings, you have to look at indoor environment quality, day lighting, toxic materials. My point is, let's not lose our broader focus by having a single-minded view on carbon reduction.

I gave the example of the response to the Iranian oil crisis 30 years ago. We were designing really bad buildings and

putting kids into really bad schools, because we were single-mindedly focussing on energy reductions.

*"A lot of mechanical services contractors know more than the engineers about how things work in the field."*

Engineers were culpable in that, because we weren't doing regular moisture management then, which means buildings would grow mould. They wouldn't be ventilated very well and people would get sick.

**Ecolibrium:** What are the biggest lessons we can learn from Europe?

**JY:** Let's break it down into four areas. The first is economics. The biggest thing you notice is that energy costs twice as much [as the US]. So you think more about energy.

If you look at it from the political/cultural side, one of the things that I mentioned in the talk is that in Germany it's against the law not to have a view to the outdoors from everywhere. That's just common sense. We have documented that people have more physical and psychological health issues if they can't see outdoors during the day. We already know that. That's in German law. So you have to design buildings differently. The real estate begins to look different. Buildings are thinner, because everybody has to be able to see outside unless you have an atrium in the middle – and that counts also.



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There are technical issues. Facade construction in Europe is much more exacting. For example, most architects essentially do an engineering course of study; in the US they don't. In the US it's all about design foo foo – art history and the like. It's funny, if you look at where US architecture schools are placed, typically it's in the art department. You send totally the wrong message, that's it's just about design and not performance.

So there are political, cultural, social and economic factors that are different in Europe, so you can't exactly import pieces of the system. But they are very serious about building in the energy-performance management that's required. They take a very dim view of waste, almost like the Toyota production system, which is all about reducing waste. Buildings are designed to last longer. In a country where so many of the buildings are 100 years or more old, you start to think differently.

They spend more on buildings, so engineers and architects have more time to work on buildings. In most of Western Europe, every major commission is a competition. So you really have to design something of quality just to be in the competition. Well that costs money. So fees are higher because of that system, but it does get you more innovative thinking faster.

Our system is all about qualification-based selection. We'll go through and look at an architect's body of work, select a few of the projects to look at, then the architect gets the job. But we haven't seen a single piece of design thinking yet, except as embodied in their previous work.

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We've seen that when European architects come to the US, they do really well. They bring this whole way of thinking, of integrated design. It's unthinkable for them for an architect to design a building without talking to their engineers.

**Ecolibrium:** In Australia it tends to take place a little later in the process.

**JY:** That's because architects won't stop sketching. The engineers don't want to design the building three times, so they want to hold back, because there's no commitment that “this is the design”. From the architect's point of view engineers don't know a whole lot about architecture so why should they listen to them? The engineers don't want to be at the table. They don't want to have responsibility for unworked design. But if you don't do that, you're giving away the whole energy issue. If you don't design the building for it to be efficient without systems, how can it become efficient with systems?

You must be at the table. But the engineering experience tends not to lead to that. In the US, the practice is, you hold back. The good engineers don't play that way, but that's at the top of the profession.

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**Ecolibrium:** In your talk you used the example of building Boeing jets and lean construction. How does this relate to buildings?

**JY:** What I meant was, a large building costs about as much as a jet aircraft – a Boeing 767. But we don't produce buildings nearly as well as Boeing produces aeroplanes. And yet we expect them to all perform consistently and last for years. We have to change the process by which we design, deliver, operate and maintain buildings to be much more like the aircraft business if we want the results.

Two buildings can be built by the same architect and the same engineer and I'll guarantee they'll perform very differently, depending on the occupancy, the quality of the people running the building, the details of the operating schedule. I'm not saying every building should be alike, but can't we get better consistency by studying how we manufacture aircraft, and building in quality control and error correction all through the process.

**Ecolibrium:** Are there any firms that have worked integrated practice out?

**JY:** A few have tried it, but the problem is good engineers don't want to work

in a firm dominated by architects, and good architects don't want to work in a firm dominated by engineers. So it's very hard to hire good people, culturally, and keep that balance so that they're fully integrated. But everyone's trying it, because architects hate their engineers, by and large, because they just don't feel like they're getting the service they deserve. And engineers don't feel appreciated.

Think about it another way. A large building is very much like a movie. It costs about the same – US\$100 million. With a movie there's a producer and a director, but you bring in all these specialists for the project, and when the project's over, they all disperse.

**Ecolibrium:** But with a movie sometimes you can have a director's cut, when whoever's at the helm can release a version of the film that reflects their vision. With buildings you only get one chance . . .

**JY:** What really happens is that architects and engineers design the project, and then the builder gets the plans and starts making all the changes that should have been made had the architects and engineers been as smart as the builder. And the mechanical services contractor does the same thing. Because a lot of mechanical services contractors know more than the engineers about how things work in the field. The design guy might be someone four or five years out of school who's only done a few projects. And now he's trying something new, so he doesn't know all the things that could go wrong, or how hard it is to make a particular detail work in the field. So there's a continuous feedback loop that goes throughout the project. And you're right, you can't redo the building once it's built. But all along the way people are making adjustments.

**Ecolibrium:** We've read that 50 per cent of the world's buildings are going to be constructed in China in the years to come. Do you feel like we could be building the most efficient, best-operating buildings possible (in the West), but unless we clean up what's happening in the China, it will count for nothing?

**JY:** China, of course, is the elephant in the room. I always think of these like ecologies. China can't design bad buildings because it doesn't have the energy for them; it can't build energy supply fast enough. So they need to

design good buildings for their own selfish reasons.

The Chinese are looking to get lessons. But in their current design practices, basically the engineers and architects are draftsmen. A lot of times the property developers and others are making all the decisions.

On a recent trip to China I asked someone who works in the industry, "Who makes the decisions, and what role does the engineer play?" The engineer plays no role because there's too much money at stake.

Improving that sector is a generational activity.

China's going to go its own way. But it still has to build efficiently, otherwise it's going to commit suicide. They're going to have to start pricing things correctly. I understand that in Beijing, which is a cold city, you pay \$25 for heat no matter how much you use. So, there's no incentive to conserve. But that will change. It has to.

**Ecolibrium:** You seem like such a positive upbeat guy, Jerry. Are you confident about the ability of efficient buildings to mitigate the effects of climate change?

**JY:** Well I travel a lot, and one of the things you learn is that you never stop moving toward the aircraft, even if you think you're not going to make the flight. You just keep going. We don't really have a lot of choices.

But what I like to say is an optimist is someone who thinks this is the best of all possible worlds. A pessimist is afraid that he's right. We just have to keep moving forward, discovering what we don't know, implementing what we do know, and doing a better job of long-term sustainability. ■

3rd  
pg Ad  
pg 23

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To visit the website of Yudelson Associates, go to [www.greenbuildconsult.com](http://www.greenbuildconsult.com)