Green Building and Beyond: Transitioning to Sustainability

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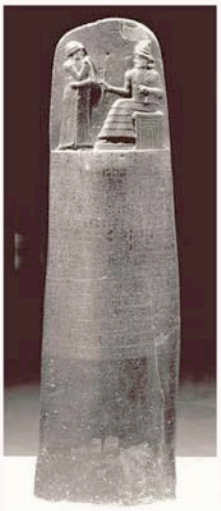
Good afternoon. Thank you for coming. My intention in this presentation is to give an overview and some insights into the circumstances we face today and the need and potential to move beyond business as usual and beyond green building and smart growth toward truly regenerative and beneficial practices.

I want to give a little background about me and the Development Center for Appropriate Technology. DCAT is a non-profit organizations, founded about 17 years ago. During the intervening years we have been involved in a great many things, most of them related to the built environment. I had a couple of years of architecture school, was directly involved in construction for more than fifteen years, had my own construction company for a few years, and have been involved with green building since the mid 1980s, including having spent 5 years on the Board of the US Green Building Council.

*At One Time Codes **Were** Written In Stone*

Some History…



1758 B.C. - Babylonian King, Hammurabi enacts the first written building code.

Of its six provisions, the first designates what the owner must pay the builder.

The rest deal with building quality from a strictly performance basis…no technical details or guidance, no plan review, no engineering, no building science, no inspections…

Just performance and consequences…

I wanted to include a bit of history of codes. People talk about codes not being written in stone…well, the first one was! Dating back to more than 3700 years ago, this first code, from the Babylonian King Harmmurabi only had six provisions relating to buildings. Other than the first one, which covered what the owner needed to pay the builder, there are no technical details, nothing about plans, no science or engineering, or anything else like what we expect to see in modern building codes. This was really the first and simplest performance code - the building had better perform…or else! Performance and consequences…

A Little Code History

229. If a builder builds a house and does not construct it properly, and the house which he built falls in and kills its owner, then that builder shall be put to death.

230. If it kills the son of the owner the son of that builder shall be put to death.

231. If it kills a slave of the owner, then he shall pay slave for slave to the owner of the house.

232. If it ruins goods, he shall make compensation for all that has been ruined, and inasmuch as he did not construct properly this house which he built and it fell, he shall re-erect the house from his own means.

233. If a builder builds a house for some one, even though he has not yet completed it; if then the walls seem toppling, the builder must make the walls solid from his own means.

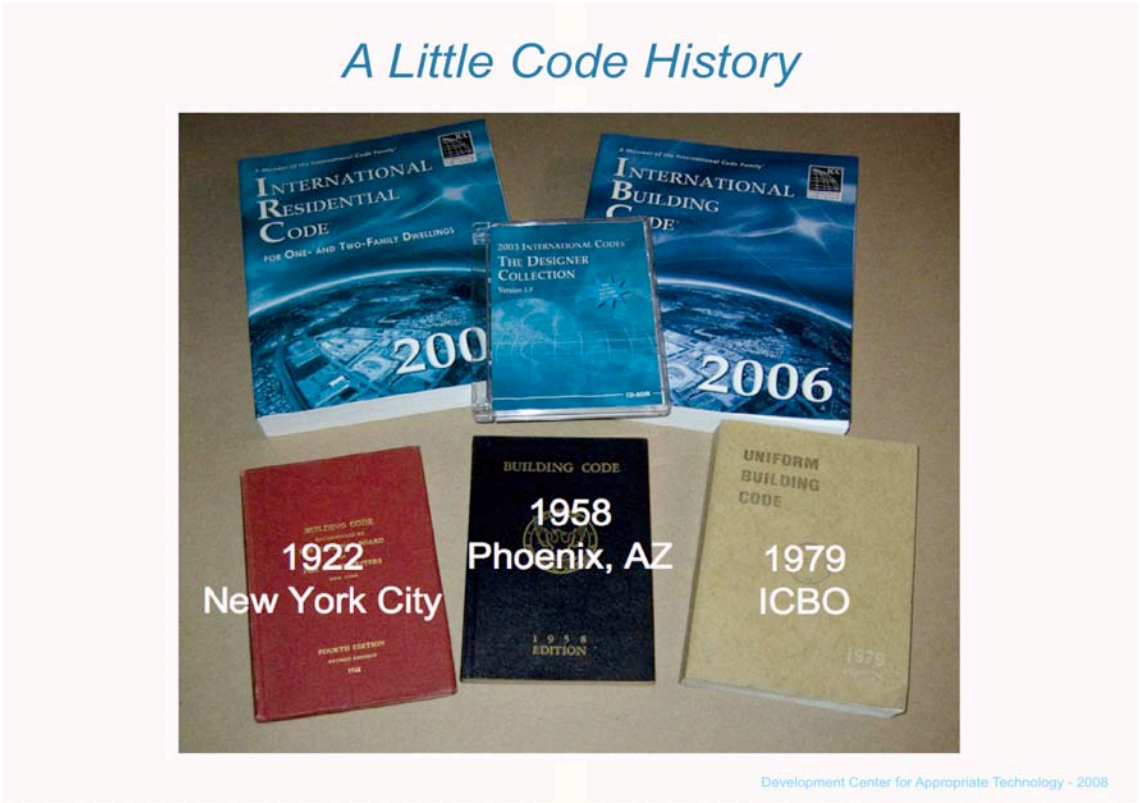
This is the old eye-for-an-eye kind of code - if the building fails and kills the owner, the builder is put to death. If it kills the son of the owner, the builder's son is put to death. If it kills a slave, the builder must pay for the slave, and if there are other costs and expenses, the builder is liable for them.

A Little Code History

That code surely stifled innovation, but things progressed anyway, because clever people kept inventing new ways to do things. Obviously dangerous things were banned - such as wooden chimneys following the great fire of London.

But it was insurance companies that produced and promoted the first modern building codes.

That code was very simple and straight-forward but it was surely an impediment to innovation. In spite of the stringency and inflexibility of that early code, things progressed. After some large-scale disasters, like the great fire of London and the great Chicago fire, a variety of obviously dangerous things were outlawed - like wooden chimneys…really. And it was actually the insurance companies that produced and promoted the first modern building codes, with an eye toward protecting property. Terrible conditions that occurred in cities in tenements - abuses by landlords, etc. also led to regulations regarding fire and means of egress, light and ventilation, sanitation and such.



Over the years the codes have grown more and more inclusive and comprehensive - and large. The little red book in the lower left is the 1922 New York City building code, produced by the National Board of Fire Underwriters - insurance people. In the center on the bottom is the 1958 Phoenix, Arizona building code and on the bottom right is the 1979 Uniform Building Code. On the top are the 2006 International Residential Code and the 2006 International Building Code, two parts of the current family of International codes produced by the International Code Council. If you took all the I-Codes and stacked them up, you'd have a pile more than a foot high. Of course the codes are now getting smaller again as can be seen in the copy of the full collection of the 2003 I-Codes on a CD-Rom… Clearly the codes have gotten much larger and more complex…but they represent only a small fraction of what is actually needed today for us to safeguard public health, safety and welfare from hazards attributed to the built environment…

I think we have a small window of opportunity to save ourselves as a species.

I believe that window is the size and shape of the human heart…

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When I think about the challenges facing us at this moment in time - challenges such as climate change, energy and resource issues like peak oil, water supply and quality, ecosystem degradation and loss of biodiversity, and our growing economic challenges, I find my self thinking that we are going to need to use more than our cleverness to survive and thrive on this planet. I think we have a small window of opportunity to save ourselves as a species, and I believe that that window is the size and shape of the human heart.

Most of the systems we have created are far beneath the dignity and magnificence of the human species.

These systems denature us.

They override our fundamental nature as a caring, creative, nurturing species.

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The human systems that we have created have enabled us to seemingly escape the limitations of the finite world of resources, space and time that have been with us from the beginning of human presence on the Earth. But I believe that most of these systems are far beneath the dignity and magnificence of our species. They denature us - overriding our true nature as caring, creative, compassionate, nurturing beings.

In order to enable our survival we have to evolve as a species.

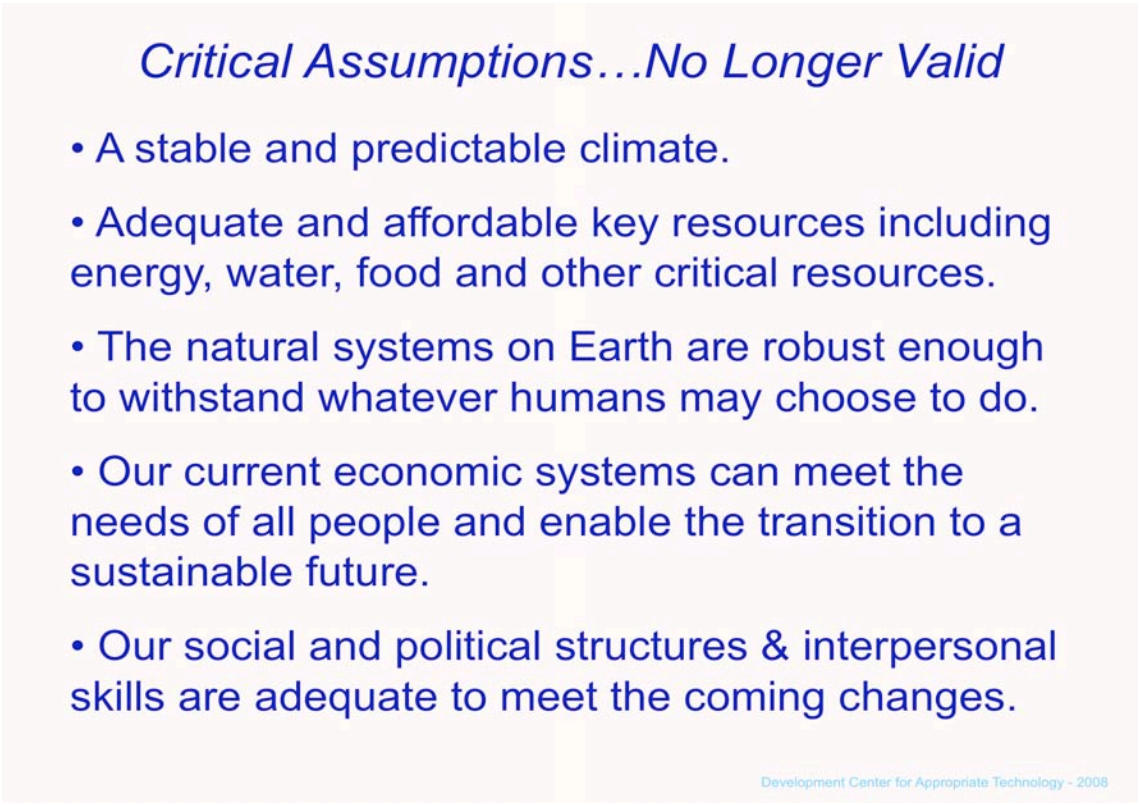
This will be the first time in history that evolution takes place as a conscious act.

Wilderness Estates - an oxymoron of course, but indicative of our deep genetic affiliation with the natural world - what is often called "biophilia" today. Our survival as a species depends on our ability to make an evolutionary leap - to consciously evolve as a species - to choose to reintegrate ourselves into the natural world - to re-member ourselves, to understand ourselves as members of the community of life.

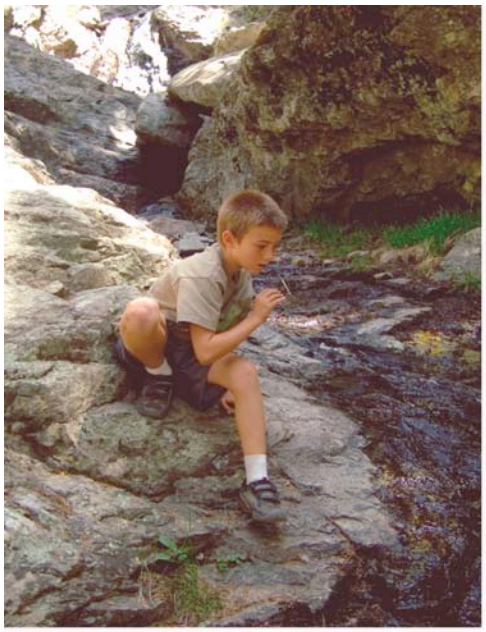
In order to enable our survival we have to evolve as a species.

This will be the first time in history that evolution takes place as a conscious act.

One of my favorite Gahan Wilson cartoon's…



What is crucial to understand today is that many of our fundamental assumptions, upon which we have based most of our human systems and decisions, are no longer valid. There is ample scientific and observational evidence that we no longer can depend on a stable and predictable climate; or adequate and affordable critical resources such as energy, water, food, and key minerals to continue current patterns of consumption and waste. Obvious to anyone paying any attention to the scientific community, our assumption that the natural systems on the planet are strong and robust enough to withstand whatever we humans decide to do is without merit. The scientists and biologists have been shouting warnings to us for decades. And more clearly than ever today, we see that our economic systems are ill-equipped to provide for the needs of everyone and those of the natural world, much less a transition to a sustainable future. Finally, I would question whether we have yet developed the social and political systems and skills that will be needed for the changes that are coming rapidly at us. Yet we continue to make policy decisions and other choices as though these things were all still true.



As a human being, citizen, neighbor, parent, grandparent - as an adult - what are my responsibilities to address societal risks that I see?

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Of course some people have been working on and talking about these issues for decades. This is my grandson Joe, about to turn ten years old. He represents all the motivation I or anyone else should ever need to wake up and begin asking serious questions about what we are doing. As a human being, a parent and grandparent, a citizen, a community member - as an adult - what are our true responsibilities when we see gigantic societal risks that are not being addressed?

And to be clear, my definition of "adults" is that they are people who take responsibility for the children, and for each other—and not just their own children, and not just the children who are here now, but the billions of children who are yet to be born in the coming decades. By that definition, there are very few actions or public policy decisions that are being made with all the children's welfare in mind…very little true adult behavior.

For a dozen years we've been working towards an intention: that if we are to deal responsibly with the risks associated with building and development, we need to be able to see those risks…fully, clearly, and in context…

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For the past twelve years, in relation to the built environment, we've been working to understand what our real situation is on this planet, how we got here, and what must change if humans are going to be able to survive and thrive, with the intention to find ways to reveal our true circumstances and to convey the reality that we have responsibilities to ourselves and each other and to future generations that we have been neglecting and ignoring. It is clear that we must develop the ability to see and respond to the whole spectrum of risks related to the built environment - especially the relationships between natural and human systems in the context of risk and responsibility.

"Safety is very important, but we need to think about the responsibilities for our collective safety; especially the welfare of future generations who, it's worth noting, are unable to represent their own interests."

The late Bob Fowler, FAIA, P.E., C.B.O.
Chairman of ICBO and Founding Chairman of the International Code Council (ICC)

In 1994, Bob Fowler was the Pasadena, California Building Official and Chairman of the Board of the International Conference of Building Officials (ICBO). He committed himself that year to leading the effort to consolidate the three regional model building code groups in the US at that time into a single organization with a single set of codes - what became the International Code Council (ICC) and the I-Codes. Bob and I became very close friends and he understood what was needed. This quote is evidence of his large vision and understanding.

…and Bob frequently reminded his fellow building officials:

"Our job is to solve complicated problems, not complicate solved problems."

The late Bob Fowler, FAIA, P.E., C.B.O.
Chairman of ICBO and Founding Chairman of the International Code Council (ICC)

Bob also had a great sense of humor and used it to influence his colleagues, often reminding them that their job was to solve complicated problems not complicate solved problems.

The Larger Context

There is a deep transformation beginning to take place in design, building and development must have a real parallel in the regulatory realm.

We need to understand what we all have to lose and what we all have to gain…

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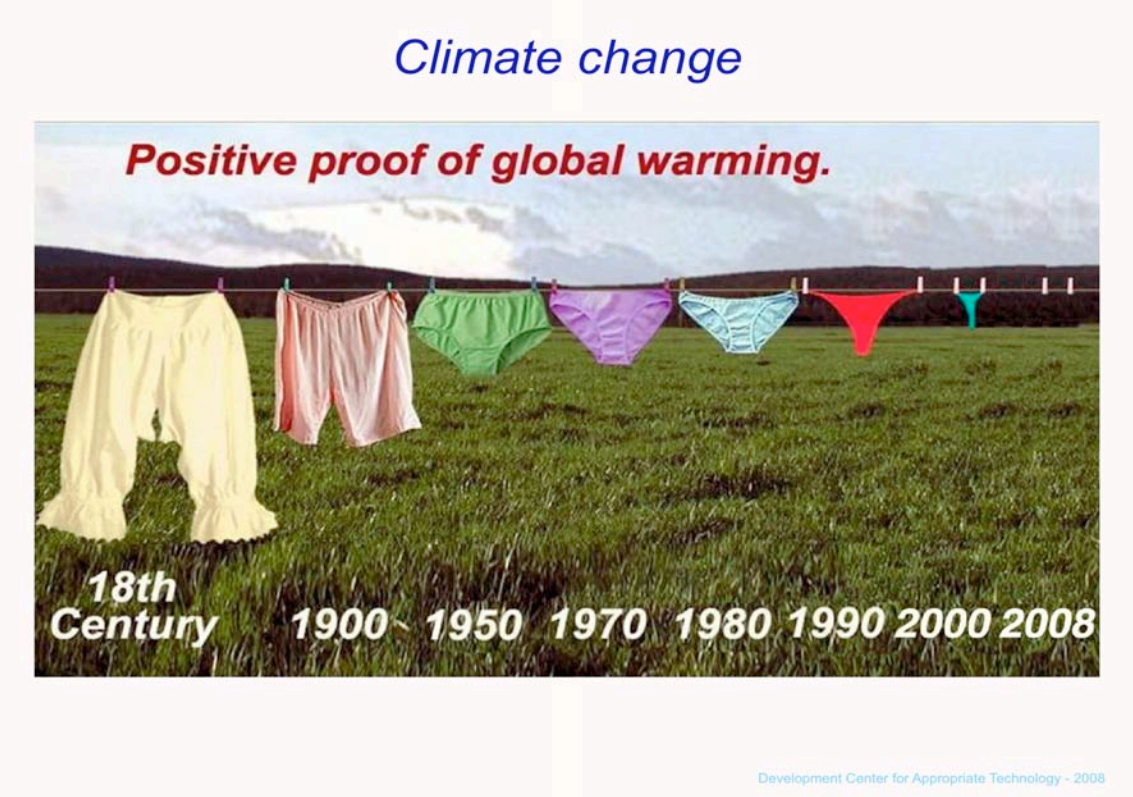
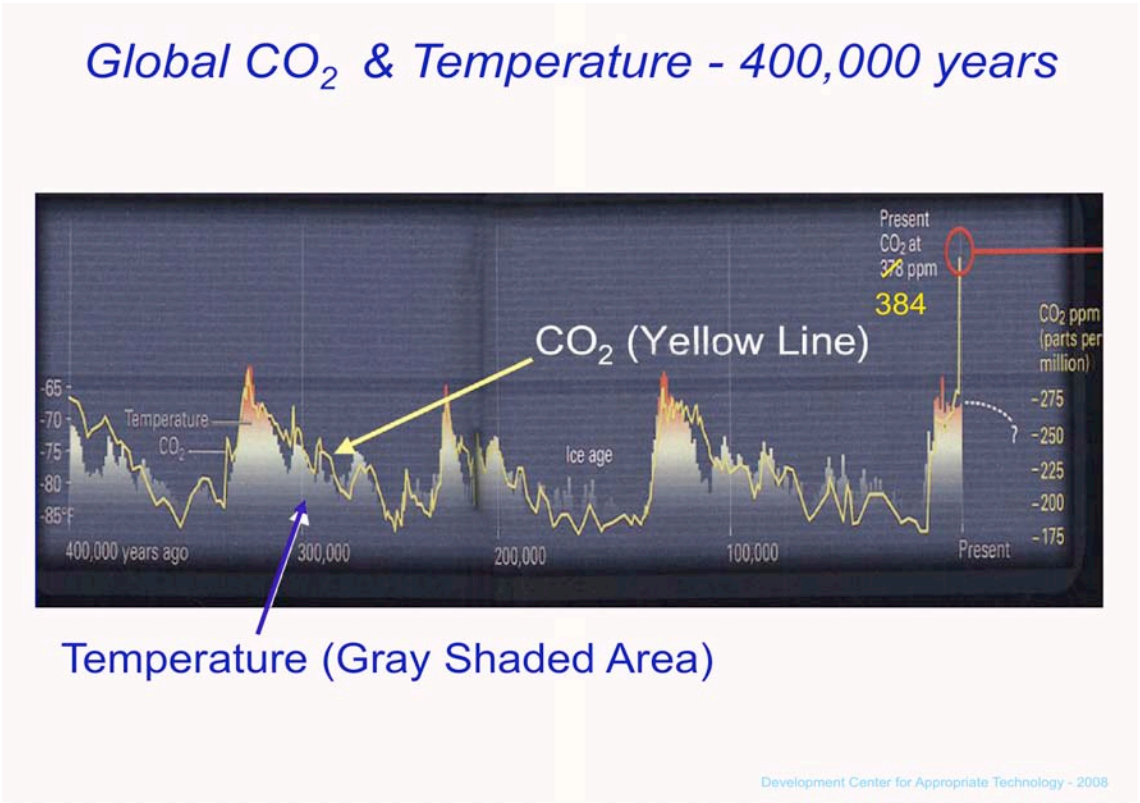
The shift to greener building and smarter development practices is important and at the leading edge of that shift a much deeper transformation is beginning to take place. The building regulatory realm needs a parallel transformation based on a much larger and clearer understanding of what is at stake.

We are at a Crossroads

This is a real place in Aspen, Colorado - the intersection of Cemetery Lane and Power Plant Road… yes, we are at a crossroads…

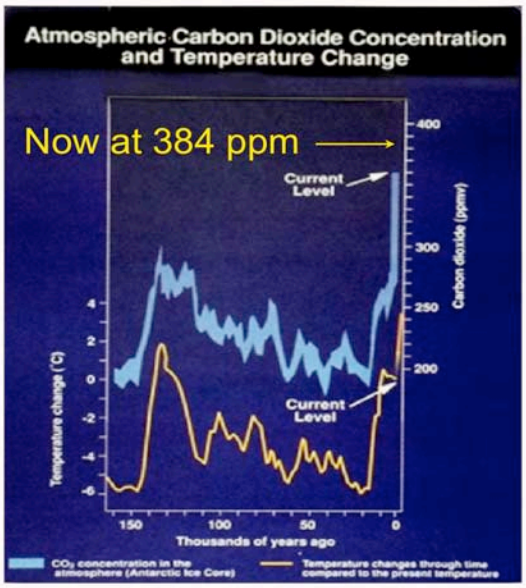


I like to stick with the more rigorous evidence in support of things like climate change…(this isn't my image except for the updating of it - adding the clothespins for 2008. And I want to be clear I'm not blaming this on the women - like the empress has no clothes…no, this has mostly been a guy thing…)



I could spend hours talking about the evidence and science but we are literally in uncharted territory when it comes to atmospheric CO2 in the past few hundred thousand years…

Will the Correlation Disappear?



Given that current levels of atmospheric CO_2 exceed historic levels, and that few scientists conclude that the correlation between global temperature and CO_2 levels will magically disappear, the question is what will happen next.

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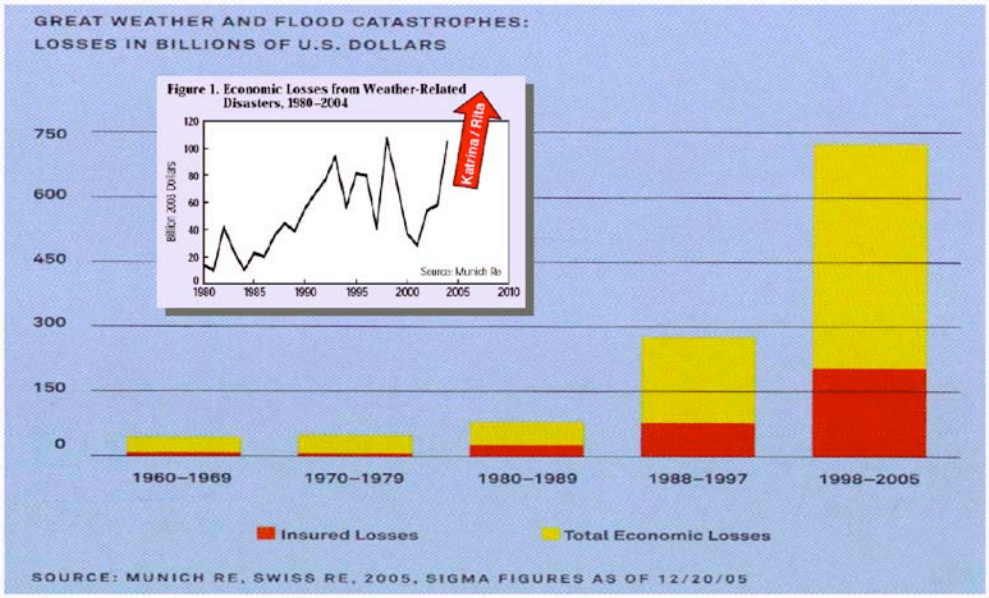
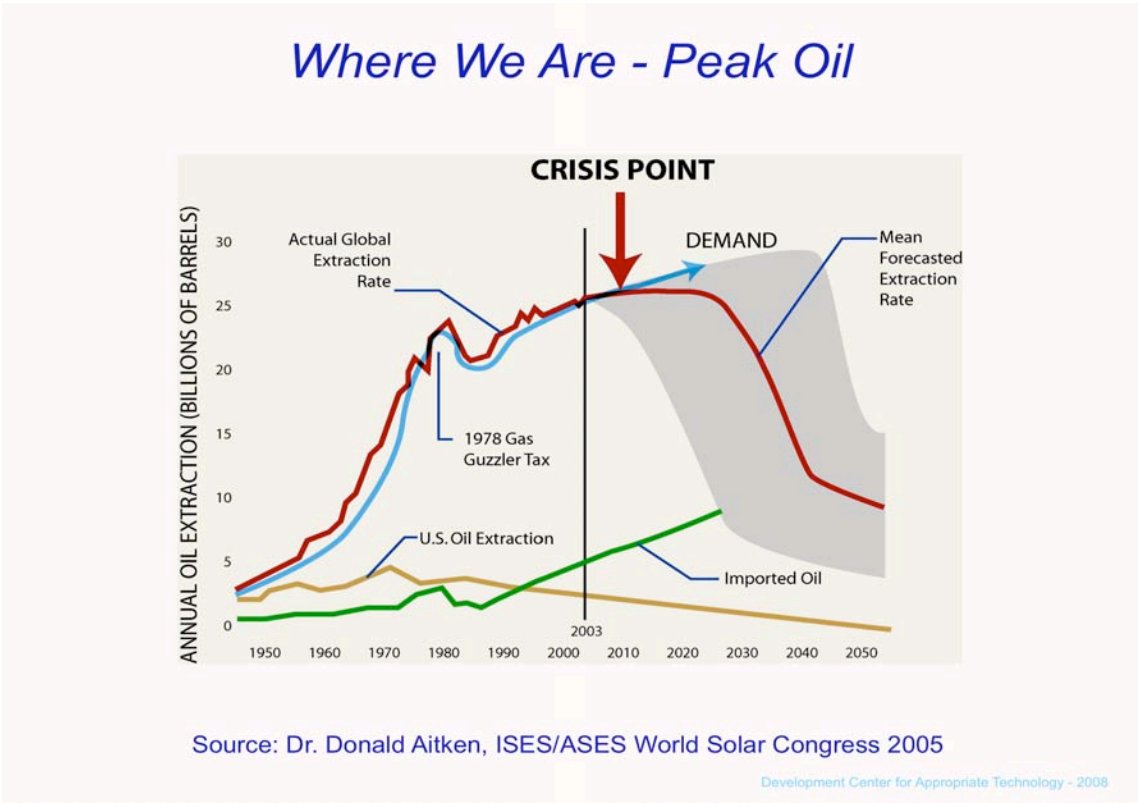
And there is no evidence to support the contention that this is within the normal range of natural systems or that the correlation that has existed between atmospheric CO2 and global temperatures will suddenly disappear.

Don't Trust Scientists?…How About Insurers?



But in case you don't trust the scientists, listen to the insurance and reinsurance folks who for the past 15 years or so have been carefully watching and studying what is happening - they are not wild-eyed radical environmentalists or left-wing nuts, and they are not disputing anthropogenic climate change - they're trying to figure out how to address it.

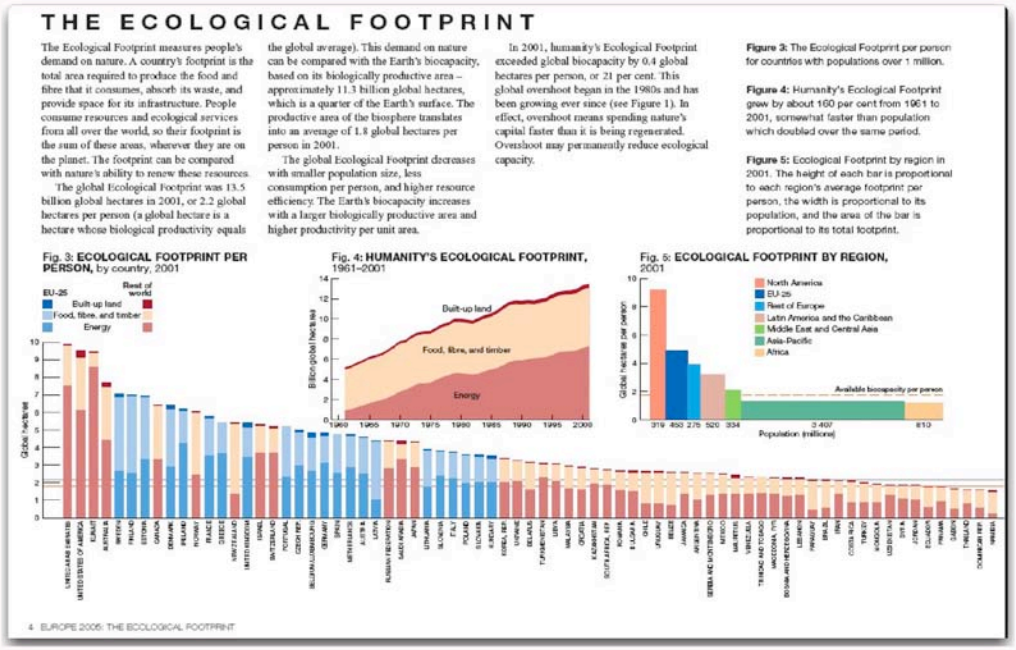


There are lots of images and graphs related to peak oil but I prefer this fairly simple one because the gray area represents the range of what are considered accepted estimates about oil supply and demand with the pessimists on the left edge of the grey area and the optimists on the right side. Even the optimists aren't projecting it out beyond about 2045 and there is scant evidence to support their optimism.

An excellent tool to understand what is happening on a planetary scale in terms of population, land, resources and nature is called ecological footprint. It is related to the concept of carrying capacity - that a certain piece of land could support a certain population or level of activity. Ecological footprint comes at it from the opposite direction, asking how much productive land it requires to provide the resources and deal with the pollution and waste of a given population, individual or activity. There is ample evidence that if everyone on the planet was consuming resources and producing waste and pollution at the rate of the average American, Canadian, Northern European, or Japanese citizen, we would need several more planets to support them. And we haven't found those extra planets yet.

The Global Footprint Network is an excellent organization and resource for such information and the data to back it up and I highly recommend visiting their website.

www.footprintnetwork.org



THE ECOLOGICAL FOOTPRINT

The Ecological Footprint measures people's demand on nature. A country's footprint is the total area required to produce the food and fibre that it consumes, absorb its waste, and provide space for its infrastructure. People consume resources and ecological services from all over the world, so their footprint is the sum of these areas, wherever they are on the planet. The footprint can be compared with nature's ability to renew these resources.

The global Ecological Footprint was 13.5 billion global hectares in 2001, or 2.2 global hectares per person (a global hectare is a hectare whose biological productivity equals the global average). This demand on nature can be compared with the Earth's biocapacity, based on its biologically productive area – approximately 11.3 billion global hectares, which is a quarter of the Earth's surface. The productive area of the biosphere translates into an average of 1.8 global hectares per person in 2001.

The global Ecological Footprint decreases with smaller population size, less consumption per person, and higher resource efficiency. The Earth's biocapacity increases with a larger biologically productive area and higher productivity per unit area.

In 2001, humanity's Ecological Footprint exceeded global biocapacity by 0.4 global hectares per person, or 21 per cent. This global overshoot began in the 1980s and has been growing ever since (see Figure 1). In effect, overshoot means spending nature's capital faster than it is being regenerated. Overshoot may permanently reduce ecological capacity.

Figure 3: The Ecological Footprint per person for countries with populations over 1 million.

Figure 4: Humanity's Ecological Footprint grew by about 160 per cent from 1961 to 2001, somewhat faster than population which doubled over the same period.

Figure 5: Ecological Footprint by region in 2001. The height of each bar is proportional to each region's average footprint per person, the width is proportional to its population, and the area of the bar is proportional to its total footprint.

Fig. 3: **ECOLOGICAL FOOTPRINT PER PERSON,** by country, 2001

Fig. 4: **HUMANITY'S ECOLOGICAL FOOTPRINT,** 1961–2001

Fig. 5: **ECOLOGICAL FOOTPRINT BY REGION,** 2001

4 EUROPE 2005: THE ECOLOGICAL FOOTPRINT

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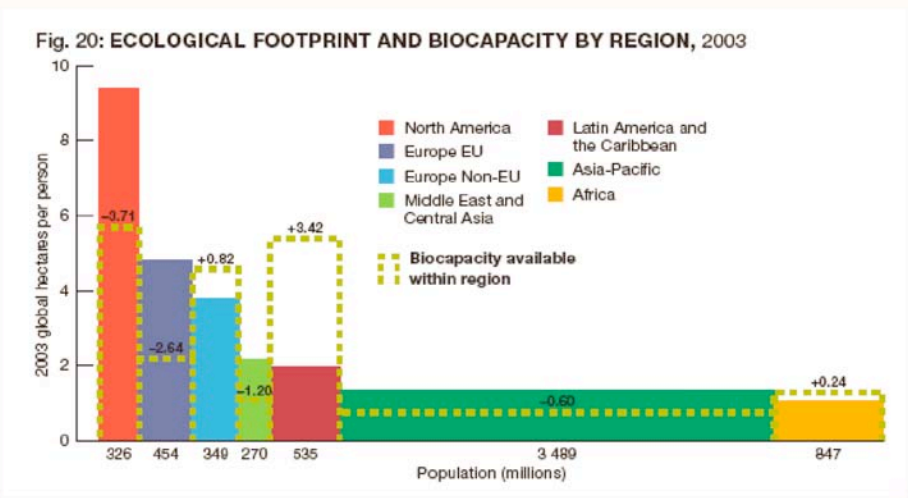
The picture this report from 2006 paints is sobering. In 2001 it was estimated that there were 1.8 biologically productive global hectares per person (roughly 4.5 acres). But the 2001 global footprint was 2.2 global hectares per person (roughly 5.5 acres) - exceeding the earth's biocapacity by .4 hectares - about 1 acre per person! And that is going in the wrong direction with each passing day.

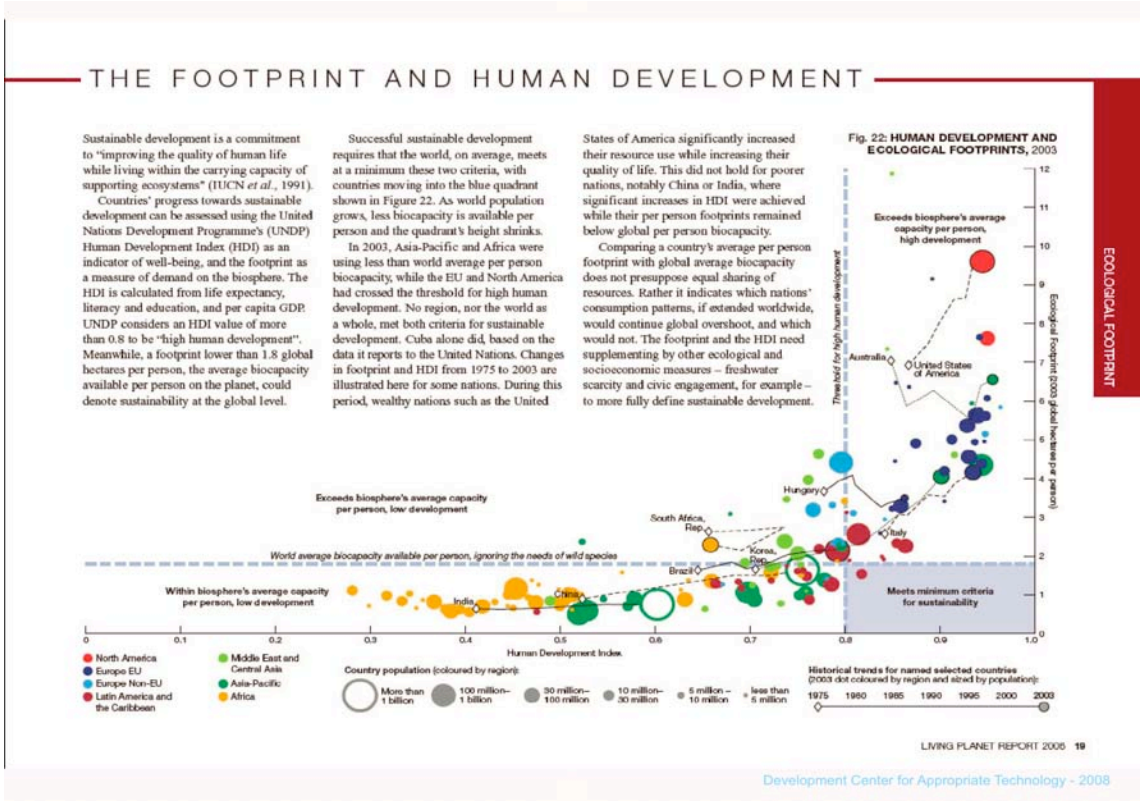
www.footprintnetwork.org



From the 2006 Living Planet Report

It is worth noting that in 2001, two-thirds of the world's people were still living within their ecological means on a per-capita basis,while that same year, North America and Europe used almost 60% of the world's ecological capacity for just 17% of the world's population. Two years later, in 2003, that had changed and in large part, because of the manufacturing taking place in the developing world for the developed world, the surplus ecological capacity in those regions disappeared.

One way to think about what has been happening is that we in the developed (or over-developed) countries have been importing the seemingly surplus ecological capacity of the less developed nations. But as world population and consumption levels have increased, that surplus has been used up. Yet we keep increasing the footprint in both developed and developing countries. Buildings account for roughly one third of that footprint with a majority of that related to energy.



THE FOOTPRINT AND HUMAN DEVELOPMENT

ECOLOGICAL FOOTPRINT

Sustainable development is a commitment to "improving the quality of human life while living within the carrying capacity of supporting ecosystems" (IUCN *et al.*, 1991).

Countries' progress towards sustainable development can be assessed using the United Nations Development Programme's (UNDP) Human Development Index (HDI) as an indicator of well-being, and the footprint as a measure of demand on the biosphere. The HDI is calculated from life expectancy, literacy and education, and per capita GDP. UNDP considers an HDI value of more than 0.8 to be "high human development". Meanwhile, a footprint lower than 1.8 global hectares per person, the average biocapacity available per person on the planet, could denote sustainability at the global level.

Successful sustainable development requires that the world, on average, meets at a minimum these two criteria, with countries moving into the blue quadrant shown in Figure 22. As world population grows, less biocapacity is available per person and the quadrant's height shrinks.

In 2003, Asia-Pacific and Africa were using less than world average per person biocapacity, while the EU and North America had crossed the threshold for high human development. No region, nor the world as a whole, met both criteria for sustainable development. Cuba alone did, based on the data it reports to the United Nations. Changes in footprint and HDI from 1975 to 2003 are illustrated here for some nations. During this period, wealthy nations such as the United States of America significantly increased their resource use while increasing their quality of life. This did not hold for poorer nations, notably China or India, where significant increases in HDI were achieved while their per person footprints remained below global per person biocapacity.

Comparing a country's average per person footprint with global average biocapacity does not presuppose equal sharing of resources. Rather it indicates which nations' consumption patterns, if extended worldwide, would continue global overshoot, and which would not. The footprint and the HDI need supplementing by other ecological and socioeconomic measures – freshwater scarcity and civic engagement, for example – to more fully define sustainable development.

Fig. 22: **HUMAN DEVELOPMENT AND ECOLOGICAL FOOTPRINTS,** 2003

This is a recent tool developed by the Global Footprint Network - combining ecological footprint on the vertical axis with the UN Human Development Index on the horizontal axis. The dashed horizontal line is the world average biocapacity available per person, ignoring the needs of wild species. The dashed vertical line is the threshold for high human development - or you might say decent quality of life. The quadrants formed by these indicators reveal that the one that could be called truly sustainable, the blue box in the lower right-hand corner represents a high quality of life with a low ecological footprint. There is one country, just barely in that box. Anyone care to guess what country that is? It's Cuba. They've already been through peak oil - because of the collapse of the Soviet Union and the US embargo - they were forced to switch to more organic agriculture, low energy transportation systems, fewer cars, and so forth - and the average Cuban lost about 20 pounds during the two years or so that followed, but today they are healthier and so is their food. We all need to migrate our lifestyles into that blue box - dematerialize well being - so we recognize that our welfare and wealth and health is not dependent on having more stuff…

Shifting back to what has been happening in the realm of the built environment and codes, the past couple of years have seen a lot of change. The photo in the upper left is of the signing of a memorandum of understanding between the US Green Building Council and the International Code Council to work together on a number of issues and opportunities. That is me flanked by ICC CEO Rick Weiland with pen in hand and ICC Board Chairman Wally Bailey, with Joe Maheady from USGBC on the right. The ICC home page now has a direct link to their Green Building page with a wide and growing range of news and resources. ICC's magazine, Building Safety Journal, has taken on the role we used to perform for them, of producing feature issues about sustainability, green building, alternative materials, and such. And last fall, ICC gave DCAT their 2007 Affiliate of the Year Award and a month later at Greenbuild, USGBC gave DCAT a national Leadership Award.

A Lot is Happening…

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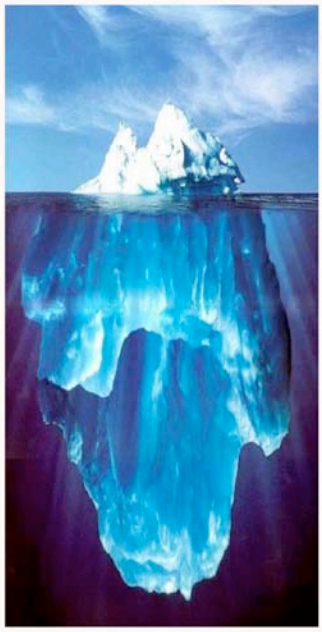
We also have been given a regular column in Building Safety Journal, ICC's magazine, to communicate with building officials across the country. We frame this transformation as true legacy work - the most important work we could ever hope to have…creating safe buildings that are also safe for the planet and future generations.

Larger Context: Just the Tip of the Iceberg

Green building, Smart Growth, Energy Star, LEED, even the Living Building Challenge, and all the recent changes in codes and standards are only small first steps.

The challenges are huge. The good news is we've overcome inertia and things are moving in the right direction…though…



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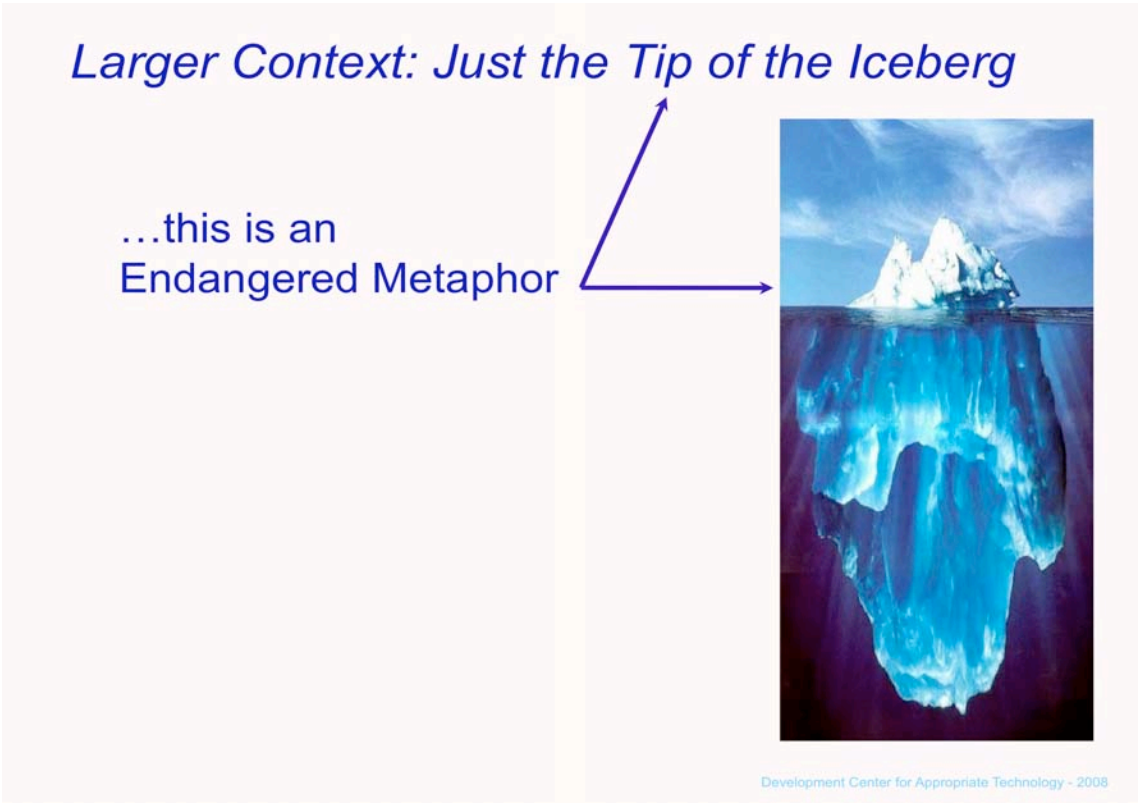
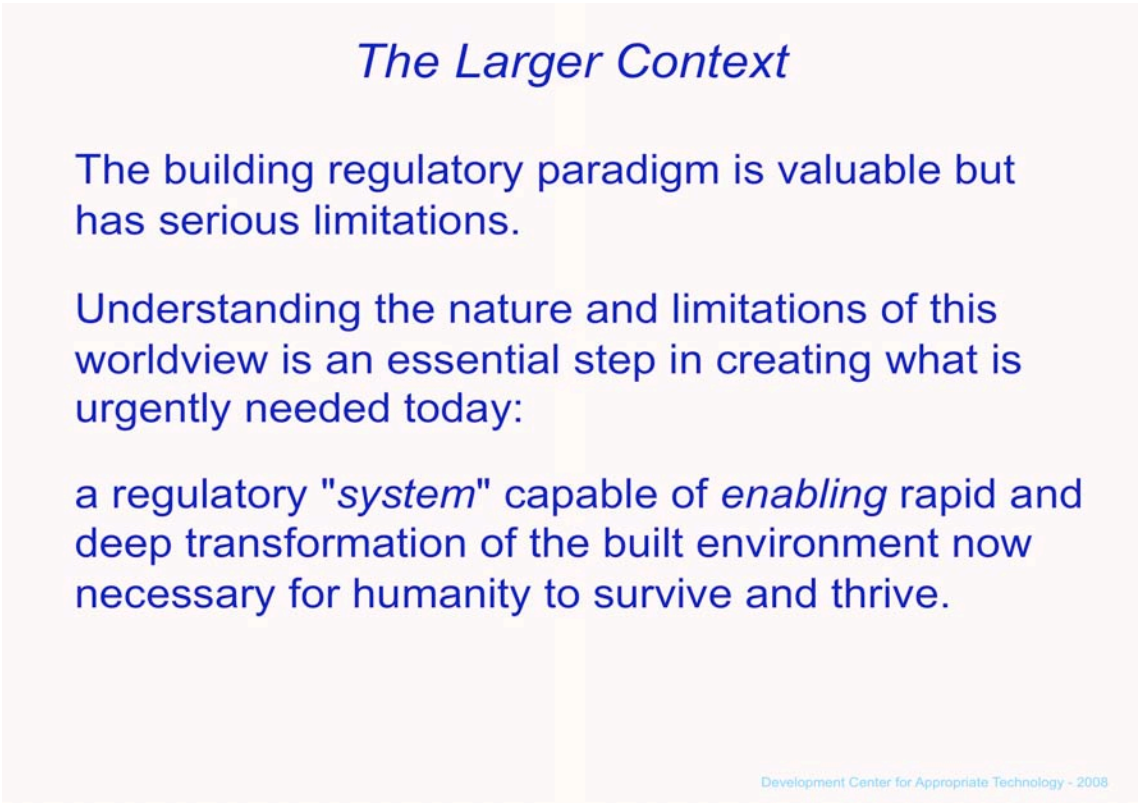
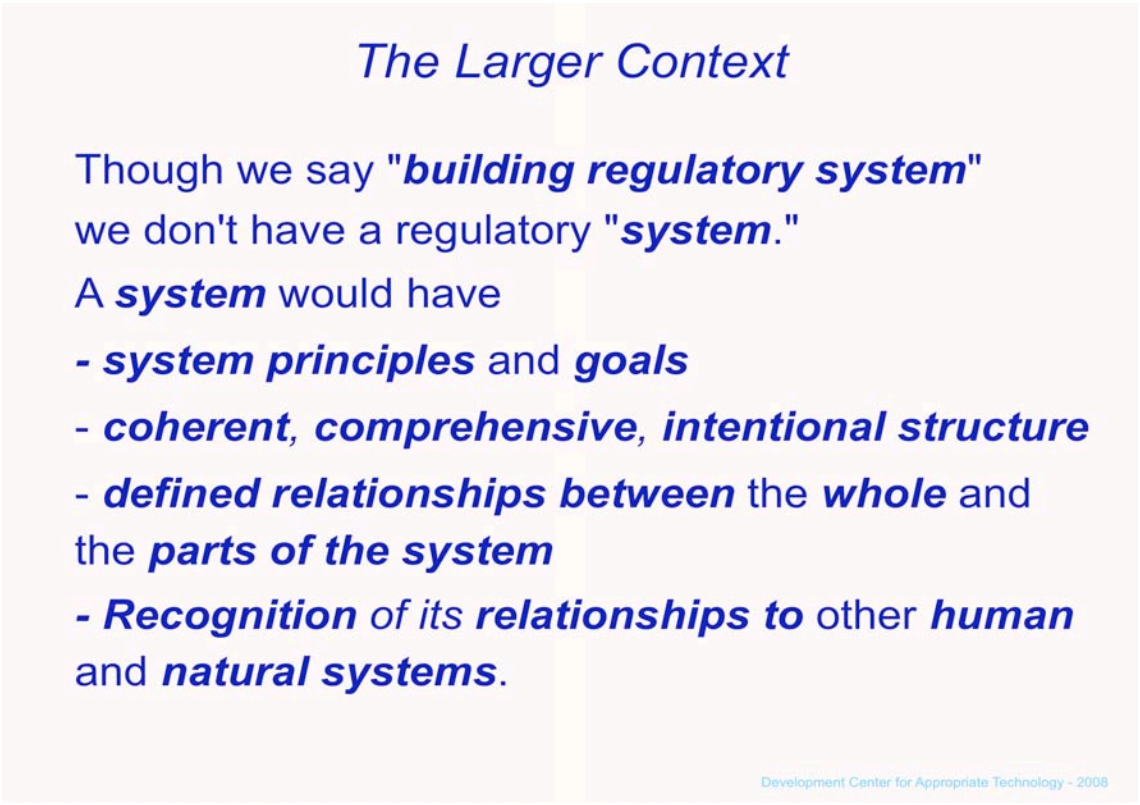
These changes are all hugely encouraging. And they are also just the first steps as we begin to address the realities we all face today. The good news is that we've overcome inertia of rest. Things are moving and moving in the right direction. And they're accelerating. But we have a long way to go…



And I like to point out that "tip of the iceberg" is actually an endangered metaphor…



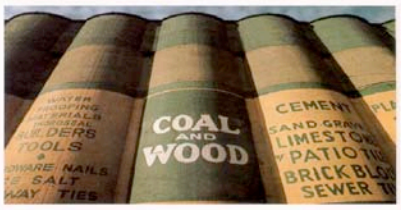
An entry point into thinking about how we begin to respond is to recognize that as important as regulations and codes and standards are, they have real limitations. We have to understand the nature of the regulatory paradigm and the limits of what it can do, as well as seeing that there are risks embedded in the paradigm itself that can only be addressed by stepping back and assessing them from a higher level. Einstein pointed out that you can't solve a problem from the same level of thinking that created it. The regulatory paradigm tends to be entrenched at the level of the problem. There is an urgent and growing need to create a true regulatory "system" capable of enabling the rapid transformation of the built environment necessary for us to survive and thrive.



We use the term "building regulatory system" but we don't have a "system." A system would have been DESIGNED with intentional system principles and goals and a coherent, comprehensive structure. It would also have defined and designed internal and external relationships with other human and natural systems. What we have has grown up in an ad hoc, process of reacting to problems as they arose. It was never designed.

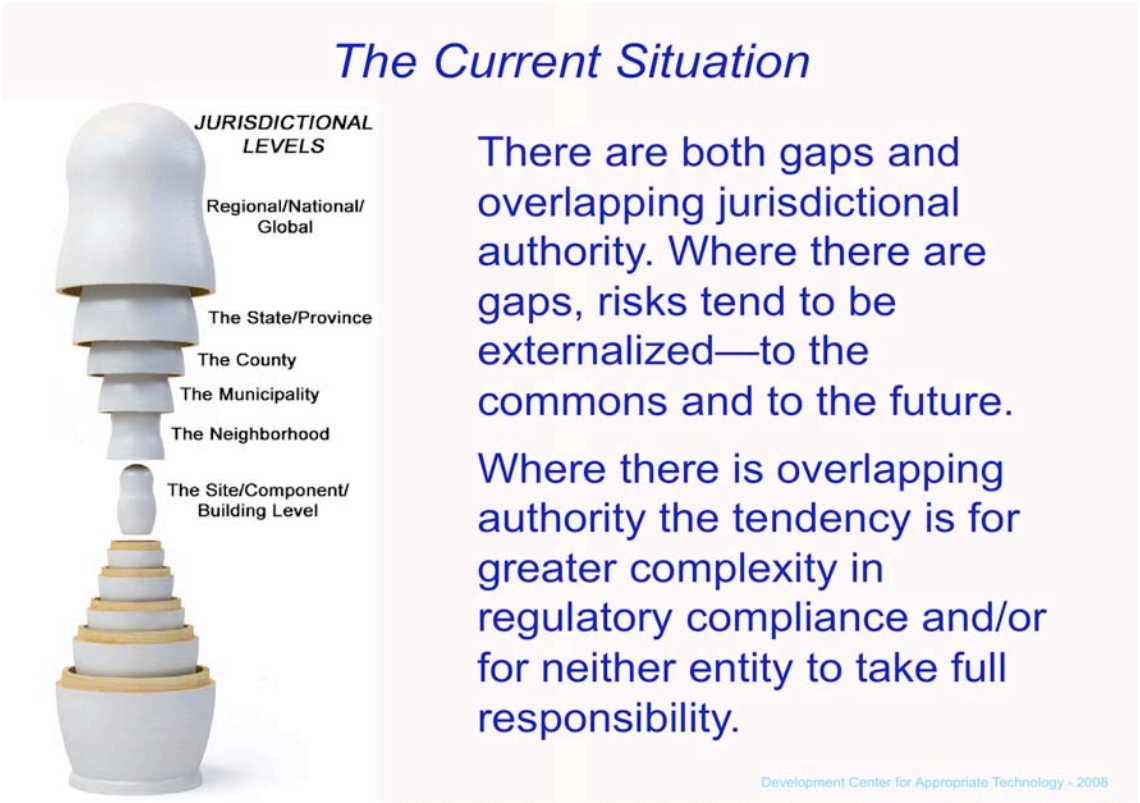
What We Have Instead…

We have a maze of regulations and regulatory structures with often conflicting and disconnected minimum standards to control what gets built…

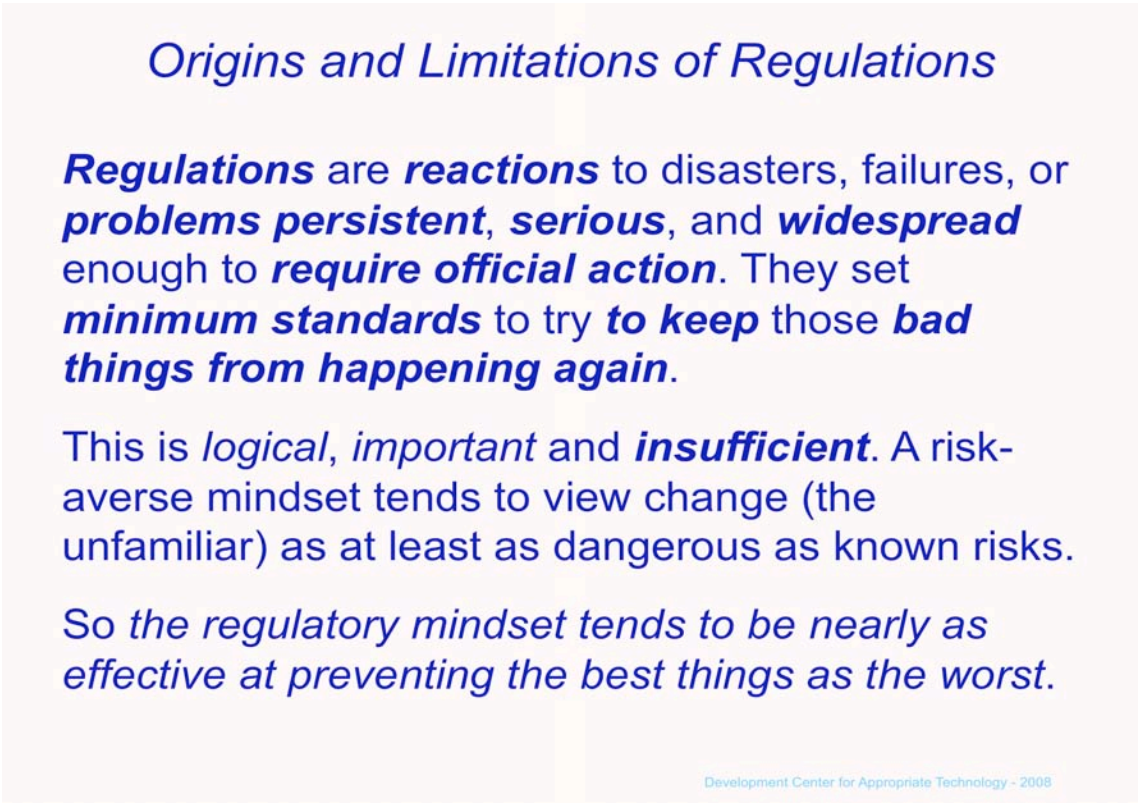


Regulatory responsibility and authority is divided into separate silos—jurisdictions, agencies, and departments. Rules, codes and standards vary from place to place, as does enforcement...

The result is a maze of regulatory silos and structures, with often conflicting goals and standards, disjointed regulatory authority, and great variety in both regulations and their enforcement.



There are both overlaps and gaps in jurisdictional authority. Where there are gaps, the risks are typically externalized - often to unregulated realms - especially to the commons and to the future. Where there is overlapping authority, rather than doubling the regulatory coverage, the overlap often is perceived as relieving both entities of full regulatory responsibility. And anything that is outside the norm, or any changes to the system are not merely twice as difficult to achieve but exponentially more difficult.



Regulations are almost always responses to failures or catastrophes - thus they are fear-based responses intended to keep bad things from happening - almost always, actually, from happening again. They establish minimum standards to minimize or eliminate risk - but often that includes other kinds of risk like perceived risks, technical risks, and legal risks. This is the same mindset that many environmentalists operate from - trying to keep bad things from happening - it's just that we're looking at different parts of the system…

Unfortunately, this mindset, which I call the regulatory mindset, tends to be nearly as effective at keeping the best things from happening as the worst things because innovation or anything unfamiliar appears to be risky and thus change of any kind is often resisted.

Origins and Limitations of Regulations

Regulations are only created for large existing problems, so they can't address emerging problems when small, manageable, or avoidable.

Thus the main navigational tool is the rear view mirror…

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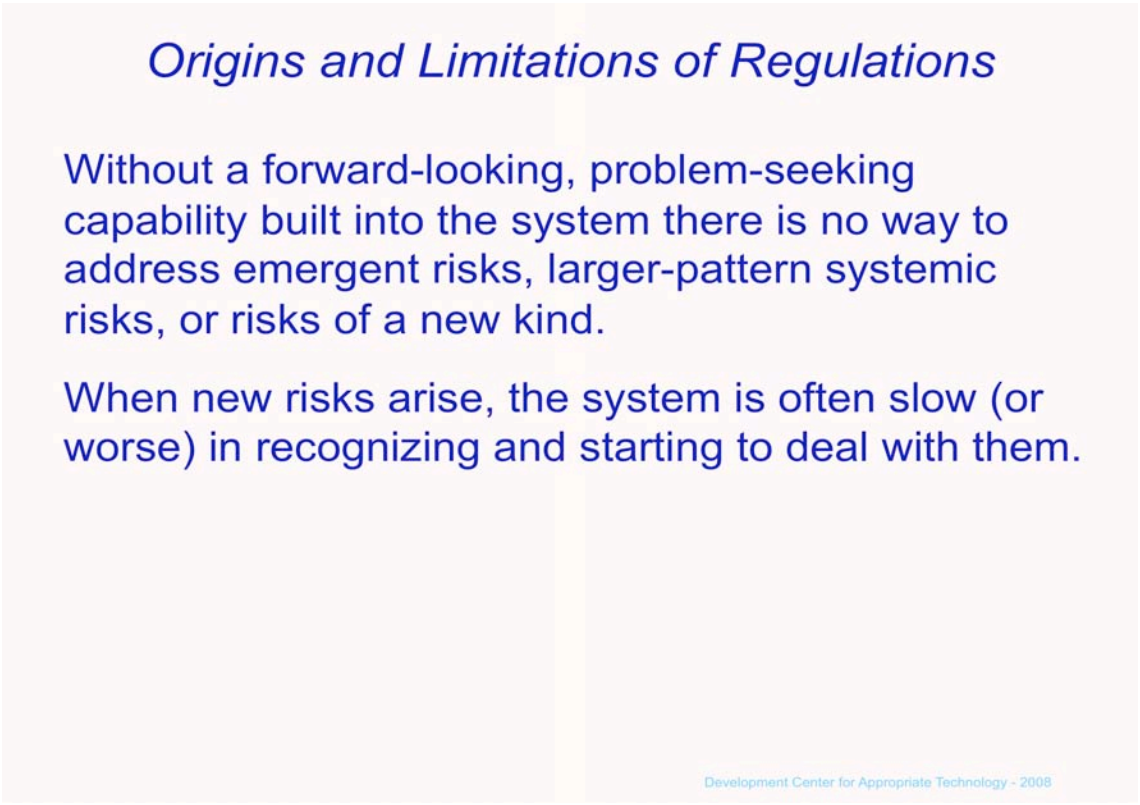
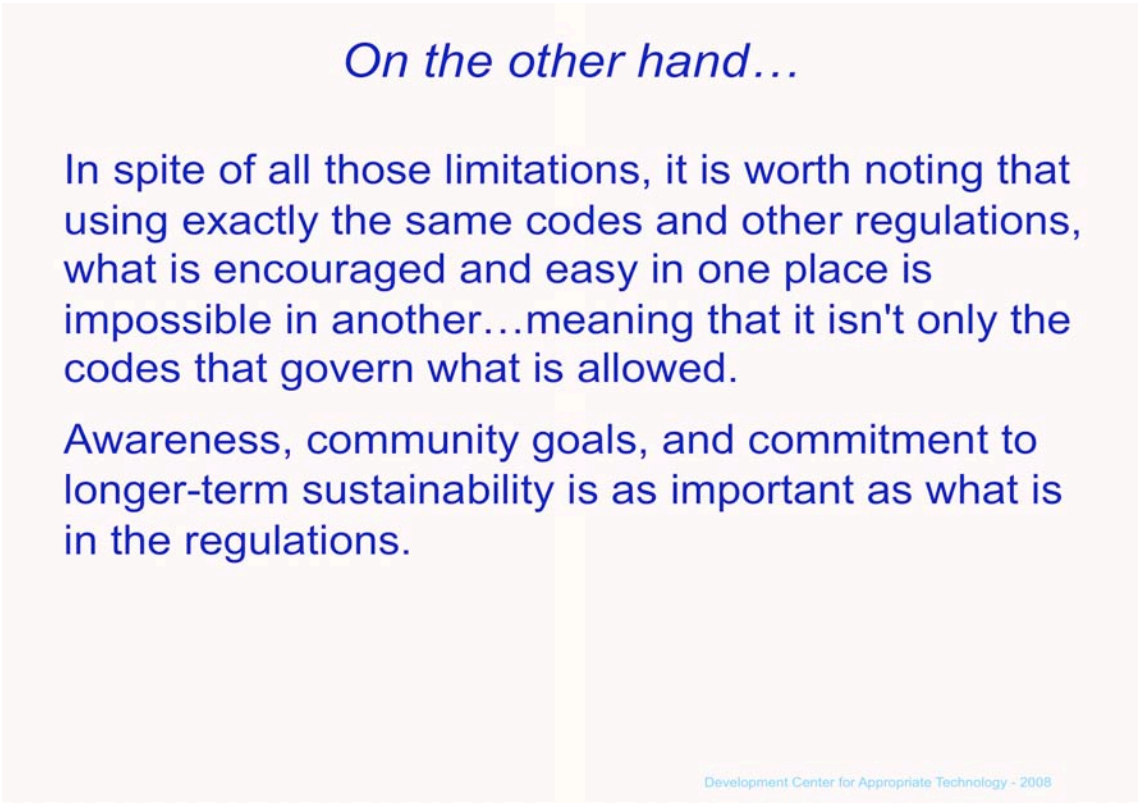
Because codes and other regulations are reactions to existing failures, they're looking backward. So the main navigational tool in the regulatory realm is the rear view mirror.



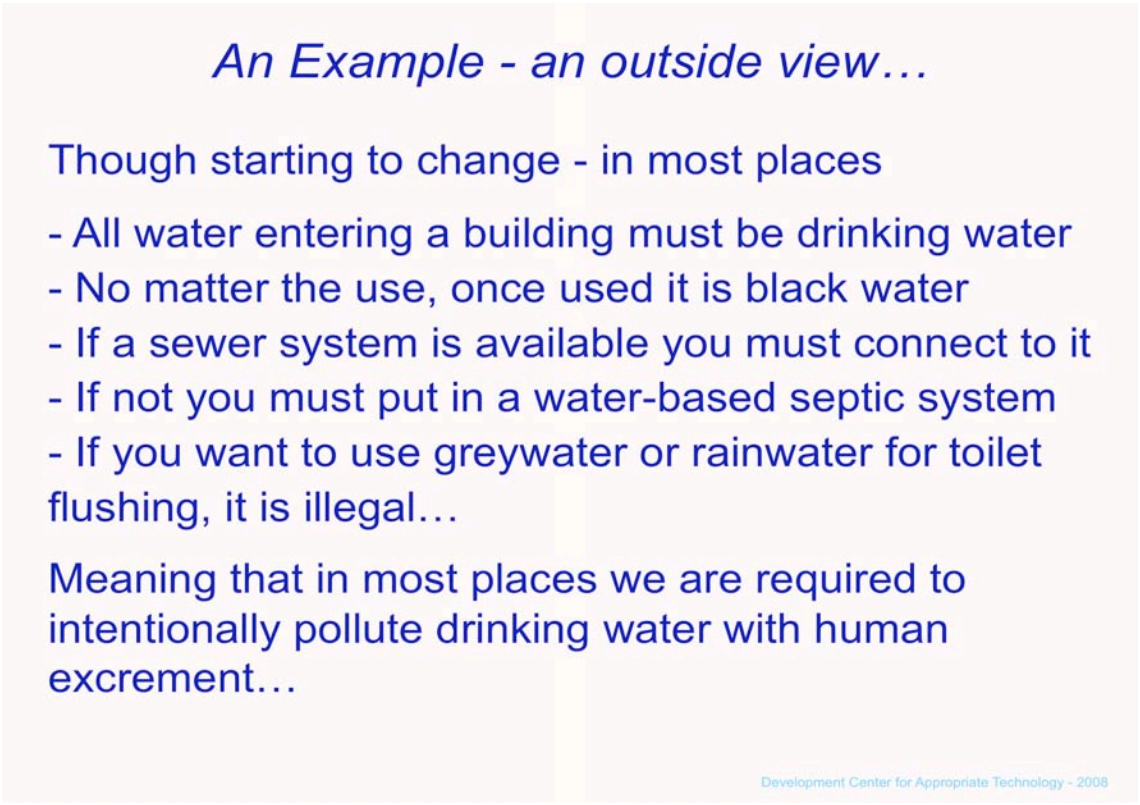
The regulatory realm inherently lacks a forward-looking capacity because we don't get regulations until we have large persistent serious problems. The regulatory toolkit lacks a problem-seeking capability designed to look for emergent, large-pattern systemic risks or new kinds of risks. More important, when new risks do arise and are recognized by some, the system is slow to respond if not outright hostile to having to address them. Some of us have been talking about climate change, energy security, water and other non-renewable resource vulnerabilities, ecosystem and human health in relation to the built environment for decades. Even though there is now much more widespread recognition of these issues, there is still great resistance in the regulatory realm to address them.

It is crucial to acknowledge, as well, that the regulatory sector is typically starved for resources. This means that they are usually understaffed and lack the resources they need. They are also unable to get the training or hire people with highly specific expertise that may be needed. And that's for their normal work, not including the demands placed by change and expanding areas or types of responsibility.

And we also acknowledge that the regulators are not free to just do as they please. They are constrained and regulated themselves by public policies, politics, elected officials, special interests, economic issues, and the regulations themselves, which are usually not of their making.

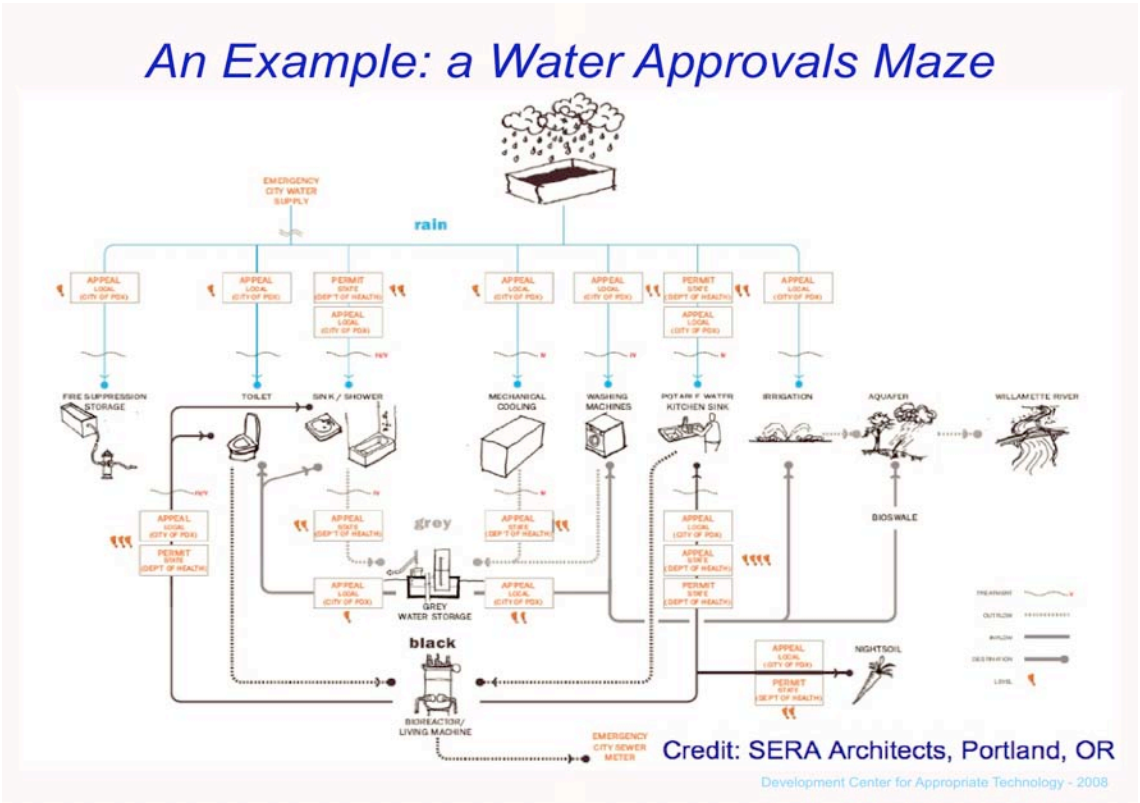


On the other hand, it must be pointed out that in different jurisdictions and communities, often in close proximity, that use exactly the same codes, standards and other regulations either encourage or discourage, create incentives or create obstacles to innovation and more sustainable practices. The larger goals, level of awareness and commitment to moving toward truly sustainable practices are at least as important as what is in the codes and other regulations.

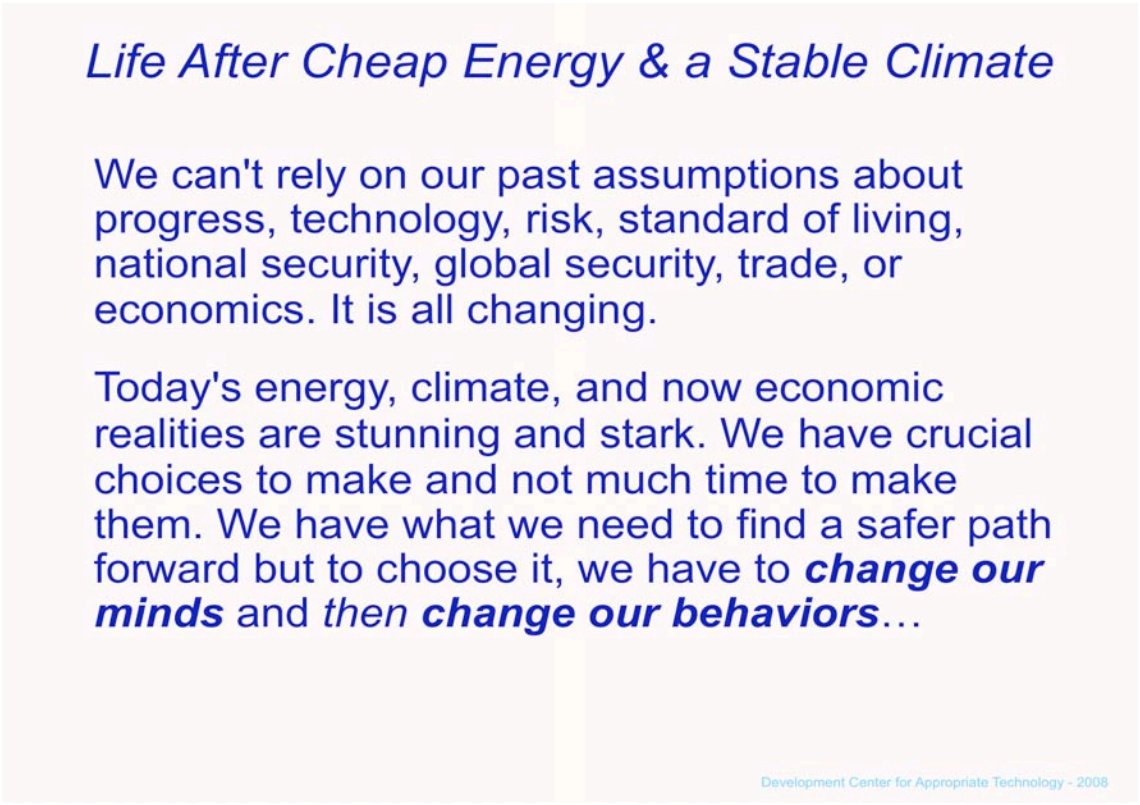


An example of something that has begun to change in some places, based on that kind of larger-scale viewpoint can be seen in how water is regulated. Though changing, in most places, all water coming into a building must be potable water - think "drinking water" because that is the required water quality - regardless of how that water is to be used. And in most places, once used that water is required to be treated as blackwater, raw sewage - as though it had gone through the toilet - regardless of the use. And in most places, if there is a sewer system available you are required to connect to it and if not, you are required to put in a water-based septic system. In most places, as well, if you want to use greywater or rainwater to flush your toilets, it is illegal. Meaning that in most places, we are required to intentionally pollute drinking water with human excrement…

As I said, this is changing, but we are still operating with 19th century technology, fears, and ideas in the 21st century, where water, and especially drinking water is an increasingly scarce and expensive resource and proven alternatives abound. Why are these alternatives acceptable in some jurisdictions and not in others?



This is a chart of the approvals maze for a Living Building Challenge project in Portland, Oregon, done by SERA Architects. What it shows is that there were over a dozen appeals necessary for a highly engineered large-scale project seeking to be totally responsible for all of its water supply, use, treatment and discharge. Each of those appeals represented a place where the most sustainable approach to dealing with water was in violation of some code or regulation. The good news here is that the way the architects and others involved with this project went about addressing these issues resulted in a number of changes and pending changes in state laws and other regulations that will eliminate the need for many of these appeals in future projects.

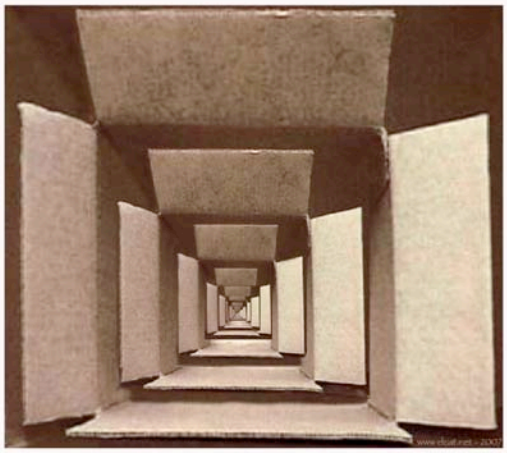


When we look at where we are today, we can see that we can no longer rely on our past assumptions about risk, resources, technology, economic viability of standard practices, and so forth. It is all changing. The realities are stark and challenging. We need to change how we think, what we think about and how we respond to these emerging realities.

Sometimes Bigger IS Better

We hear that we need to think "outside the box" to deal with our problems today.

But it's a process - expand your field of view, get out of the box you're in …into the next bigger box.



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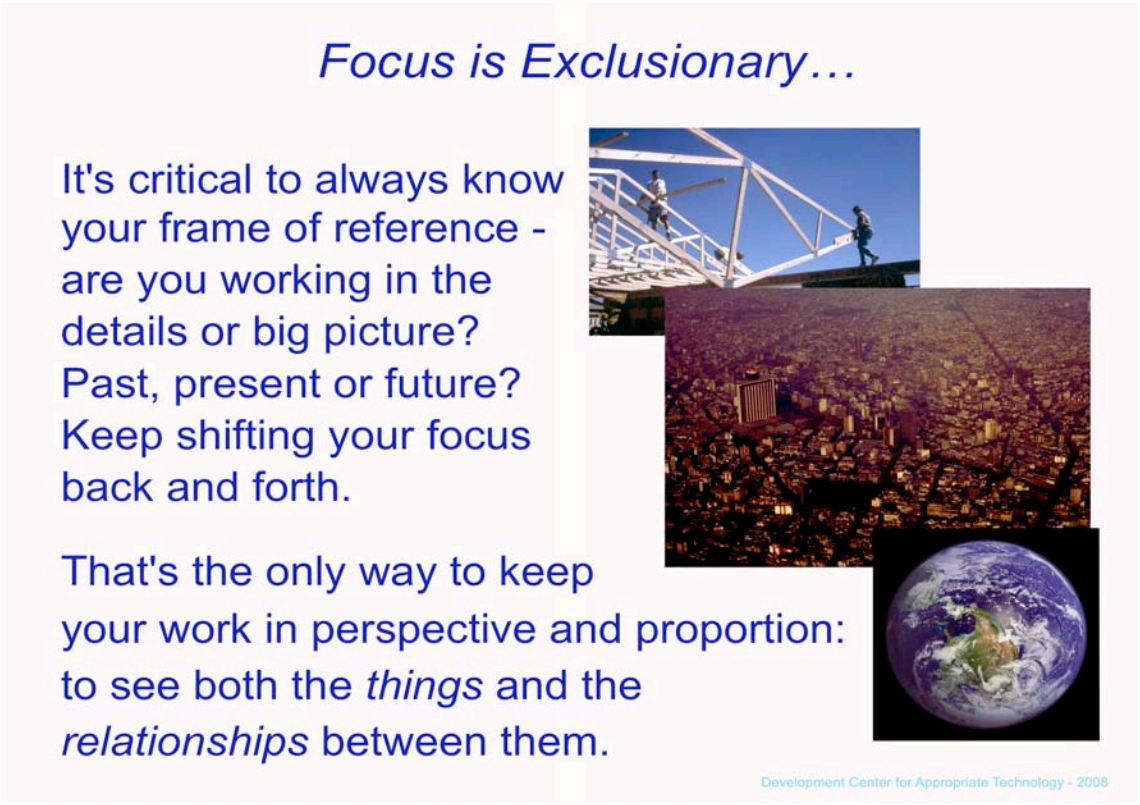
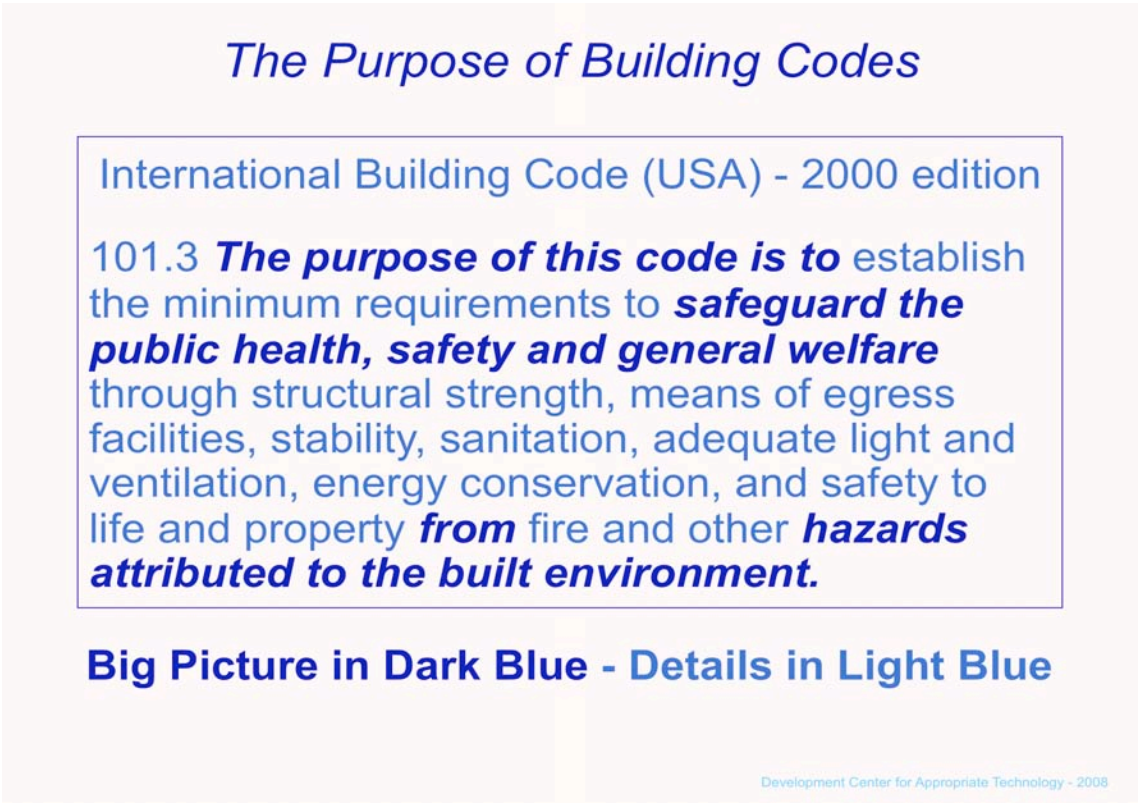
People talk about the need to think outside the box - especially with all the daunting challenges we're facing today. My experience is that it's an infinite series of boxes. We expand our thinking and understanding and climb into the next bigger box. I love this image because it reminds me that I and everyone else always has a lot to learn - when we get into paradigm wars - you know…my paradigm is bigger than your paradigm…that they're all, always inherently incomplete and inaccurate. Our task is to make the largest and most accurate map of reality that we can in our time here. We have to be willing to redraw our map constantly…



We also need to know whether we're working in the details or the big picture or some intermediate level, in the past, the present, the future, always trying to understand the context of your focus. Focus is an act of exclusion - you focus on something and by definition, you exclude everything else. If you don't know that, if you don't pay attention to that you get lost in the details or you lose sight of them. We all need to develop the habit of constantly shifting our focus and looking for the patterns and the spaces between things and their relationships. This is how we learn to keep things in perspective and proportion.



This is the purpose statement from the International Building Code (USA). The dark blue text is the Big Picture. The rest is Detail. Thus, I believe that the purpose of the code is to safeguard the public from hazards attributable to the built environment. That responsibility is not limited to hazards that occur at the building site or hazards that exist only during the life of the building - because hazards attributable to the built environment begin far from the building site and before it is built, and often extend far from it as well, extending far into the future.

Our modern building codes are extraordinarily good at enabling us to design and build buildings that rarely burn down, fall down, trap people in emergencies, expose them to raw sewage, electrocute them, let them fall from high places, suffocate them too quickly…thus we think we've eliminated or greatly reduced the risks associated with buildings.

What we've actually done is move those risks in space and time. We've moved them away from the building site out into all the natural systems on the planet - our life support systems, and from the present to our children and grandchildren and all the future generations of all the other species on whose welfare our welfare, to some unknowable degree, also depends.

Big Problems Hidden in Plain View

Looking at buildings through codes has been like looking through a microscope. The individual, building-related risks filled the field of view.

But, it's like we've dealt with risk with tweezers, while creating orders-of-magnitude greater, generalized risk for everyone, including all future generations.

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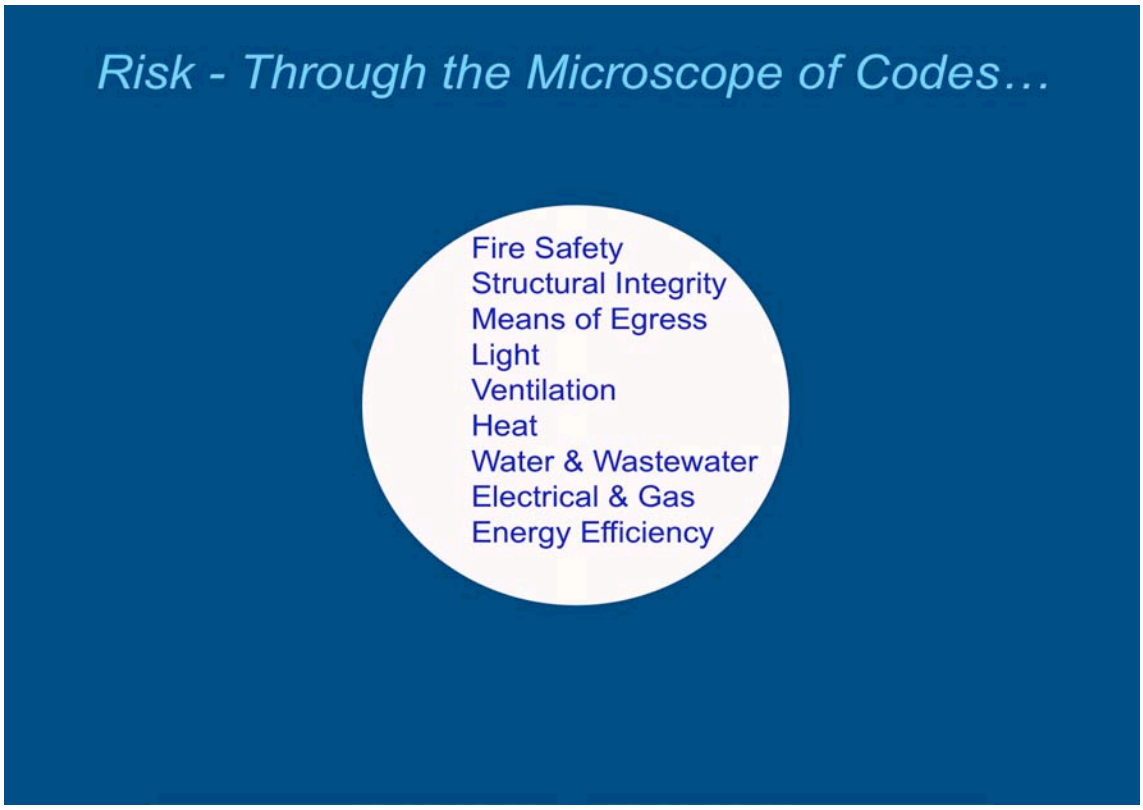
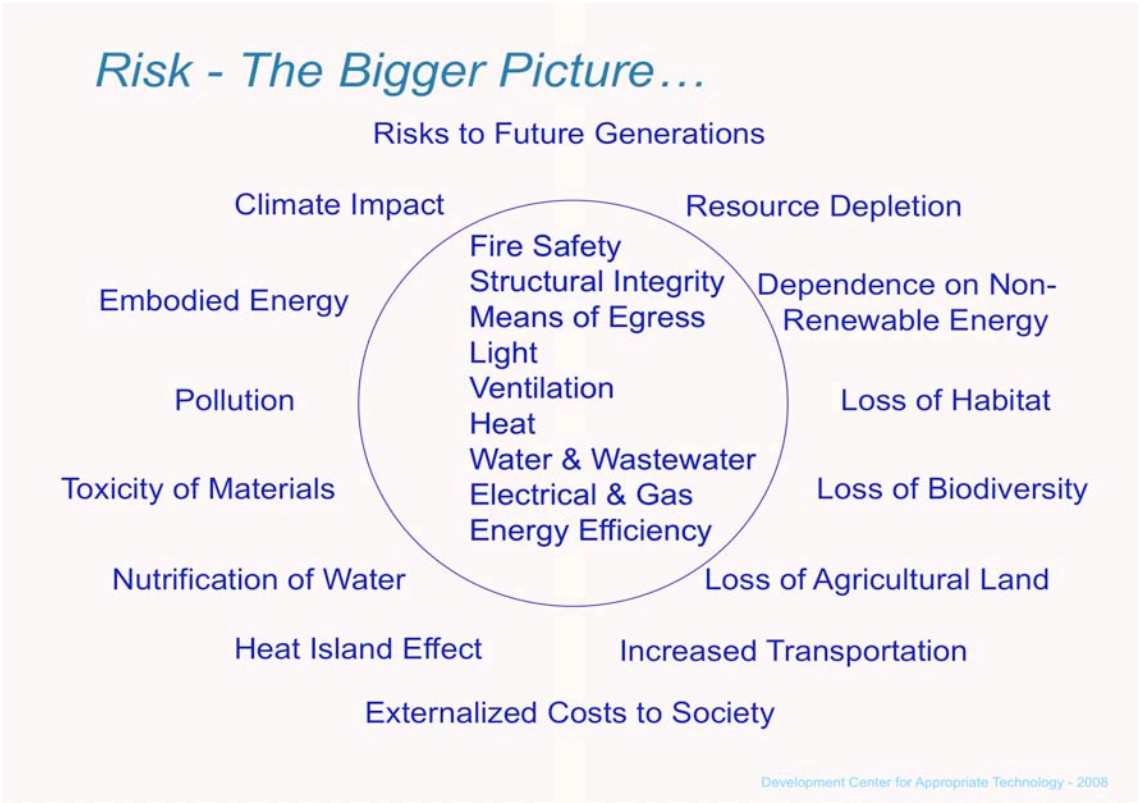
So, it's like we're looking at building-related risk through a microscope. We can see all the important risks to people in and around buildings. But important as they are, these risks exist at the smallest and most specific level and they completely fill our field of view. They're real risks to real people. But it's like we're dealing with risk with tweezers while what we are requiring people to do to minimize these risks are creating orders of magnitude greater generalized and distributed risk to billions of people - none of which can be seen through that lens.



These are the categories of risk and responsibility as laid out in the codes. This is the view through that microscope…



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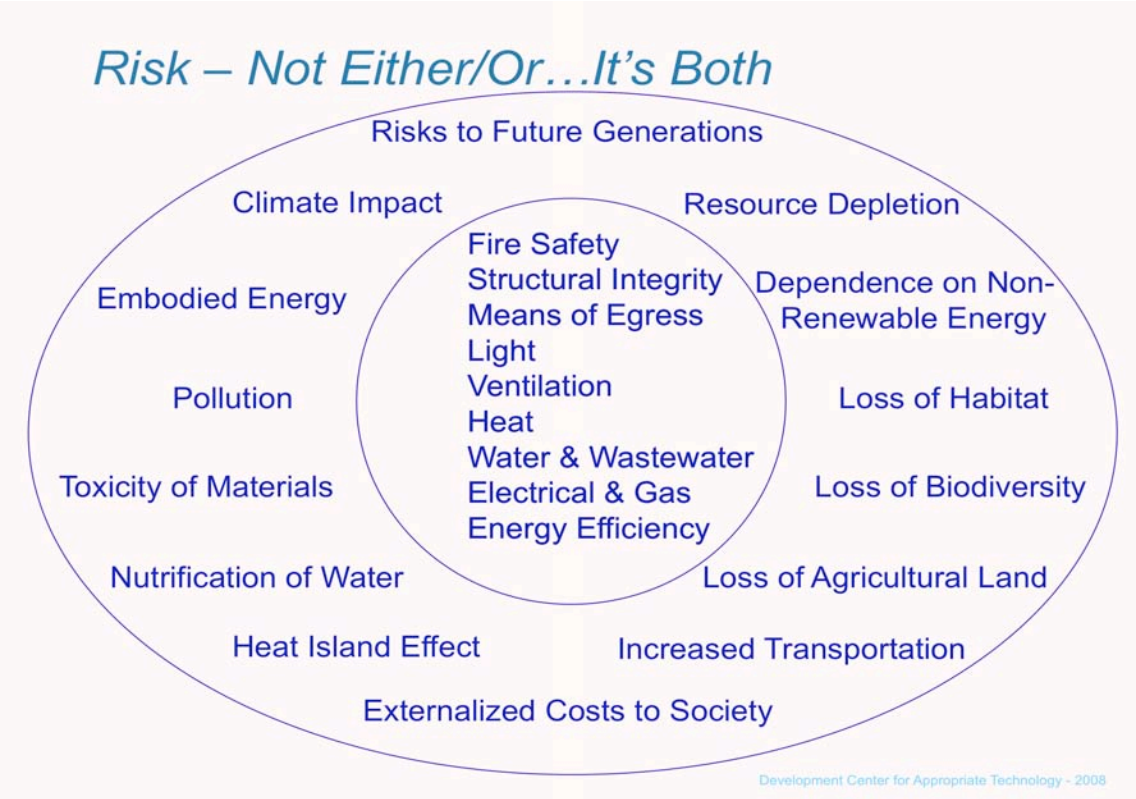
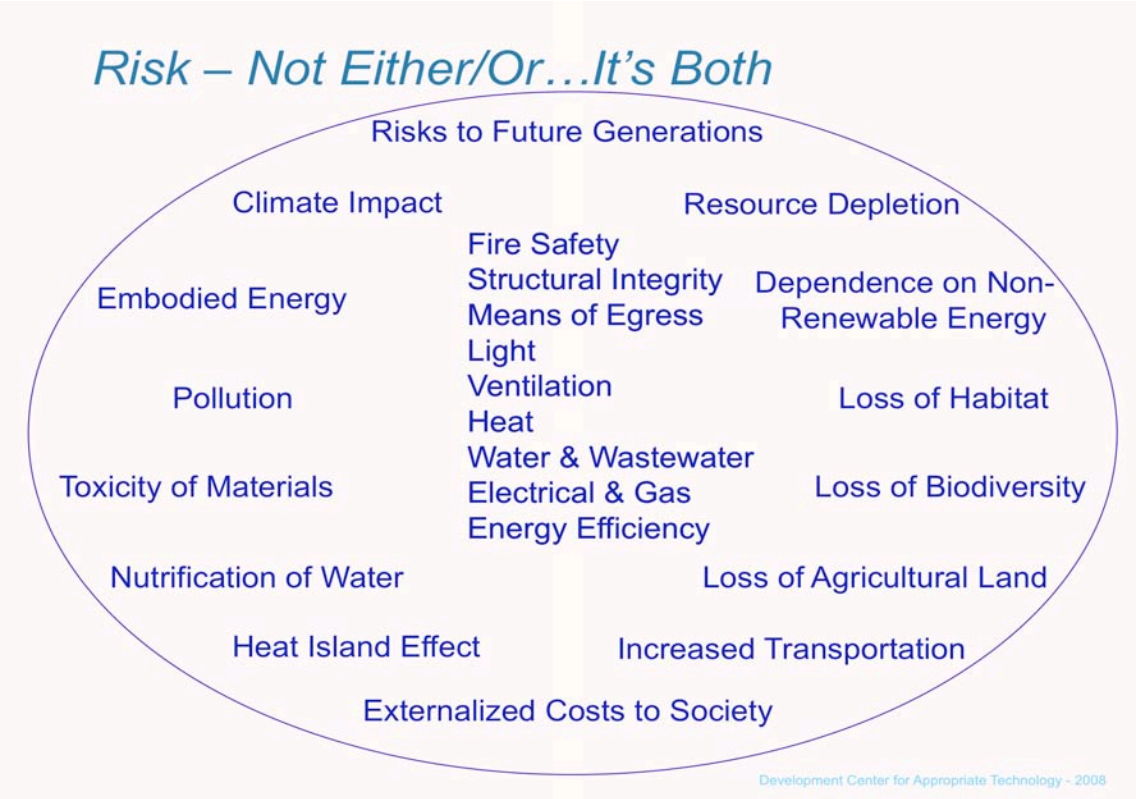
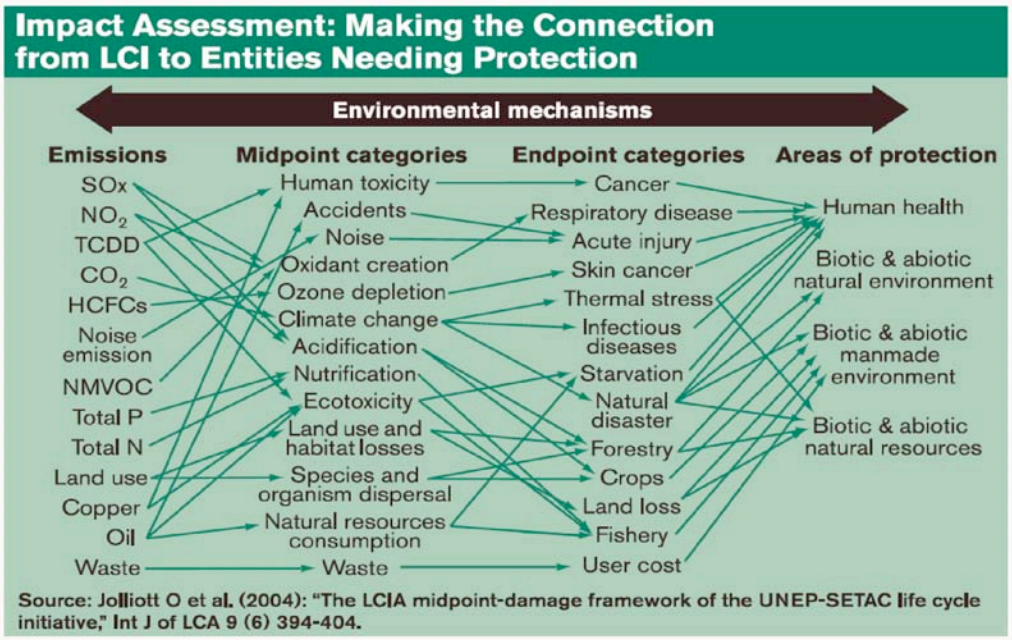


And these are some of the risks attributable to the built environment that are invisible until you take your eye away from the microscope…The crucial point here is that we are not talking about an either-or situation. We need to learn how to address both sets of risks - they need to be balanced.

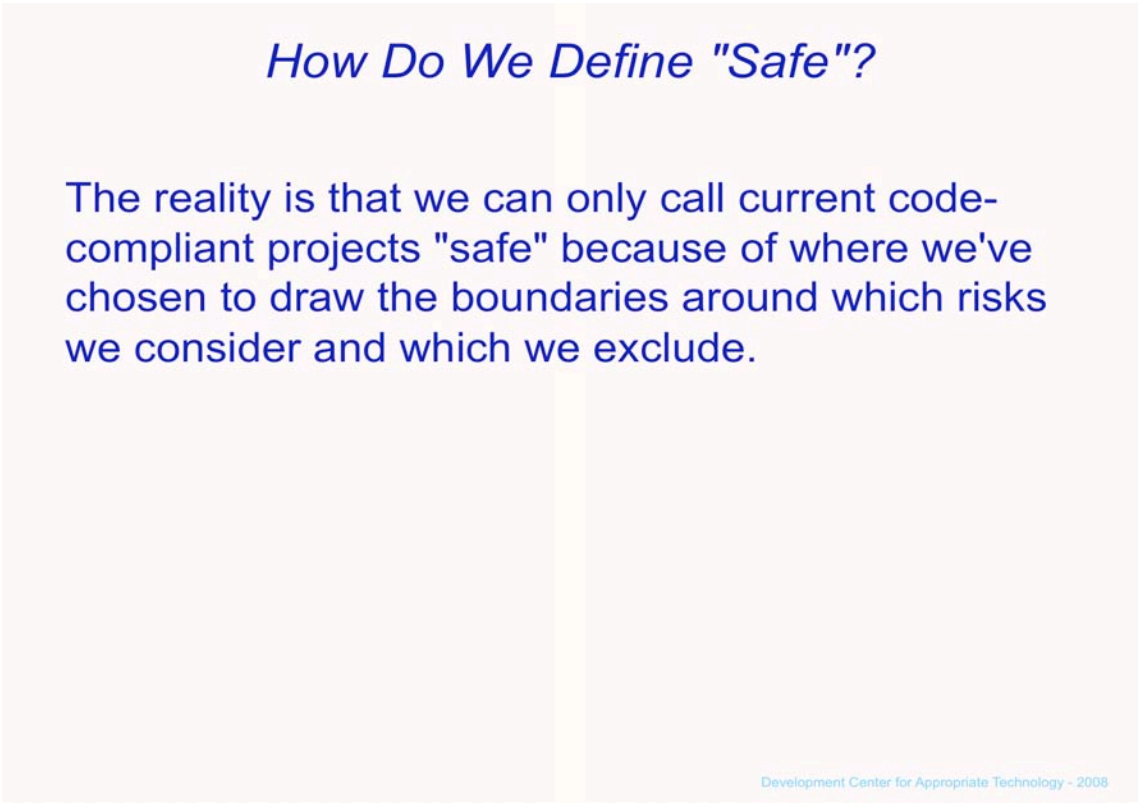


And these are some of the risks attributable to the built environment that are invisible until you take your eye away from the microscope…The crucial point here is that we are not talking about an either-or situation. We need to learn how to address both sets of risks - they need to be balanced.

Mostly Falling Through the Cracks…

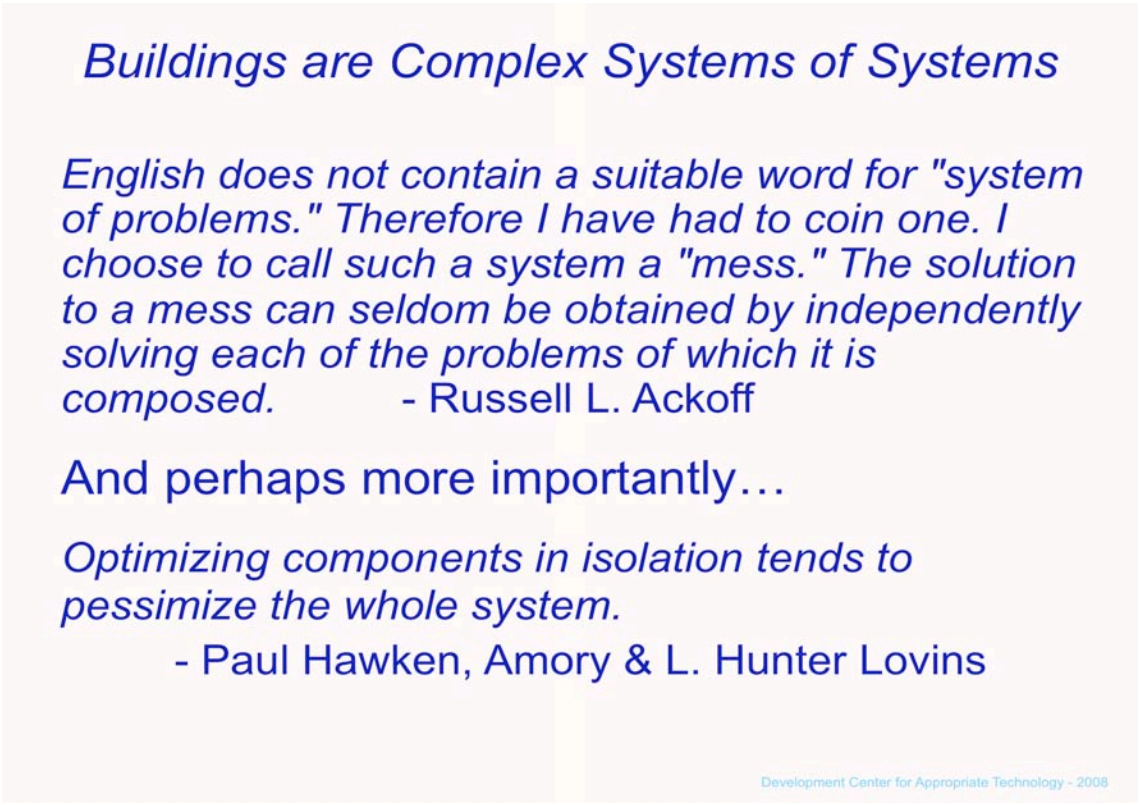


This is a life cycle impact assessment diagram defining some of the entities needing protection from a sampling of activities and mechanisms related to the built environment. These are the kinds of risks and relationships that some of us have recognized need to be addressed in order to safeguard the public from hazards attributable to the built environment. How many of these risks are acknowledged, even in a general way, by our current codes and regulations?

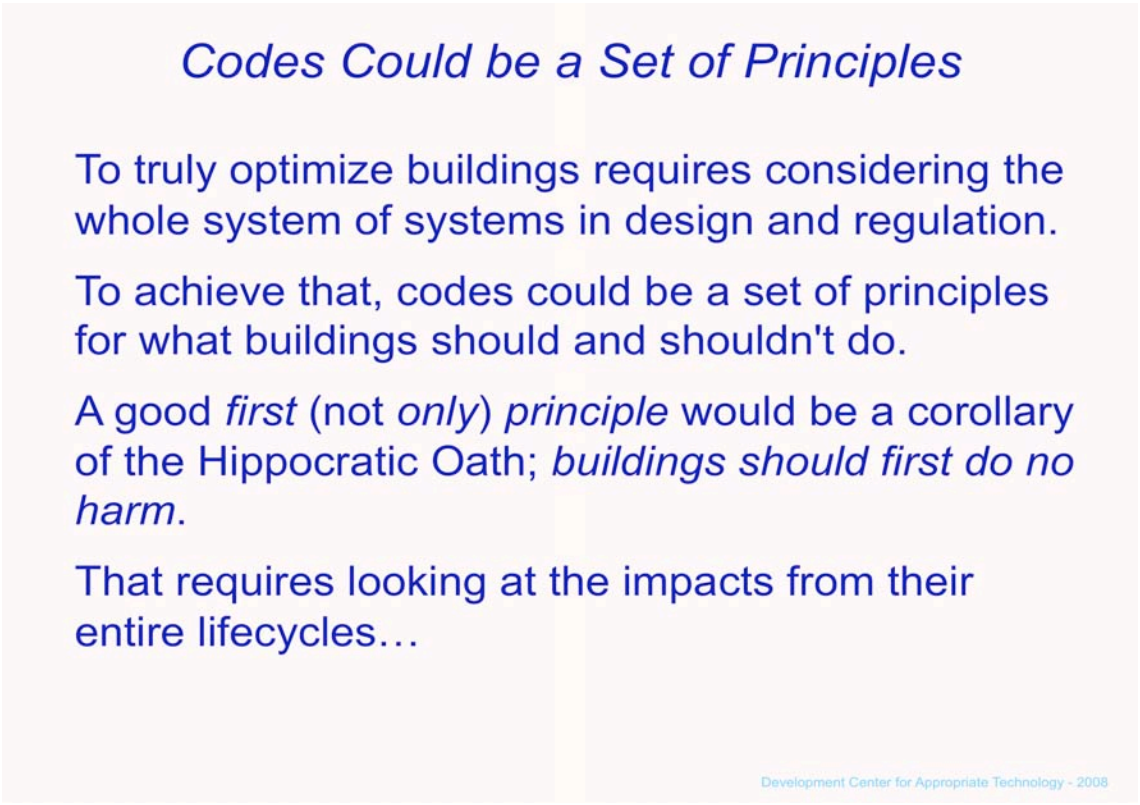


Though there is still limited acceptance of this idea, the reality is that the only way we can say that completely code-compliant projects are safe today is how tightly we've drawn the boundary around which risks we are willing to consider and which we are not.

Looking at the level of risks associated with climate change, depletion of non-renewable and essential resources like energy and water and others, the damage to ecosystem health and biodiversity, it seems plausible that these large-scale risks have grown large enough to overwhelm our ability to meet them, and they are beginning to jeopardize our ability to meet the more specific and smaller level risks currently in the codes. If we aren't there yet, we may soon be at a point where the minimum necessary to safeguard the public is the most, not the least we can do to rapidly and fundamentally transform how we create, maintain and recreate the built environment.



These are two of my favorite quotes - a long and short version of the same essential idea - that we are dealing with systems - always. It's all connected and we can't solve any problems independently.



Think about codes - they don't treat buildings as systems, they treat them as collections of materials, parts, equipment - components that are not viewed in a comprehensive, systemic way. And so they have tended to pessimize both the buildings and the human and natural systems in which buildings exist. To get beyond this we need to see and think differently about design and buildings and technologies. That requires us to look at the whole lifecycle of buildings…

This starts with the acquisition of resources and their transportation and processing and extends to the impacts of the building on the land and the infrastructure it requires. We'd need to consider the impacts of the construction process, the wastes generated, toxic chemicals used, the flow of resources through the building over its lifetime for repair, maintenance and refurbishing and for the services we demand of our buildings. And then we'd need to think of the impacts at the end of the life of the building and out into the future, and whether the materials are reusable, recyclable, toxic, or will just end up in the landfill.

Let's Really Look at the Risks…

What Risk?
Where?
To Whom?
When?
How Long?
How?
How Much?
Is It Reversible?
Is It Necessary?
At What Cost
and to Whom?
(not just monetary)

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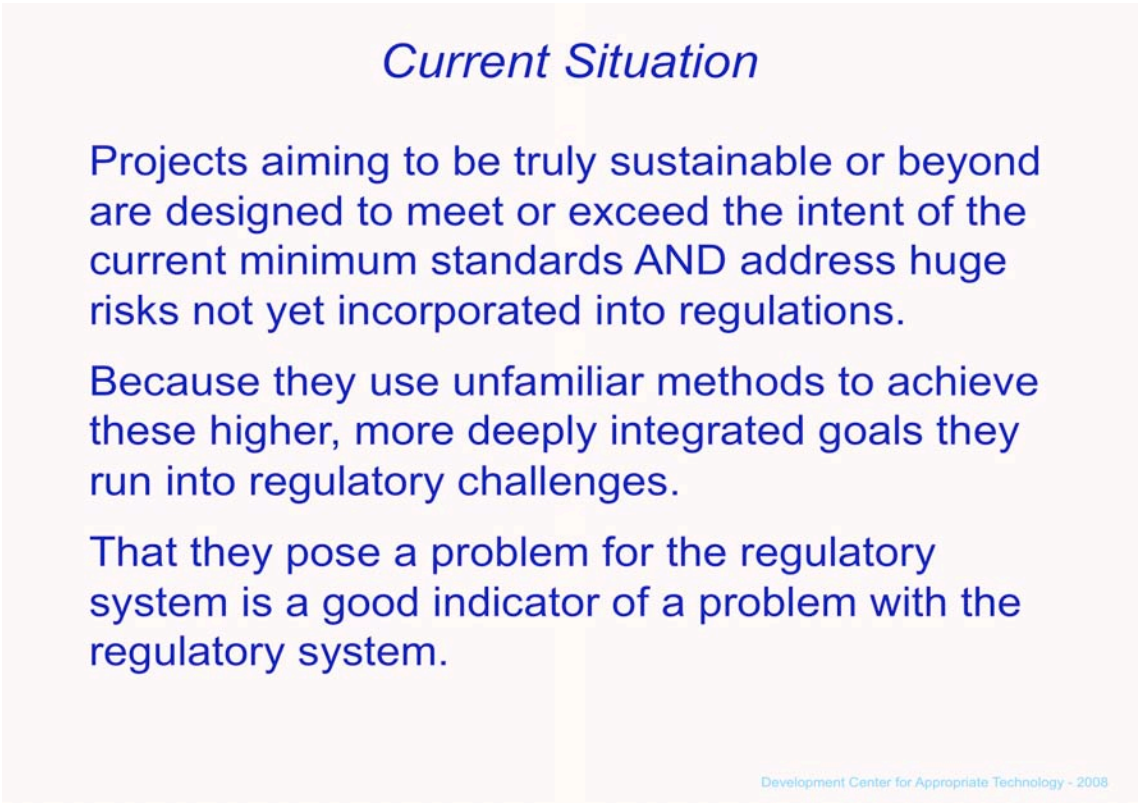
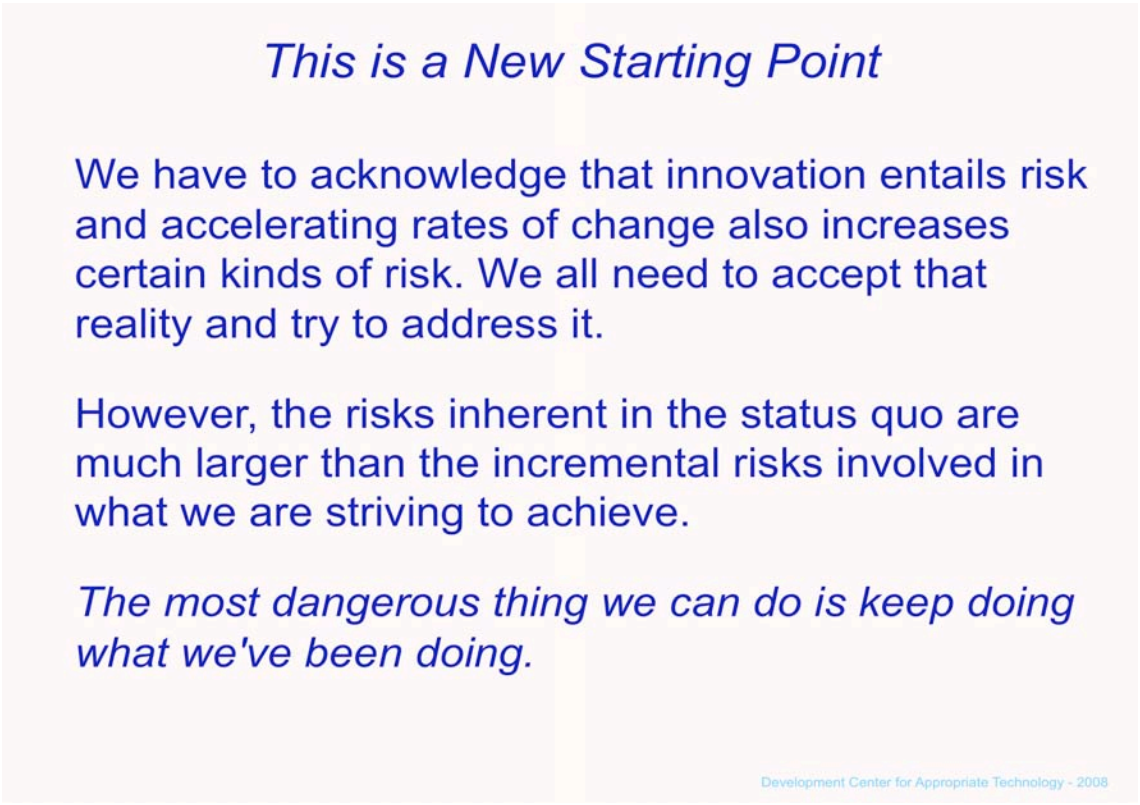
When we consider the risks we need to address we need to ask very different questions than we have been…looking at this much larger picture.



The challenge that we are facing over and over in projects pushing toward true sustainability and beyond toward regenerative goals is that they are voluntarily taking on this much larger set of risks and responsibilities - including ones that are not yet incorporated into regulations - while seeking to meet all the existing regulatory requirements. Since that can't be done following mainstream practices, they employ innovative and alternative strategies, designs and systems. These pose challenges for the regulators. However, that such projects, with their greater understanding of risks and greater acceptance of responsibility, are a problem for the regulatory system is the clearest indicator of a problem with the regulatory system.

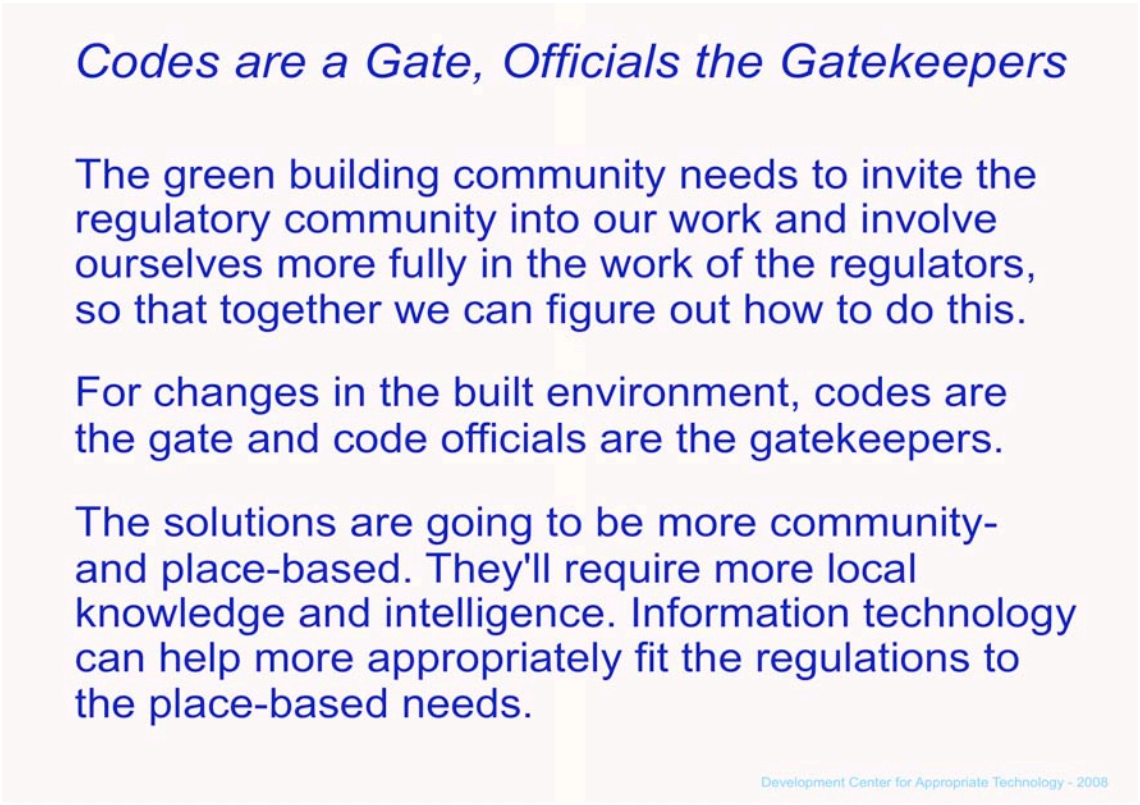


The proponents of these alternative and innovative practices do not claim that they are risk-free. Nor are we claiming that there is not inherent risk in change and especially in accelerated change. We accept that this is the case. What we see and what drives our work, is that the risks inherent in the status quo are so much greater that the incremental risks in trying these alternatives. In reality, the most dangerous thing we can do is to continue doing what we have been doing.

Beyond Risk Management

Truly restorative and regenerative projects demand a fundamentally different mindset; a commitment to honor the essence of each place we inhabit. This is about relationships not just managing risks.

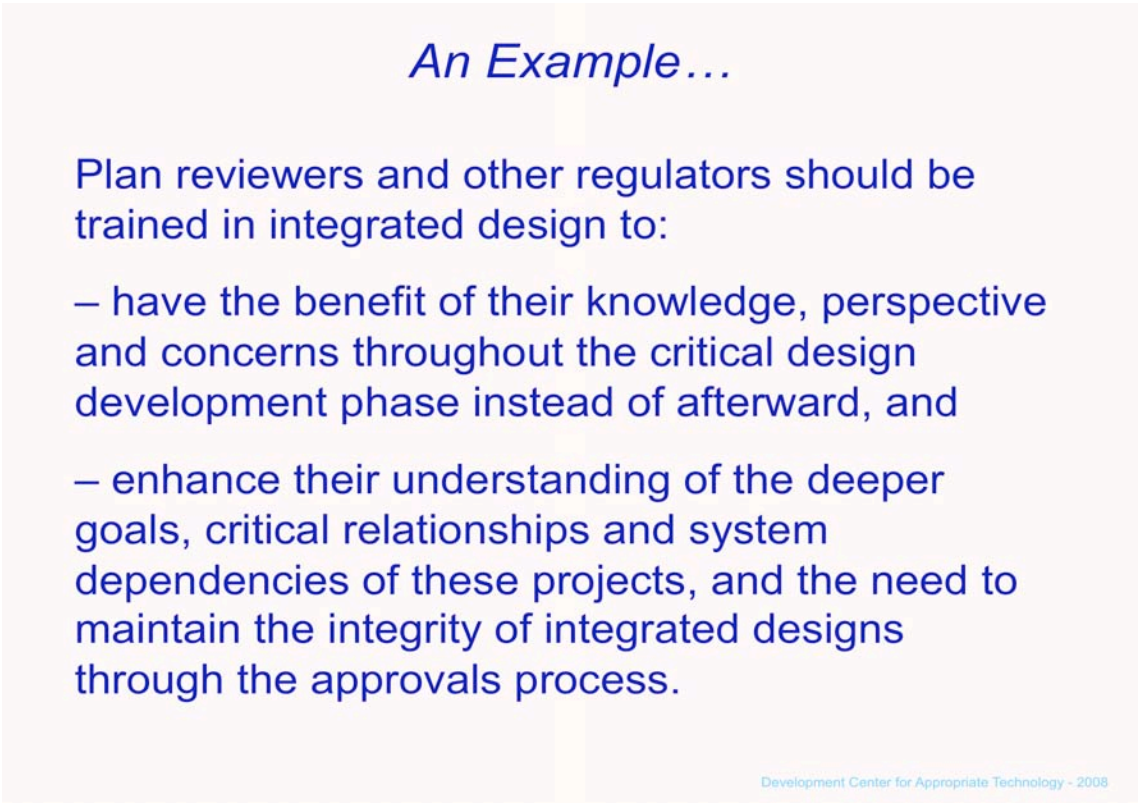
Nature has never operated on a risk management or risk avoidance basis. In nature all sorts of things are tried and those that work best persist. In spite of the way Darwin's work has been misunderstood to describe a kill or be killed, survival of the fittest reality, Darwin was describing something more like the survival of the fittingest - survival of those entities that filled a niche the best - that co-operated most successfully with the rest of the ecosystem and other species. This is at the heart of regenerative projects - moving beyond merely a risk-averse way of doing things to trying to create projects which fit and enhance the well being of everything they are connected with.



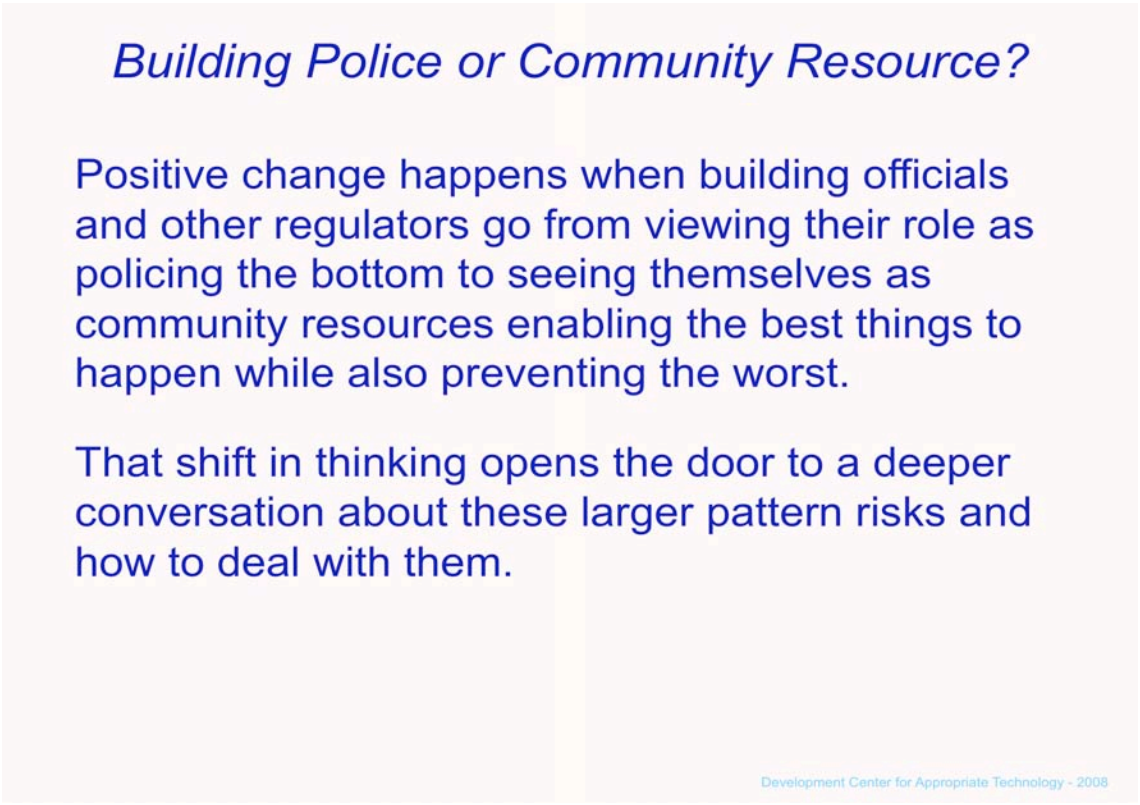
The changes now required demand new kinds of relationships. The green building and sustainability community needs to invite the regulators into our processes because we are not going to get where we need to get separately. The solutions are going to be much more place-based and community-based. Everything is going to shift toward a different kind of knowledge and expertise and intelligence.

For the built environment, codes are the gate to those changes and code officials are the gatekeepers. This is a crucial understanding of the role that this sector plays in enabling or undermining our ability to adapt to changing realities.

We need to be able to carry out a wide range of innovative and experimental projects and the regulatory structures to support multiple iterations, ongoing monitoring and review, real-time learning and change must be developed. We need to partner in new ways so we can more rapidly find what does and doesn't work. And when things fail, we need to understand why and how they failed and be able to make corrections and changes and try again.



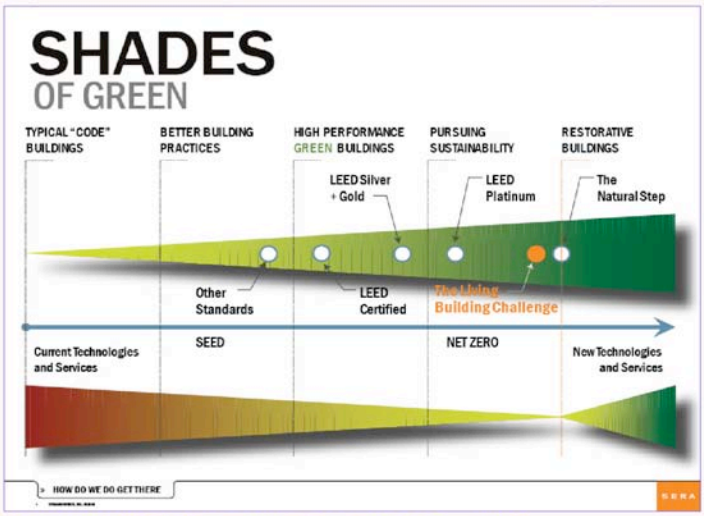
With all the attention that has been focused on the need for and importance of the integrated design process - and the failings and limitations of the old linear process, why are we still willing to hand off the product of that intensive, intelligent design process to a linear regulatory process each part of which has the ability to disintegrate the whole thing because they don't have the whole systems understanding of the project? Why are we not insisting that plan reviewers and other critical regulators are trained in the integrated design process and that they participate in the design charrettes where their knowledge and concerns could be appropriately incorporated and addressed and where they could gain a deeper understanding of the bases of the designs that they are being asked to approve?



What we have seen is the power of a shift in the perception of the regulators - when they go from essentially being the police, patrolling the bottom to keep bad things from happening, to seeing themselves as real community resources supporting the best building. From that higher purpose they can both enable the best and work to prevent the worst. From the policing mindset, it is very difficult to enable the best things to happen.

We are on a Long Trajectory

The transformation in design, development and building must be paralleled in the regulatory realm.



Source: SERA Architects, Portland, OR - 2008

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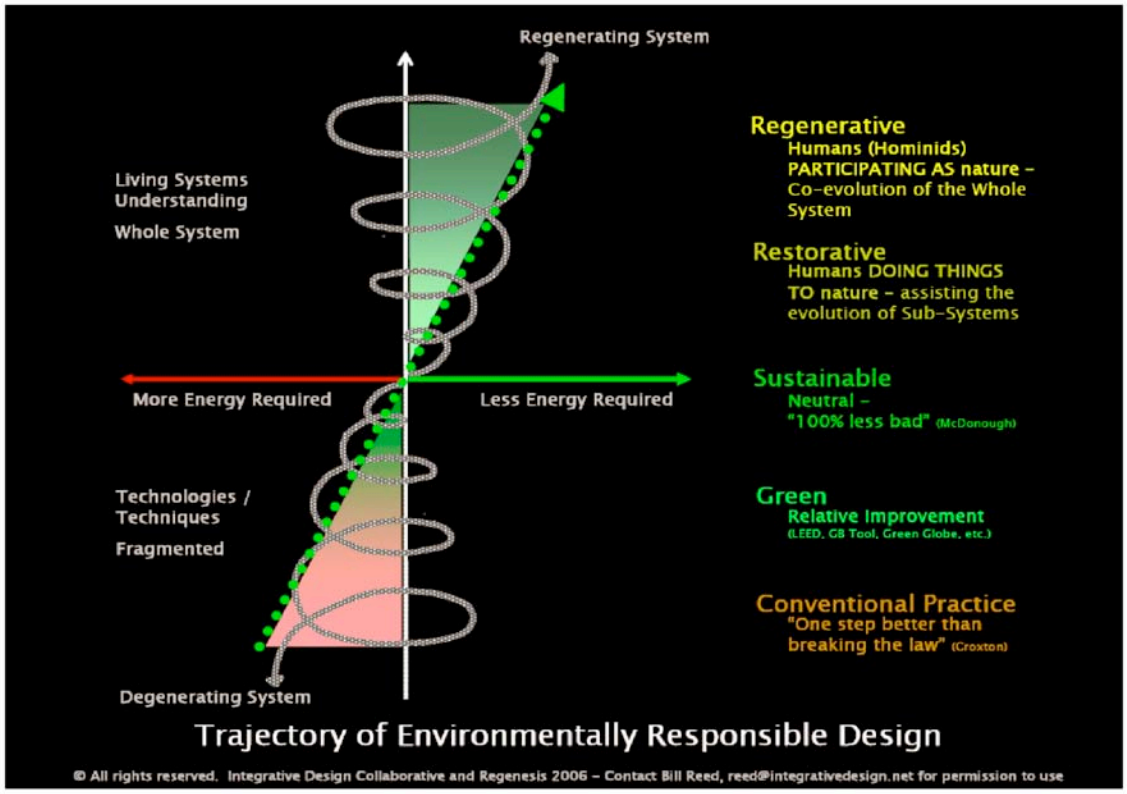
The transformation that is taking place at the leading edge of the design, building and development communities must be paralleled in the regulatory realm. This is a continuous change, not a destination. What we see in this diagram from SERA Architects, is a continuum from typical mainstream practice today to increasingly more sustainable practices and ultimately to a place beyond "net-zero" to where our projects begin to create more benefit than harm.

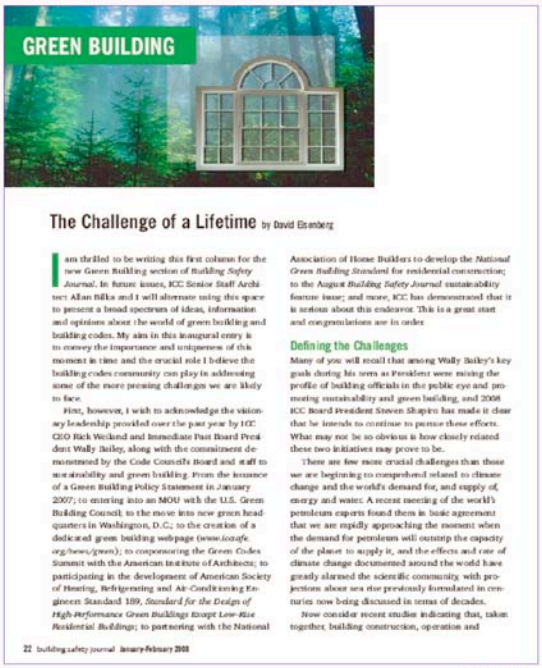


There are people envisioning a very different way of thinking about building and development, looking deeply into the way nature and natural systems work and evolve. As we seek out these systems that fit us back into the co-evolutionary flow of life all kinds of possibilities emerge. In this diagram from Bill Reed of Integrative Design, we see a midpoint of "Sustainable" - which Bill McDonough describes as neutral - "100% less bad," and Paul Hawken said is the midpoint between destruction and regeneration. As we begin to shift our thinking and our understanding of place in the community of life, new opportunities emerge for fundamentally different ways of conceiving of and creating the things we need.

The biomimicry movement is one that is on this path - seeking to understand and pattern human systems after the way nature works - using the billions of years of evolutionary wisdom we find in the natural world as a guide and inspiration. This is not re-engineering nature or manipulating or dominating nature, but learning from what works and seeking to understand how and why it works.

There are a couple of excellent resources, one that is out now and one that will be available soon. The Rocky Mountain Land Use Institute at the University of Denver, has produced a draft Sustainable Community Development Code. This is a framework for land use codes that move well beyond many of the limitations built into even the best current smart growth and other land use regulations - to incorporate and integrate many crucial sustainability requirements into workable codes. There is a huge amount of information and resources embedded in this document and I highly recommend it. It is downloadable at the url at the top of this slide. The other is a paper that DCAT and a colleague, Sonja Persram at Sustainable Alternatives in Toronto, are finishing for the Cascadia Region Green Building Council on code and regulatory barriers to the Living Building Challenge, which should be finalized and released sometime soon.

This is Our Generation's Great Work



GREEN BUILDING

The Challenge of a Lifetime by David Eisenberg

I am thrilled to be writing this first column for the new Green Building section of *Building Safety Journal*. In future issues, ICC Senior Staff Architect Allan Bilka and I will alternate using this space to present a broad spectrum of ideas, information and opinions about the world of green building and building codes. My aim in this inaugural entry is to convey the importance and uniqueness of this moment in time and the crucial role I believe the building codes community can play in addressing some of the more pressing challenges we are likely to face.

First, however, I wish to acknowledge the visionary leadership provided over the past year by ICC CEO Rick Weiland and Immediate Past Board President Wally Bailey, along with the commitment demonstrated by the Code Council's Board and staff to sustainability and green building. From the issuance of a Green Building Policy Statement in January 2007; to entering into an MOU with the U.S. Green Building Council, to the move into new green headquarters in Washington, D.C.; to the creation of a dedicated green building webpage (*www.iccsafe.org/news/green*); to cosponsoring the Green Codes Summit with the American Institute of Architects; to participating in the development of American Society of Heating, Refrigerating and Air-Conditioning Engineers Standard 189, *Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings*; to partnering with the National Association of Home Builders to develop the *National Green Building Standard* for residential construction; to the August *Building Safety Journal* sustainability feature issue; and more, ICC has demonstrated that it is serious about this endeavor. This is a great start and congratulations are in order.

Defining the Challenges

Many of you will recall that among Wally Bailey's key goals during his term as President were raising the profile of building officials in the public eye and promoting sustainability and green building, and 2008 ICC Board President Steven Shapiro has made it clear that he intends to continue to pursue these efforts. What may not be so obvious is how closely related these two initiatives may prove to be.

There are few more crucial challenges than those we are beginning to comprehend related to climate change and the world's demand for, and supply of, energy and water. A recent meeting of the world's petroleum experts found them in basic agreement that we are rapidly approaching the moment when the demand for petroleum will outstrip the capacity of the planet to supply it, and the effects and rate of climate change documented around the world have greatly alarmed the scientific community, with projections about sea rise previously formulated in centuries now being discussed in terms of decades.

Now consider recent studies indicating that, taken together, building construction, operation and

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We believe that this transformation and shift toward sustainable and regenerative practices is the most important work any of us will have in our lives. This is the true legacy work of our time. We are challenged to come together both in seeing our actual circumstances and the large risks we face and in creating the solutions that will give us the future our grandchildren deserve to have. This is the Work!


Thank you!
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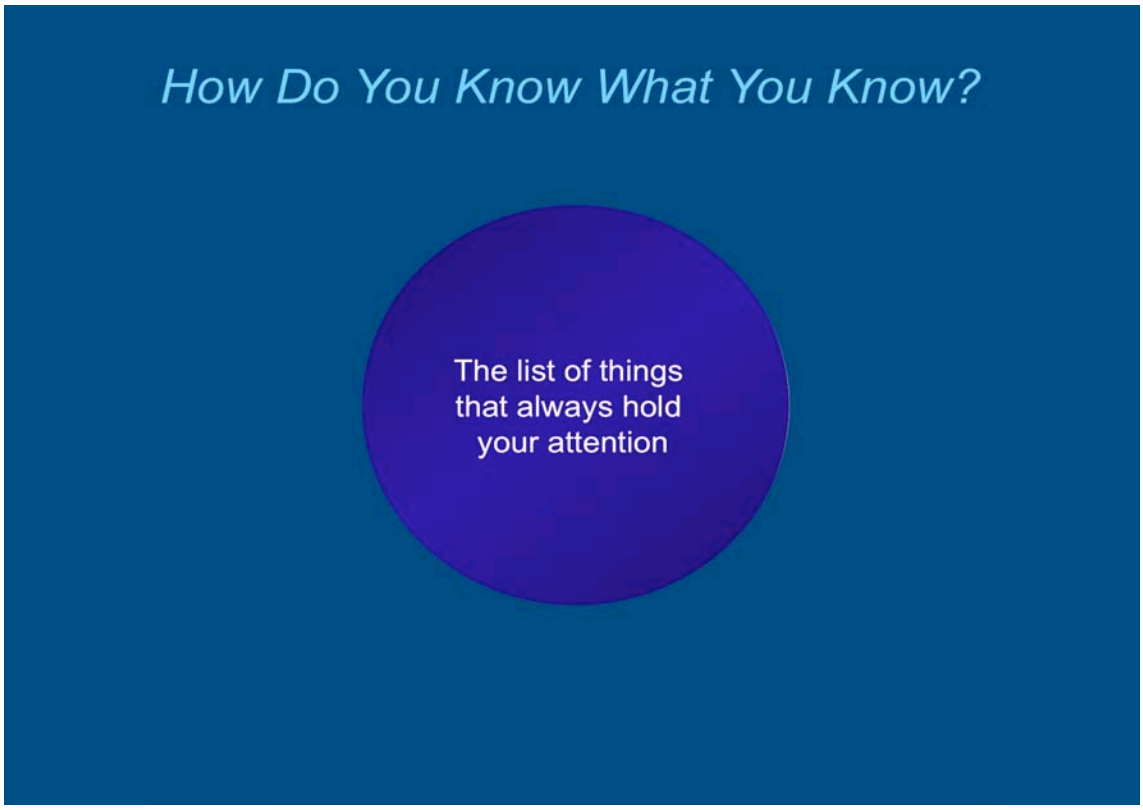
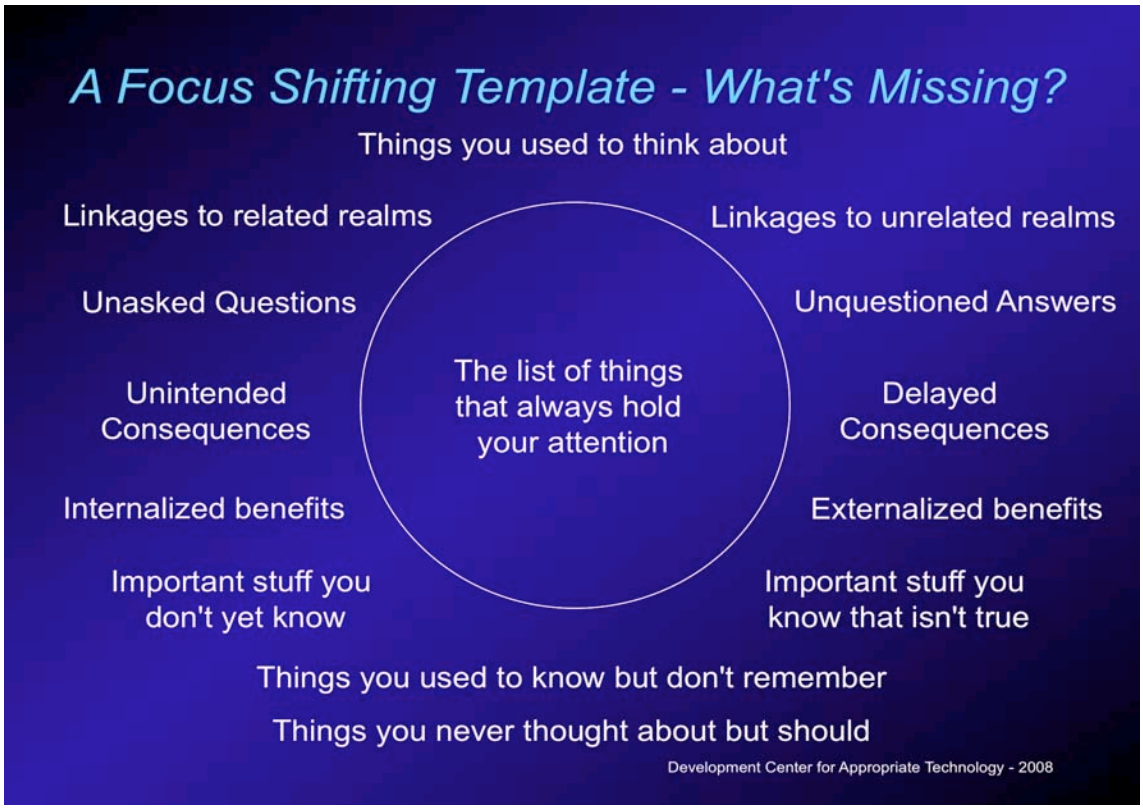
And please visit our website:
www.dcat.net
DCAT is a 501(c)(3) Non Profit Organization

Thank you.



Here is a little bonus - something I've developed to help us all think about what we're not thinking about but maybe should be…a template - fill in your own info…


A Focus Shifting Template - What's Missing?
Things you used to think about
Linkages to related realms
Linkages to unrelated realms
Unasked Questions
Unquestioned Answers
Unintended Consequences
The list of things that always hold your attention
Delayed Consequences
Internalized benefits
Externalized benefits
Important stuff you don't yet know
Important stuff you know that isn't true
Things you used to know but don't remember
Things you never thought about but should
Development Center for Appropriate Technology - 2008

Good luck!