

Expanding Our Approach to Sustainable Design— An Invitation

Primary authors:

Bill Reed
Joel Ann Todd
Nadav Malin

Primary reviewers and other contributors:

Gail Lindsey
John Boecker
Donald Horn
Pamela Mang
David Johnston
Alex Zimmerman

Submitted by:

BuildingGreen, Inc.
122 Birge Street, Suite 30
Brattleboro, VT 05301

December 15, 2005

Table of Contents

Foreword.....	3
1 Setting the Stage.....	4
1.1 Green Building Circa 2005.....	4
1.2 Our Approach.....	7
2 Starting the Conversation.....	7
2.1 Key Visions.....	8
2.2 Framing the Conversation.....	10
3 Getting to What’s Important.....	11
3.1 Goals and vision.....	11
3.2 Deeper Systems Thinking.....	12
3.3 New Mental Models.....	14
4 Making it Happen.....	18
4.1 Building Demand and Capabilities.....	19
4.2 New Approaches for the Built Environment.....	22
4.3 Real World Examples.....	23
5 Ongoing Process for Dialog.....	24
5.1 What’s on the Website?.....	25
5.2 Final Thoughts.....	26
Appendix: Real-World Examples.....	Separate Document
Profile 1: An Integral Approach to Market Transformation	
Profile 2: Integrating Sustainability into Organizations	
Profile 3: Regenerative Design	
Profile 4: Comprehensive Stakeholder Engagement for the Alexandria Bay Port-of-Entry	

Prepared for the U.S. General Services Administration, in partial fulfillment of Contract #GS-00P-05-CYM-0104.

Foreword

With this report we – the authors – hope to stimulate dialog on “next steps” for moving the built environment toward a more sustainable future. These next steps involve all of us who own, plan, design, furnish, manage and construct buildings. We offer some ideas and a vision about the ways in which today’s typical approach to sustainable design – and to the creation of built environments in general – can and should be expanded for the benefit of the clients, occupants, and all others who are affected by our activities. But most of all, we invite you and others who are pursuing more holistic approaches to share their experiences and insights and help us all learn more about what needs to be done, and how to do it.

After setting the stage and providing some background, we lay out our thinking about reframing priorities and getting to what’s important. We then get into the question of implementing these ideas from two perspectives: 1) Building demand and capabilities, and 2) New approaches to the built (and natural) environment. In both of these areas, we hope that you, the reader, will contribute with your thoughts, perspectives, and experiences.

This report and its accompanying website (<http://gyre.buildinggreen.com>) are only the beginning, and your contributions can help them grow and evolve into a book (or series of books?), an annual think-tank gathering, or something we have yet to envision.

1 Setting the Stage

In spite of a growing environmental awareness worldwide, the Earth's natural systems appear to be in steep decline. Relatively new threats, such as global warming and persistent bioaccumulative pollutants, have joined a host of older problems, including overpopulation, desertification, and the loss of arable land.

Recognizing that the design and construction of buildings has a significant impact on many of these issues, the green building movement has evolved to address these concerns. Since the 1970s there has been a concerted effort to understand how buildings may contribute to environmental problems, and to find ways to minimize those adverse impacts. By linking global and regional environmental concerns with direct benefits to building occupants and financial gains for building owners, the green building movement has gained significant momentum. However, today's green buildings typically represent only an incremental improvement over conventional practice. The state of the planet demands more radical gains.

1.1 *Green Building Circa 2005*

Over the past 30 years, “green building” has grown from an idea pursued by a small group of innovative architects, designers, and environmentalists to a concept that has been adopted by many government agencies and mainstream companies. During this period, practitioners and researchers have worked to define the field, develop and test strategies and technologies, learn what works and what doesn't and under what conditions, and develop tools and resources to communicate this knowledge to a wider audience and improve our ability to make the right choices. These efforts have been carried out in the United States and around the world. There are now green building rating systems in many countries, including LEED® in the U.S. There are also tools to assist architects, engineers, and designers; databases to provide environmental life-cycle assessment information and other data needed to run the tools. Finally, there are integrated design processes to encourage owners, architects, engineers, and other participants to work more effectively together.

The evolution of the green building movement has followed a trajectory from a narrow focus, primarily on energy efficiency, to the integration of more subsystems and the expanded use of systems thinking. People who initially came to green building with a particular interest, such as environmentally preferable building materials or low energy use, began to ask broader questions and to explore the relationships of their particular interest to other aspects of the design. This expansion of boundaries continues, to the whole building, the whole site, the community, and beyond.

So, what can we say about the status of green building in the U.S. in 2005? Although there are no clear data to indicate the extent to which green building has taken hold in the U.S., we know that Federal, state, and local government agencies have instituted policies mandating or providing incentives for green building and elements of green design; more than 300 projects have been certified by LEED and more than 2,100 are registered; thousands more projects have been designed using the LEED checklist as guidance; more than 28,000 people have attended LEED workshops and over 21,000 have become LEED Accredited Professionals; more than 9,000 people attended the U.S. Green Building Council's Greenbuild conference in November 2005; green buildings are featured in mainstream television shows and newspaper articles; many green building newsletters, magazines, journals, books are in circulation as well as websites and CDs (a Google search on "green building" yielded more than 1 million hits). At the same time, the majority of buildings continue to be built with little or no regard to "green-ness". Although they might include energy efficiency measures as a future cost saving device and water conserving fixtures to meet legal requirements, they ignore other aspects of green design. And, most owners are unwilling to incur increased first costs for a green building, even if those costs could be recouped quickly.

The U.S. Green Building Council's LEED Rating System has played a key role in beginning this market transformation. Since its initial promulgation, LEED has evolved into a suite of rating systems that now covers new and existing commercial buildings and their interiors, while new LEED rating systems are under development for core and shell, homes, and neighborhoods. In addition, LEED is being refined to address specific applications, such as health care facilities and retail facilities. Other rating and assessment systems, produced by government agencies, universities, associations, and private organizations, have also been developed for specific cities, states, or market sectors. Tools and resources for energy modeling, product specification, and design assistance are available; guidance is also available on integrated design processes and conducting green charrettes.

Innovators continue to push beyond our current notions of best practice to imagine and experiment with the next generation of approaches. As more and more design teams are using an integrated design process to optimize performance and cost of building and site systems, innovative practitioners are asking deeper questions: If integrated design means effective integration of the multiple systems engaged in a *building*, how far do we go in embracing other social and natural systems that affect and are affected by the building's life? What does it mean to achieve a "totally" integrated and optimized building? And, importantly, is this enough – can we reach a society that is sustainable and equitable, using this mental framework and approach?

We are not routinely measuring the effectiveness of our efforts – we do not know if the performance of green buildings meets our expectations or the needs of the planet for a sustainable future. Most of us agree, however, that our current efforts fall far short of what is needed. Our current approaches are focused on reducing negative impacts. They can be characterized as “doing less damage” or “doing damage less quickly.” They beg the question, is achieving even 100% less damage good enough?

Current green building goals are typically characterized in terms of relative improvement over conventional practice, as in “30% energy savings compared with an ASHRAE 90.1 baseline.” Beyond this relative improvement model, is a vaguely understood idea of sustainability, where any negative impacts from our projects are somehow within the capacity of natural systems to absorb and mitigate indefinitely. But even that goal has two questionable implications: 1) that the current state of natural systems is good enough, and should be sustained; and 2) that the built environment will always exist in opposition to natural systems. Are we really constrained by these implications? One way to illustrate this idea is shown below:



Graphic by Bill Reed, based on a concept from Ray Cole

The goal of this report is to look beyond conventional understandings of “green” or “sustainable” design, into the realm beyond relative improvements and reductions of harmful side effects. We don’t claim to have any specific technological or architectural solutions for getting to that realm, but we have some thoughts about processes that might lead us in the right direction.

1.2 Our Approach

An integrated design process is now widely recognized as the most effective means of delivering a green building within a budget. Bringing the entire project team together early in the process is essential for optimizing the synergies within building systems and avoiding overdesign, unnecessary redundancy, waste, and additional cost. But even this integrated design approach often sets its sights too low. Low-impact, efficient, and functional buildings still presuppose a lot of environmental damage, and fail to ask meaningful questions about whether it is sufficient to merely minimize that damage.

After almost a decade of experience with green building assessment and rating systems, such as LEED® (U.S. Green Building Council's Green Design Rating System), BREEAM (a rating system in the U.K.), and the GBTool (an international green metric and benchmark system), we still understand amazingly little about some fundamental questions:

- How much better are green buildings, ecologically, socially and economically, than conventional buildings?
- What is the role of rating systems and performance metrics tools in encouraging and maintaining improvements?
- What does it take to sustain the performance of a green building, and its relation to natural and social systems, over time?
- What design and project delivery approaches have the greatest potency for creating buildings that stretch towards their ultimate potential, moving beyond sustainability to catalyze restorative and regenerative ecologic relationships?
- Can buildings and human development participate in a healthy manner with the place they inhabit?

The rating and assessment systems currently in use are proving effective at moving the building industry from conventional practice to a greener approach. As practices evolve, we need to be looking further ahead, toward a vision for the built environment that is not limited by the paradigms of the current building industry. This vision must expand beyond the idea of a building as a fixed end-point, toward a more fluid understanding of project design, construction, and operation as they relate to sustainability and regenerative relationships.

2 Starting the Conversation

Kicking off this exploration, a group of leading sustainable design practitioners and thinkers gathered at the Pocantico Conference Center in April 2005 for a workshop on "Expanding Our Approach." This event was sponsored by the U.S.

General Services Administration and supported by the Rockefeller Brothers Fund. The group explored various ways of engaging in building and in the integrated design process that might lead to revolutionary, rather than evolutionary, gains, including place-based design, living systems analysis, and integral thinking. A port-of-entry station in Northern New York, currently being designed for GSA, provided a sample project as a basis of discussion for some of these ideas.

Participants were asked to bring important questions about their practices that were uppermost in their minds and were encouraged to share ideas freely as part of an open exploration of the topic at the workshop. As the workshop evolved, the dialog was framed by these two broad questions:

- What is the nature of change being called for in our industry?
- What has the greatest potency to catalyze this change?

2.1 Key Visions

The theme of the gathering was “expanding our approach” – for most participants, this interest has been driven by a fundamental shift over time in our views of what is important. We came to the workshop having reached the realization that improving our technological fixes, even when accompanied by an integrated design process, is not sufficient for the magnitude of change that will be needed for sustaining, restoring, or regenerating our communities and our planet. “Doing less harm” is simply not enough. There were many commonalities to the thinking that has been evolving within the group and was expressed at the workshop:

- Moving away from a totally human-centric view of the world,
- Understanding the synergism between nature and human nature,
- Appreciating the interconnectedness of the whole,
- Using principles of living systems to approach our work,
- Seeing ourselves as continual learners and avoiding hubris,
- Encouraging dialog and asking deeper questions, and
- Recognizing the role of spirit and love in everything we do.

These elements permeated the dialog during the meeting, leading to insights on current and future approaches and tools. One key thought was that current tools need to be linked to the core values that nearly all of us share, such as care for our families, other people, and the other species with which we share this planet.

This explicit connection with these values is missing from many of today's green building efforts. As a result, these efforts and tools don't motivate us, don't stir passions, don't create a movement with a large following.

At Pocantico participants struggled to articulate a coherent vision for the future of the built environment. A working draft of this group's vision statement is:

“All buildings grow out of and reflect the unique character of their place and are an integral, value-adding, reciprocal member of the living system of which they are a part.”

In this future vision, buildings and projects will be catalysts for creating more resilient and healthy ecosystems. Buildings and their communities will produce and trade their own energy, water, and food, and manage their own wastes. The buildings will be culturally “of their place” and beautiful; they will have meaning to their occupants and the community so they will be loved for generations. Building materials will be largely biobased and compostable. Buildings will learn and will encourage learning in their occupants. This type of building will be the norm rather than the exception; everyone will have access to this type of building for work, living, and play. A complete list of the visions proposed during a brainstorming session about buildings in 2050 is available on the website:

<http://gyre.buildinggreen.com/sessions/thursam1/ThursAM1asumm.html> Moving toward this vision means increasing the health-generating capacity of the whole – growing resilience through greater vitality, viability, and capacity for evolution. This process has drivers that are positive and negative, internal and external. Intrinsic drivers include humans' innate biophilia and the power of our connection to place. Extrinsic drivers include politics, economics, environment, technology, and culture/society. Examples of these extrinsic drivers include economies that do not reflect reality, resource shortages, climate change, inequity, and insecurity that will likely increase in the future.

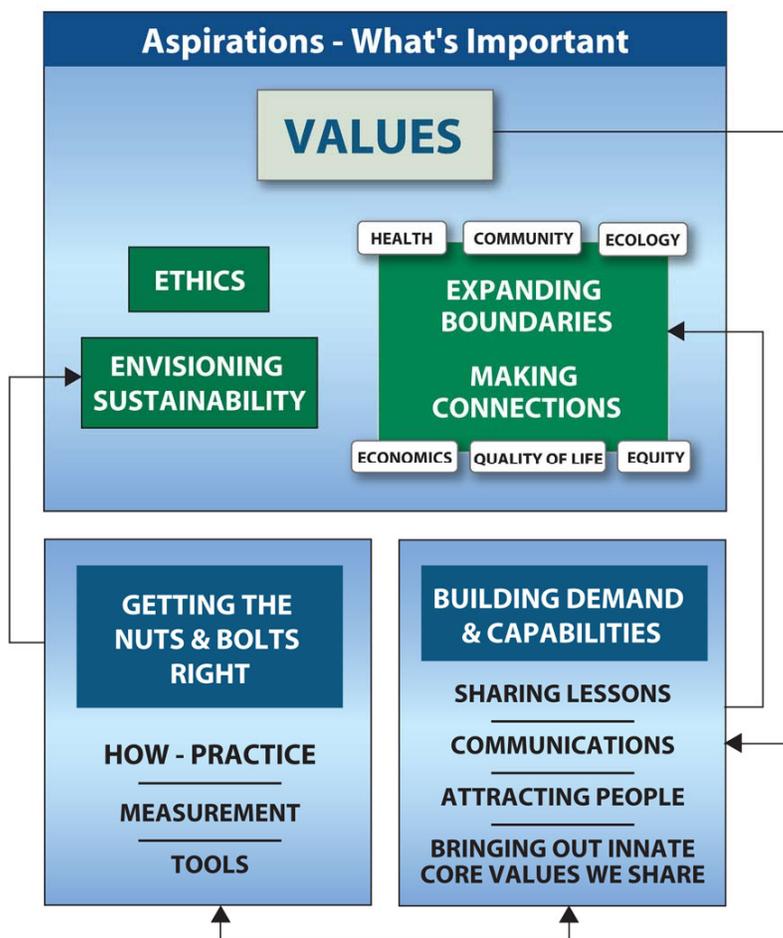
In envisioning instruments for effecting transformations needed, we focused less on technology and more on creating processes and tools to support a new way of thinking. Education and communication are at the center of these processes, to reinforce values, provide information leading to knowledge and understanding, and train people so that they can participate effectively in a new paradigm.

Project teams will need to be integrated, holistic, creative learning environments with no “disconnects”. Also critical are processes for community-driven design that reflect community values and understanding of that place. Eco-maps could

help communities understand inventories and flows; intelligence centers could demonstrate place-based approaches and strategies.

2.2 Framing the Conversation

We recognized that there were three broad, interrelated areas that needed to be addressed to expand our approach, which are illustrated in the diagram below. This diagram was created during the introductory session of the workshop, as a way of integrating the range of core questions that participants offered.



We shared a sense of goals and vision for a more sustainable future. Although we didn't all use the same words, there was considerable agreement at a deeper level. There was also broad agreement on what is needed to move us closer to these goals. In other words, we believe that there is agreement on a general direction and the broad outlines of a very inclusive path toward that direction,

recognizing that this is not a linear process but one that spirals up and loops back, always learning and evolving.

3 Getting to What's Important

This chapter and the one that follows describe what might look like a logical sequence. In practice, however, they are not so readily separated. For many individuals and groups it is the very process of getting to what's important (the subject of this chapter) that creates the motivation and capabilities needed to make it happen (the subject of the next chapter). At the same time, getting to what's important is a large part of how one might go about making it happen, so in an actual process these two aspects are more simultaneous or iterative than they are sequential. The linear nature of a written document, however, requires that we put one before the other.

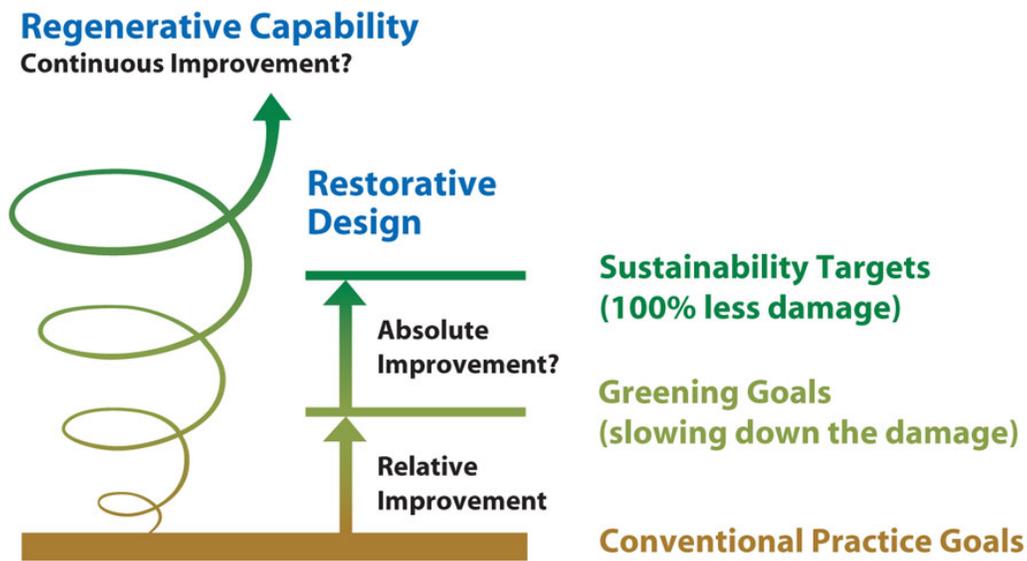
3.1 Goals and vision

Our goals and values, our hopes and aspirations – our view of what's important – shape our efforts to improve our practice and provide the foundation for expanding our approaches. So, our dialog must start here – thinking about *why* change is needed and what we hope to achieve before getting to *what* we are doing and *how* we are doing it.

There seems to be general agreement that we hope to evolve toward:

- Preserving, restoring, and supporting regeneration of the planet for future generations, and promoting the health and well-being of all species.
- Recognizing our interconnections with the whole of life – the web of life – not just intellectually but in a deeper sense so that it transforms how we live.
- Facilitating and encouraging the development of informed, value-based communities that work – that have quality of life, health, happiness, and equity while promoting the regenerative capacity and vitality of the local environment and the planet as a whole.
- Designing, constructing, and managing buildings that grow out of and reflect the characteristics and conditions of their place and are integral, value-adding members of the living systems of which they are a part.

These goals lead us to a vision for the future of our engagement with the built and natural environment in the form of movement from greening goals through sustainability targets to restorative and regenerative design. Graphically, this movement can be seen as an ever-expanding spiral, or “gyre”, that encompasses a growing range of stakeholders, areas of influence, and potential sources of energy, inspiration, and direction.



Bill Reed and Regensis

3.2 Deeper Systems Thinking

The basic foundation for this evolution is systems thinking. The “whole” of systems thinking moves us beyond mechanics into a world that is activated by those elements of the system that participate in complex inter-relationships – natural systems, human social systems, and the motivating forces behind their actions – call it spirit, will, emotion, values, and so on. Everything is connected – in the act of building design we are inextricably engaged in direct and indirect reciprocal influence in the immediate community (place) and the planetary systems we are part of.

It is helpful to think about some of the basic systems that we need to address to achieve a sustainable condition. One set of systems nested within the whole are ecology and human society (economic systems are a further subset of social systems). Others include physical systems and systems of values and motivations. On one hand, it is somewhat cavalier to simply say we need to be focused on the whole. On the other hand, breaking the whole system into many manageable pieces is a sure way to miss the mark by not understanding the larger context.

An integrated design process, by definition, will address all these systems in a way that helps us understand that these are not separate pieces but parts of the whole; the whole process of living systems; the processes of life. Western society has a hard time with moving beyond immediate cause and effect thinking. We rarely exercise the patience to analyze our “systems” beyond one level of

hierarchy. The deeper level of systems design embraces the need to understand the relationships to a number of connected parts. These relationships are, in effect, invisible to all the participants in the system. A level of caring (spirit, value, empathy, long term self interest) is needed to be able to consider the complex web of complications or opportunities that a decision that is made on a site or in a building can have – remembering that sustainable economics are a logical result of good design and must be included in any decision involving deep systems analysis.

We need to ask ourselves how these various types of systems inter-relate and the possibilities of better integration. It is necessary to think beyond the industrial model of “manageable uniformity” (in the words of the late John T. Lyle) and understand and respond to the unique rhythms and patterns of the many ecosystems, bioregions, and human cultures that are the base condition of the unique places we inhabit. It is necessary to understand the nested relationships of smaller to larger ecological systems.

It is interesting that most of our efforts in the green building movement have not been focused on the whole or on the basic systems of sustainability’s three-legged stool, but have been primarily focused on technical systems, which are the interface between natural and social systems. We need to shift our focus in design to the prime resources that produce our resulting technologies and shelter. In other words, on our journey to achieve a sustainable condition we ought to be focused on the basic foundations rather than the byproducts.

Some of these basics are:

- *We Are Nature.* The first step toward systems thinking and regenerative design is to really understand ourselves as integral with nature. This means understanding our past relationship to nature and the potential of this relationship in the future. The western view of humans as separate from nature must ultimately change for our species to survive. We need to get beyond the widely held belief that we are only capable of doing harm to natural systems. This shift doesn't give humans justification to destroy living systems, or to abandon the protection and care of wild places. It will allow us to see ourselves as partners with other living systems, seeking the deeper roles and exciting possibilities of co-evolutionary relationships – relationships whose end results or outcomes are not controlled or predetermined by humans for strictly human ends. This understanding of interconnectedness is essential if we are to create regenerative systems that will empower a more abundant future.
- *Change Is.* Within this new worldview, change is inevitable and the only certainty is surprise. By its nature, energy moves, producing change. Paula Underwood put it in *A Native American Worldview*: “The indigenous scientific approach understands Universe – or All Things – as constantly

in motion. Even particles are “dancing,” already moving toward the Flow State.” A group of ecologists writing about resilience and sustainable development put it another way: “We are facing ‘permanent white-waters’ which demands strategies for adaptation to uncertainty...” (Scientific Background Paper on Resilience for the process of the World Summit on Sustainable Development on behalf of The Environmental Advisory Council to the Swedish Government, April 16, 2002)

- **Life Wants to Unfold into Greater Resilience.** Nature appears to unfold as a result of uncountable interactions between countless actors, in relationships that change and evolve constantly at every scale from the atomic, to the micro-organism, to the living individuals, to communities, to the global and beyond. Diverse relationships give systems resilience: the ability to absorb the effects of change without falling apart. They have the capability, the depth, to withstand the shocks and blows of disturbance. Like a tree that bends in the wind instead of breaking, they respond with flexibility to fluctuations and maintain their integrity. The greater their resilience, the larger the disturbance they can withstand.
- **Diversity Needs Relationships.** The value of diversity is only manifested in the presence of relationships – the open flow of information and resources through the links in a network. Without this capacity to cooperate, diversity can become a source of friction, conflict, and even violence. So variation in co-operative relationships, not just of elements, is key to resilience.
- **Resilience Makes Disturbances into Opportunities.** Disturbance can become an engine of learning and innovation if resilience is present. Life wants to unfold into more complex networks. When greater depths of resilience exist, a system can not only sustain itself (maintain existing levels of complexity while maintaining its essential integrity within a changing environment), it creates the threshold conditions within which the system can evolve itself to more complex levels. Developing the capacity for resilience is necessary for a system to then develop the capacity to move toward a regenerative state – a state that goes beyond sustainability in that it fosters learning and innovation to a degree that allows a shift or transformation into a more complex phase of evolution.

Bullets extracted from Brattleboro Food Coop report: Mang, Marvick, Murphy, Reed.

3.3 New Mental Models

We recognize that there are limits to what we can do through our projects in the built environment – but we can (and should) do what is possible to move toward this future. How do we do that? First and foremost, we need a different mindset or mental model. While most of us feel we are systems designers by the nature of

our work in delivering complex buildings, we are working with a very narrow view of the “system” with which we’re interacting. If we simply think of the parts and their connections that make a larger functioning whole – this is simple systems design.

We need a mental model that is able to look at systems in a more complex way. Instead of looking at just the physical elements of the building, the invisible connections between the elements need to be understood, as do the connections between the building and its social and ecological environments. These invisible connections and patterns, for example, may be manifest in the downstream impact of toxins in building materials, the multiple efficiency and cost relationships between the many variables in an HVAC system and the building envelope, or the impact on social systems due to logging practices or any raw material extraction.

Similarly, when it comes to building capabilities and motivating actions, systems thinking as a way of working is necessary, but it must be approached in a holistic, connected way. If left as an isolated concept, systems design is insufficient to help us address the deep issues of engaging people. It is the people in a project who are required to realize the mechanics of systems thinking.

If we begin to think about systems as having a purpose or a quality we begin to move beyond simple mechanistic design. ‘Design’ implies that there is a purpose. A mechanical approach may be portrayed as, “what we are doing.” A deeper approach raises the issue to a more critical level, “Why are we doing this” or “How are we thinking about the issue?” Systems thinking must have a purpose and a sought-quality behind it or the result may be a better system for doing destructive things.

This mental model, based on deeper systems thinking, will help us shift from a culture that is disposed to view parts and pieces to also see the whole. Reframing our perspective is necessary because we have to overcome certain habits. We have been trained to look at the pieces as relevant and significant because they can be directly understood and directed. Shifting to the “whole” requires us to iterate the pieces with the many connections that influence their performance relative to the whole. The essential purpose is, of course, to shift our design culture to one that can iterate quickly between the pieces and the whole. This will allow us to practice sustainability in its true context – the whole of the health of the planet with all its participants.

The best green projects have been successful not because of adding technology and products to the building, but because the project teams had the willingness to focus on the environmental issues – and the invisible and critical connections – as essential to the success of the design. They had the willingness to ask deeper questions, not just about potential environmental damage but also about the potential beneficial relationships between ALL the systems in the

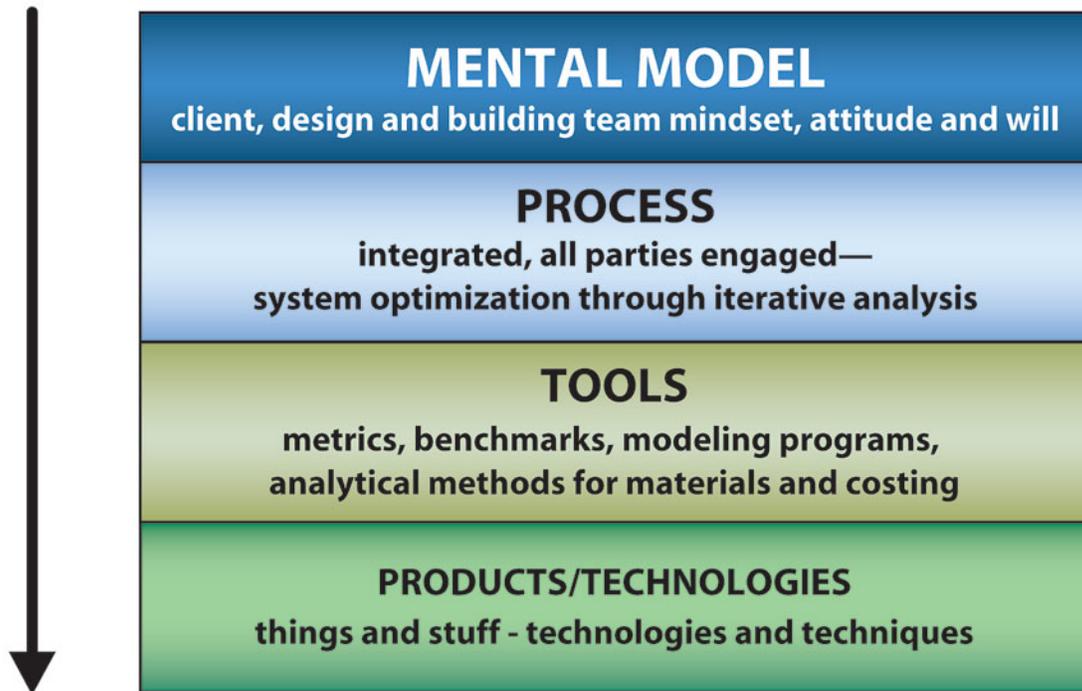
building, site and region and to explore the many different ways to reach toward better ecological integration. The environmental concerns were not secondary, nor were they dominant, just an integral part of the design.

Deep sustainability requires a shift in thinking and in language, as most modern languages lack words to describe humans as an integral element within nature. And most of the terminology of the "green" or "sustainable" building and development movement blurs rather than sharpens our understanding of the challenge we face. The term "regenerative" is useful because it suggests the self-organizing, self-healing and self-evolving properties of living systems. Another useful term, "re-integration", offers a meaning that might be akin to remembering – which can have three meanings here: recalling a past state, re-awakening to something we already know, or perhaps most important, consciously becoming a member again, rejoining the community of life.

The challenge is not just technological. It requires altering assumptions, attitudes, and understanding. Across the disciplines – from physics, to natural resource management, to farming, to economics – a shift in the way we see the world is underway. It can be summed up as a shift from seeing the world as a machine composed of parts, to seeing the world as a self-organized continuously evolving living being composed of other self-organized living beings, nested in relationships with each other. It invites us to move from our current view of standing apart from and using nature to being part of, participating, and co-evolving with nature.

Thus, our mental model is changing in light of recognizing the nature of life – the ultimate, but rarely focused on, purpose of sustainability. We are slowly shifting from a fascination with technology as our focus for achieving sustainability to a recognition of our inextricable integration with the complex systems of life.

Our mental models work in the realm of how we recognize and address cultural and personal values, spirit, will, and so on. Our mental models organize and determine how we use tools and technologies.



(Expanded by Bill Reed from an idea by Barbra Batshalom)

This runs counter to much of our current approach. We, in the building business, are generally material oriented in our approach to design. This is understandable because we utilize a palette of **products and techniques** to produce our buildings. However products and techniques are of limited value if seen only as things that are added to a building to make it green. In addition, the availability and performance characteristics of products are typically in a state of flux— especially in the current state of green market evolution. Concentrating on these alone as the knowledge base for green building we find ourselves in a continuous game of catch up, as well as spending more money to produce a building.

Overcoming this challenge requires changing the design process to utilize **tools**, now widely available, that enable us to make decisions based on optimizing the performance and costs of the whole building, as a system, rather than focusing on the equipment, materials, and products that will be used. Energy modeling programs, Life Cycle Assessment, LEED, scientific indicators of ecological health— are examples of such tools and measurement systems. With these tools we can more adequately evaluate products, techniques, habitat health, water system health, and building massing/ orientation/ zoning at the conceptual phase of the design process; when opportunities are greatest for significant cost and performance improvements.

To use the tools in a timely and meaningful way we must change the **process** of design. Changing the process to one that embraces the larger reaches of system design is the most difficult – because change is hard; and changing the complex relationships of practitioners, builders, suppliers, and customers is even more difficult than changing one profession in the building industry.

For substantive change to take place in the process of building it is necessary for us to understand the techniques and process that will shift the client and design team’s mental model. Values, core purpose, and the resulting ‘will’ are underplayed categories of leverage in the design field. These “soft” concepts powerfully relate to and help to realize the most effective thinking and design.

In practice, shifts in mental frameworks, paradigms, and the nature of practice reinforce one another. As society demands more responsible, effective, and reasoned solutions to a degrading quality of life the professions will be better prepared to respond; and as the building industry grows to manifest the benefits of more fully integrated design, society will accept these increasingly sophisticated levels of practice as a standard level of care.

4 Making it Happen

The ideas and vision discussed above are compelling because they represent such a dramatic departure from our usual way of working. But that difference also creates a challenge: how to realize these ideas in our buildings and communities? That challenge is addressed here in two interdependent parts:

1. Building demand and capabilities:

The first of these is about building demand and capabilities. It involves communication in its broadest sense, including education, changing mental models, expanding worldviews, and co-learning. The questions behind this challenge include: How do we encourage others to join us in this journey? How do we motivate project teams, customers, government agencies, and manufacturers to think beyond the traditional process? How do we share our experience and learn from one another? How do we develop the capabilities and tools we need to effect change on a larger scale?

1. New approaches to the built environment:

The second part is about how to implement these ideas in our work with buildings and the built environments. Questions behind this part include: What should we be doing in our projects that differs from conventional practice? What difference does this make to the outcome?

This chapter presents some thoughts to begin the dialog, examples of new approaches for the built environment and for communication, and provides a mechanism for you to add your ideas and work.

4.1 Building Demand and Capabilities

Effective communication is at the heart of expanding this work beyond a relatively small circle, and this expansion is crucial to our future. The goal will be to create a *demand* for new approaches to the built environment as well as *capabilities* for making it happen.

- We need to motivate project teams to use new approaches and provide the skills and tools to enable them to do so
- We need to reach out to others
- We need to be able to learn from one another

To be truly effective, this communication will need to go beyond provision of information and tools, and current concepts of marketing or promotion. Since our new approaches are based on changes in our mental models, it will need to address our mindsets—how we think about our work and our relationship to other people, community, and the planet. This is not a simple task. Some would say that it is impossible, but we are more optimistic. We have seen the process of integrated design move into mainstream architecture, a shift that required a significant change in approach and perspective. We have also seen dramatic mindset changes within society in relation to other issues, such as civil rights. Change is possible, but it takes time.

The nature of communication needed will depend to some extent on the answers to questions such as—how much of our new approaches can be “codified” into tools and how much will depend on skilled facilitators and knowledgeable participants? Does everyone need to “get it” or is it enough for some people to go along with the process? How much time does it take and are people willing to commit this time?

How do we create an environment in which change can occur? People need to get beyond the current, all-too-prevalent attitude of “just tell me what to do and I’ll do it” coupled with “I don’t have time for this.” We need to provide a context that encourages people to ask questions. When people are willing to ask questions, they are ready to explore new frameworks and see themselves and their work from a different perspective. In general, people truly learn when they are curious enough to ask. They then become “available” to listen or find the answers themselves.

And, importantly, communication is *not* one-way. We do not pretend to have The Answers. Communication concepts and issues presented here are intended to open dialog and invite new perspectives and different ideas.

Our exploration of key facets of communication has raised more questions than it has provided answers.

- **Education, building knowledge and awareness (for adults as well as children).** How do we help people develop the ability to ask better questions and use better processes? This can be in formal settings but what innovations in mentoring, teams, etc. can be used? Co-learning and experiential learning have proved to be most effective – walk people through an experience and they “get it”. How do we get people in the building industry to take the time to see the value and to do this?
- **Tools, training, and technology transfer.** This is where we have been putting much of our effort and it’s important but not enough. What types of different skills will be needed for these different approaches? How will we train facilitators to lead the questioning process (and what types of facilitators will be needed)? Should everyone have a better understanding of the process? What types of tools will be needed? How much can be “codified” into tools and how do we communicate the remainder? What topics will we be exploring that are new to us and therefore lack tools?
- **Marketing and promotion.** Where have current models of “selling” green building fallen short and where have they been successful? Which of our assumptions about target audiences have been accurate or helpful and which ones have not? What different models could help us improve our ability to reach target audiences? What is the role of opinion leaders and who are they? In particular, what can we learn from those who have been successful in creating “movements” and changing the way people think?
- **Feedback loops, listening, and lessons learned.** How can we establish a learning, evolving, ever-changing field? How do we continue to ask and refine our questions? How do we keep our approaches and tools updated and always updating? How do we communicate our lessons without overwhelming one another with yet more information? How do we set up mechanisms that encourage and facilitate collaboration, exchange of ideas and questions, and open ongoing dialog?

An overarching question is the nature of the change we seek – if we are simply seeking an incremental change in behavior, more modest forms of communication might be effective. If, on the other hand, we are seeking changes in the ways in which people identify and put their values to work, the ways in which they view the world and their place in it, and other more “systemic” changes, communications of a different sort will be needed

The fundamental question is what will move people to change their willingness to embrace new approaches to green design? It is easy to talk about systems but it is difficult for those who are accustomed to simple cause-and-effect thinking to make the transition to this more complex level of thinking. The most effective way to do this is through experiential learning. But this is usually not in the scope of work for the typical project—even a green design project that uses the charrette process. It is difficult to explain the need for this to a client who may be interested in a green design process but doesn't really understand what it can entail. The incorporation of this level of coaching and training in a design process depends on the boldness and/or sales ability of the prime design leader or it may have to wait until an initial level of success is experienced to be brought in later or with a following project.

Can we look at how we build knowledge and awareness apart from how we market and promote or encourage dialog? Can we develop tools in isolation from education, promotion and feedback? The answers are, of course, yes (we've been doing it for years!)—but will this be effective? Just as we are suggesting that more holistic approaches to thinking about the built environment are needed, we also need more holistic approaches to creating more motivated and capable professionals, stakeholders, and communities who are prepared to carry forward these changes. How can educational processes and tools further engage people in living their values? Who are we trying to reach with what messages and how can marketing and promotion reach the people who have not yet responded to past efforts to reach them—what is the key (or keys)?

What are some of the approaches that have promise in bringing about the types of changes proposed?

- The design charrette has been used extensively to introduce teams to new concepts of green buildings and then integrated design. Can the charrette be used to introduce this more fundamental change? Our experience is that it is an effective way to introduce a new way of thinking as part of a real-world exercise. What needs to change in the way we organize and conduct charrettes? Is a charrette necessary? Are there other tools or methods that might work as well? How do we get people to the point of wanting a charrette in the first place?
- Communication in various forms is essential at all stages of the process. We need to think about what forms of communication are most appropriate for various points in the process. What are leverage points or entry points? What are most effective ways to reach and respond to people at their own level and interest. How can communication be used to sustain the energy and enthusiasm that participants feel following an effective charrette?

The appendix contains profiles of ways in which people are working to create demand and build capabilities for the expanded approach. These profiles are structured in seven parts: approach, purpose/desired outcome, distinguishing elements, evolving capabilities, making it happen, examples, and additional thoughts.

4.2 New Approaches for the Built Environment

Those who are trying to move us beyond current green building efforts invoke a variety of “lenses” to help us develop a deeper understanding and new approaches. Some of these lenses have been applied to specific projects and some have not, but could be. These include:

- *Ecological Footprint*: a method for calculating how much land and water an individual or group requires to produce the resources it consumes and to absorb its wastes, given current technology; it demonstrates disparities in consumption among different populations and for different lifestyles and can illustrate the magnitude of change needed to reach equitable distribution of resources worldwide.
- *The Natural Step*: a framework of essential principles and an approach to sustainability that includes a strategy for action, as well as a methodology and processes for applying this framework in organizations. (<http://www.naturalstep.org>)
- *CO₂ Balancing*: when carbon stored in materials that are net carbon sinks is equal to or greater than the total carbon released as CO₂ during the upstream life cycle stages of other materials or processes, the materials may have zero impact on global warming over their full lifecycle.
- *Biophilia*: innovation inspired by nature, using nature’s models to solve human problems and valuing nature for what we can learn from it not just what we can extract from it (*Biomimicry*, Janine Benyus).
- *Cradle-to-Cradle*: a model in which all materials used in our economy can be manufactured in a benign way and reused indefinitely. Key aspects of this model include the elimination of toxic ingredients and byproducts, the use of renewable energy, and the separation of “technical nutrients” from “biological nutrients” (McDonough Braungart Design Chemistry, <http://www.mbdc.com>).
- *Life Cycle Assessment*: compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle (<http://www.lcacenter.org>, http://www.setac.org/htdocs/who_intgrp_lca.html, <http://www.uneptie.org/pc/sustain/lcinitiative/home.htm>)

- *Input/ Output*: a technique for analyzing economy-wide interdependencies; input-output life-cycle analysis (IO-LCA) involves supplementing conventional economic input-output tables with indices quantifying flows of resources and emissions. This type of modeling, based on economic numbers of an entire nation's economy, is much more complete than conventional, process-based, life-cycle assessment, but it is much less precise at an individual product level.

(Not all new approaches, or lenses, have names – those listed above have been widely discussed and are the subject of publications.)

4.3 Real World Examples

Some of the ideas discussed in this report may seem a bit abstract or idealistic. The appendix contains profiles of specific approaches, being used in actual projects, that exemplify many of these ideas. Hopefully these examples will help to ground this thinking in the realities of day-to-day project delivery.

1. An Integral Approach to Market Transformation, submitted by David Johnston
2. Integrating Sustainability into Organizations – A Framework, submitted by Alex Zimmerman
3. Regenerative Design, submitted by Bill Reed
4. Comprehensive Stakeholder Engagement for the Alexandria Bay Port-of-Entry, by the Expanding Our Approach workshop participants, and the authors of this report

The examples are structured in the following format:

1. **Approach:** What is the new approach you are using or working on? What are the key elements of this approach? How is it different from what you and others have been doing?
2. **Purpose/desired outcome:** What is the purpose? Why are you doing this? What are the results you're looking for? What is the change you're trying to create?
3. **Distinguishing elements:** How is your process different? What are the questions you're asking that are different from what guides a conventional process?
4. **Evolving capabilities:** How has your understanding changed? What new capabilities do you find that you need to work in this new way? How have you changed in relation to what you're doing?
5. **Making it happen:** How do you communicate these ideas with clients? Others? What motivates them to expand their thinking and approach?

6. **Examples:** If you've tried this approach, tell the story. Please provide a brief description, and feel free to attach files or include links with additional details, case studies, papers, presentations, etc.
7. **Additional thoughts:** Anything else you'd like to say about your approach.

These examples are only a beginning and we encourage you to add to this section by submitting your own work, using the same structure.

5 Ongoing Process for Dialog

The exploration that was shared at the Pocantico workshop was only the beginning of a collaboration that reaches far beyond the workshop participants. Our conversation focused on views of the future and values that are important in shaping that future more sustainably. We did not have time to talk about specific approaches that participants are developing and using in their work or communications.

An important goal of this report is to stimulate and provide a mechanism for carrying on dialog on approaches and communications – what are people doing? What are the results? How are you evolving your thinking and practice? How are you communicating these ideas with others? How are you getting your information? How are you getting others to join you – clients, other team members?

We have developed a framework for these submissions that we hope will make the submissions more user friendly, for submitters and readers. The framework asks that you answer the questions outlined in the previous section. You can also append specific case studies, papers, presentations, links to websites, and other material that describes your work.

Follow-up workshops are being pursued as a way of sharing these ideas with a wider audience and developing them further. We hope that ideas and experiences from more people will help in creating an effective vision and process, and that engaging some of the same people in additional events will allow the thinking about these ideas to evolve.

With these same goals in mind, an interactive website has been created: <http://gyre.buildinggreen.com>. This website documents the conversations and discoveries that of the Pocantico workshop, and it offers a forum for collecting examples for future versions this report. Over time the website may grow to include a much broader range of material and ideas from anyone who wishes to contribute.

5.1 What's on the Website?

An outline of the content on the "Expanding Our Approach" website, as of December, 2005, appears below. No log-in is required to view the contents, but users who choose to register and log in can submit comments via a form at the bottom of most screens. The website can be accessed at <http://gyre.buildinggreen.com>.

Overview – about the website, and the Expanding Our Approach workshop.

Preliminaries

Background – explaining the rationale and goals of the workshop

Key Questions – submitted by participants in advance of the workshop

Musings – some participants wrote whole essays to go along with their questions. The contributions here came from Sim Van der Ryn, the Regenesi Crew, Kevin Hydes, Lisa Mathiessen, and Bungane Mehlomakulu.

Participant List – names, affiliations, and a group photo

Organizers – the people who put the event together, with bios

Workshop Sessions – summaries of the proceedings and flip-chart images from all nine workshop sessions, including whole-group meetings and break-out sessions

Follow-up

Follow-up Musings – three essays from participants responding to what they experienced at the workshop

Hot Reading – books and other reading materials recommended by participants during the workshop, and the full text of Donella Meadows' seminal Whole Earth Magazine article "Places to Intervene in a System"

Related Initiatives – a place to list other events, programs, and resources that users of the site should know about

Greenbuild 2005 – presentation slides and questions generated during the "Shifting Our Collective Mindset" session in Atlanta

Report – this document

5.2 Final Thoughts

Green building is very important, but it doesn't go nearly far enough. It isn't enough for three reasons: 1) The number and scale of buildings under construction is growing fast enough to overwhelm the benefits of any incremental improvement in the performance of those buildings; 2) The environment has already been degraded and stressed to the point where restoration and regeneration are required; and 3) The creation of a building represents a moment in time when significant attention, energy, and capital are concentrated, making positive interventions and even transformations possible.

This report suggests some ideas and approaches for going beyond conventional green building. Every project represents an opportunity for fundamental change in our society's approach to ecology and buildings. We don't have the luxury of taking a wait-and-see attitude – we have to explore and exploit those opportunities.

Appendix: Real-World Examples

[See separate document for these profiles.]

Profile 1: An Integral Approach to Market Transformation

Profile 2: Integrating Sustainability into Organizations

Profile 3: Regenerative Design

Profile 4: Comprehensive Stakeholder Engagement for the Alexandria Bay Port-of-Entry