DRAFT: LEED as Collaborative Planning; LEED as Public Policy

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Introduction

Through two illustrative case studies, this paper outlines how the use of the U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Rating System can promote collaborative planning. This new form of practice—defined less by hierarchy, long term patterns of routine behavior, and structured roles—recognizes the interdependence of design decisions and promotes the authentic dialogue necessary to achieve a successful green building.

While probable that collaborative practices and authentic dialogue occurred on projects prior to LEED, traditional contractual relationships between the architect, owner and contractor actually formalized a hierarchical and adversarial process. The introduction of new standard contracts by the American Institute of Architects (AIA) and the emergence of new technologies such as Building Information Modeling (BIM), created a shift in practice; most designers now recognize that they cannot produce the necessary results they desire if they work alone.

But LEED is not a panacea to cure all ills; when used as a de facto building code, the LEED system loses its ability to promote collaborative practice because it can be reframed as a checklist or as overly simplistic. To continue their goal of market transformation, this paper argues that the USGBC should recognize the "punctuated equilibrium" nature of the building code process and continue to engage local policymakers in an incremental, collaborative process to revise building codes in the United States.

The Adam Joseph Lewis Center at Oberlin College

In 1992, the architectural firm of William McDonough and Partners was commissioned by the city of Hannover, Germany to prepare "The Hannover Principles," a series of sustainable development principles for the 2000 World Expo. The purpose of the document was to "insure that the design and construction related to the fair will represent sustainable development for the city, region, and world." (McDonough 1992, p. 3) One of the nine principles stated that, "human designs should, like the living world, derive their creative forces from perpetual *solar income*." (Ibid., p. 6; italics added)

During the same period, Professor David W. Orr was laying the foundation for an environmental studies center at Oberlin College in northeastern Ohio. Over the course of several months, he gathered students, faculty, staff, and members of the community to participate in a series of public planning sessions for a new building. During the course of those meetings, they collectively developed a series of principles to help shape the design. One of their principles, to "utilize sunlight as fully as possible," may have been derived from the Hannover Principles; it quickly became the focal point for the building's design (Orr 2004).

In the fall of 1995, a request for qualifications was issued by Oberlin College for an architect to lead the design process for the new building. Twenty-six architectural firms responded, and after interviewing five firms, the firm of William McDonough and Partners was selected as the lead architect (Orr 2004, pg. 162). As the design process unfolded, the architect and client aligned on the solar goal. To operate within the building's solar income the energy loads needed to be dramatically reduced from standard practice; a computer simulation helped the team to evaluate systems and to finalize design decisions. At the end of the design process the architect and client were confident that a photovoltaic array would produce more electrical energy than the building needed.

After the project was substantially complete and occupied, the architect began to claim in public that the building "makes more energy than it needs to operate." (McDonough, 2005) This proclamation captured the imagination of the architectural community and garnered national attention. Unfortunately, an audit conducted by a member of the physics faculty at the college (Scofield 2002) and the National Renewable Energy Laboratory (NREL) (Pless and Torcellini 2004) revealed that the building did not meet its proclaimed "zero net energy" goal. This discovery caused negative publicity for the college, strained relationships with donors, and led to a number of public attacks on the architect's character (Sacks 2008).

What happened at Oberlin College? Far beyond a simple miscalculation of energy loads or the incorrect installation of mechanical equipment, the key factor cited by all parties in the design and construction process was a lack of integration and communication as the project neared completion. Although the architect, client, and engineering team were in alignment about the solar income goal, the contractor had held a "value engineering" exercise with college utilities staff late in the game that resulted in a significant change to the mechanical systems. The contractor had not participated in the initial visioning sessions and was unaware that altering of the building systems could challenge the entire "concept" of the building (Orr 2004; Oberlin College and Lucid Design Group 2007).

The story of Oberlin College does not stand in isolation. In the 1990s, the pressure to build green forced many architects to begin to value a diverse set of opinions and to understand that all design decisions were interrelated. Goals for a building could no longer be post-rationalized, as performance began to be tracked after the fact. In response, many firms began to develop their own rubric for sustainability and to track project progress. But for the mass market an off the shelf solution was missing, and in this receptive environment, the USGBC was formed in 1993.

LEED Rating System

The mission of the USGBC is "to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life." (USGBC 2009, pg. 2) By 1995, after reviewing existing green building rating systems the USGBC began work on its own system to define and measure "green buildings." (Scheuer and Keoleian 2002, pg. 16)

The first Leadership in Energy and Environmental Design (LEED) Pilot Project Program, also referred to as LEED Version 1.0, was launched at a Membership Summit in August 1998. The current version of the system, LEED 2009, is described by the USGBC as "voluntary, consensus-based, and market-driven." (USGBC 2008, pg. xi) The system evaluates environmental performance using a checklist, and attempts to standardize what constitutes a green building in design, construction, and operation. There are several versions of the rating system available; versions have been released for rating new and existing commercial, institutional, and residential buildings. Each rating system is organized into five environmental categories: (1) Sustainable Sites, (2) Water Efficiency, (3) Energy and Atmosphere, (4) Materials and Resources, and (5) Indoor Environmental Quality. An additional category, Innovation in Design, addresses sustainable building expertise as well as design measures not covered under the five environmental categories. Regional bonus points are a recent addition to LEED and begin to acknowledge local conditions in determining environmental design practices. In total there are 110 points in the system; LEED 2009 certifications are awarded according to the following scale: “Certified” for 40–49 points, “Silver” for 50–59 points, “Gold” for 60–79 points, and “Platinum” for any project above 80 points. (USGBC 2008)

The design of the LEED Rating System, as a simple checklist or menu from which any number of credits could be selected for a project, reflected the lesson learned from early green buildings that a project needed to keep all members of a project literally on the “same page” as a project progressed from initial ideas through construction. As Lindsey, Todd, and Hayter state, “Process is key to whole-building design. Sustainable design is most effective when applied at the earliest stages of a design. This philosophy of creating a good building must be maintained throughout design and construction.” (2003, pg. ii) Each credit in the LEED Rating System could be assigned to a member of the project team, the LEED checklist could be reviewed at each project meeting, and team members could quickly report their progress in meeting the requirements of their assigned credit.

One method that began to be used to tackle the LEED Rating System, similar in concept to the visioning session that David W. Orr held at Oberlin College, was to hold a LEED charrette, a gathering of all members of the project team to discuss and select LEED strategies for a proposed building. Out of this new collaborative process a specialization emerged for a green building professional as the manager of the meeting, the team, and the process of LEED certification. As described by Lindsey, Todd, and Hayter, their role (called a “LEED Accredited Professional” by the USGBC) was to “use strategic planning to overcome conflict…focus on both the big picture and the details of a project to produce collaborative agreement on specific goals, strategies, and project priorities. Charrettes establish trust, build consensus, and help to obtain project approval more quickly by allowing participants to be a part of the decision-making process.” (Lindsey et al., 2003, pg. 1) In other words, what a green building design charrette was attempting to encourage was “authentic dialogue” among project participants. This authentic dialogue required each speaker to legitimately represent the interest for which they claim to speak, to speak sincerely, and to make statements that are accurate and comprehensible to others. (Innes and Booher 2003)

Authentic dialogue is critical because it allows a “collaborative rationality” to emerge. This rationality defines the remaining process for executing the building, and represents the collective meanings, identities, and heuristics of the team that emerged during the charrette. The concept of authentic dialogue is borrowed from the Frankfurt School of critical theorists, especially Jurgen

Habermas (Habermas, 1981). While the conditions he describes could never be achieved because of his stringent definitions, his theories are widely considered to be the foundation of collaborative planning that was later described by Forester, Healy, Dryzek, and Innes/ Booher (Forester 1980; Healy 1992; Dryzek 1990; Innes and Booher 2010). Collaborative planning is therefore a process that empowers stakeholders by elevating them to the level of decision-makers through authentic dialogue, dependent on a diverse and interdependent set of interests.

On LEED projects, the interest each participant claimed to speak for was aligned to the credits in the LEED Rating System. A lighting designer might take responsibility for achieving "Light Pollution Reduction," a mechanical engineer might volunteer to manage refrigerants, and multiple professions might align and form a coalition as they recognize their interdependence as they attempt to reduce the building's energy use. In exchange for taking responsibility for a credit, a team member had gained a place at the table and power in the process. They now had a legitimate interest in achieving a credit because they were identified as responsible for a successful outcome, and to make their case they were often required to translate the language of their profession to other members of the team. With the LEED Rating System combined with a charrette, the traditional power structure used to deliver a building had been upended. Team members other than the architect, owner, and contractor could control parts of the design and construction process and had a "falsifiable" rationale to draw on to defend their interest against "value engineering."

While it is probable that something approaching authentic dialogue had occurred on green building projects in the past, the traditional contractual relationship recommended by the American Institute of Architects (AIA) between the architect and owner (AIA Contract B-141) and owner and contractor (AIA Contract A-101) had formalized a hierarchical and adversarial relationship. In recognition of this, in 2007 the AIA began work to alter the standard contractual agreements provided to their members to address what they called "the status quo of fragmented processes yielding outcomes below expectations to a collaborative, value-based process delivering high-outcome results to the entire building team." (AIA National and AIA California Council 2007, pg. 1) The result was a new series of integrated project delivery (IPD) standard contracts to supplement B-141 and A-101, and a guide to assist the delivery of a green building.

The goals of the integrated project delivery approach are found in Table 1. Although never stated directly, the practice of green building had embraced the concepts of collaborative planning. While there were many reasons for the emergence of this collaborative approach, part of which were the LEED Rating System and design charrettes, the role of new technologies such as building energy simulation software, internet collaboration tools, and Building Information Modeling (BIM) also played a crucial role. Together, these factors changed the creation and control of information, created new methodologies and rationales, and created new power relationships between team members. In the end, the entire practice of building was altered as individuals began to realize that they could not produce the green building results they wanted when they worked alone. (Innes and Booher 2003)

Table 1: Comparison of Project Delivery Approaches (from AIA National and AIA California Council 2007)

	Traditional Project Delivery	Integrated Project Delivery
Teams	Fragmented, assembled on "just-as-needed" or "minimum-necessary" basis, strongly hierarchical, controlled	An integrated team entity composed key project stakeholders, assembled early in the process, open, collaborative
Process	Linear, distinct, segregated; knowledge gathered "just-as-needed"; information hoarded; silos of knowledge and expertise	Concurrent and multi-level; early contributions of knowledge and expertise; information openly shared; stakeholder trust and respect
Risk	Individually managed, transferred to the greatest extent possible	Collectively managed, appropriately shared
Compensation	Individually pursued; minimum effort for maximum return; (usually) first-cost based	Team success tied to project success; value-based
Reward	Paper-based, 2 dimensional; analog	Digitally based, virtual; Building Information Modeling (3, 4 and 5 dimensional)
Communications	Encourage unilateral effort; allocate and transfer risk; no sharing	Encourage, foster, promote and support multi-lateral open sharing and collaboration; risk sharing

Chartwell School

An example of how a collaborative planning process can lead to a high performance green building can be found in Chartwell School, a small private grade school for students with learning disabilities located in Northern California. In 2002, Douglas Atkins, the executive director, began to investigate green building rating systems for a new facility to be constructed on a former U.S. Army base in Seaside, California. The goal of the project was to create a green, healthy, and high-performance school that would support a productive learning environment.

As he began the process, he sought advice from a friend who had completed a number of green buildings in the Northeast. The friend suggested that he should "engage all the constituents at every level: students, parents, faculty, administrators, trustees, donors, and community leaders. He said we should interview everybody in order to create a vision about what constitutes a good school. He suggested we pose questions in such a way that they don't presume what the outcome is going to be." (Kwok et al. 2009, pg. 8) Similar to the Berger Inquiry, the programming report for the building was created through a discursive process that valued voices not usually included (Torgerson 2003). "We had the students draw pictures of what they thought a school should be. Some of those were whimsical, and some of them were very analytical; it was really amazing to see what they prioritized. We brought all this information together, and what came out of this picture was a programming document. It allowed us to establish a process of sending out the programming document as part of a broad RFQ." (Kwok et al. 2009, pg. 8)

According to Atkins, several dozen firms from across the United States responded to the RFQ because the project represented an opportunity to create a green building unlike any other that had been constructed in the United States. From the responses to the RFQ a committee short-listed three firms, one of which was led by EHDD Architecture of San Francisco. At the interview this team won the project because according to Atkins, "they worked collaboratively, from the very beginning of their presentation, in a way I hadn't seen in other presentations by other design firms." (Kwok et al. 2009, pg. 9) In addition, when the lead architect Scott Shell presented to the school he brought the engineers with him and said, "Here's the team." To Atkins, "that was another paradigm shift. I saw that architecture isn't, as it might have been a couple of generations ago, just about aesthetics, massing, and color selection. You need engineers to be part of the team as early as possible, in order to achieve those sustainability goals and show that your investment is going to perform in energy efficiency, air quality, and daylighting. They have to pencil out the solutions that can't be intuited, and they have to check that the theoretical performance is actually what you get when you walk into the building and flip the switches." (Kwok et al. 2009, pg. 9)

After the design team was under contract, they engaged in a series of design charrettes to determine the direction for the project. As with any project, power struggles emerged, but were generally resolved by the architect managing the process.

> In design charrettes, there are a lot of different opinions expressed, and they can be expressed in a very animated and passionate manner. When trying to reconcile different views on how to accomplish something, egos can emerge. Then people get bruised, and things can happen that unravel the process…through these design charrettes, [the architects] were able to hear a cacophony of input. Where most people would melt down, or get frustrated, they would be very congenial and fun. They would challenge

> themselves by looking for ways to do what we were asking them to do. They showed us they could think out loud. They shared their thoughts. (Kwok et al. 2009, pg. 12)

The design team consisted of a group of people that had collaborated together in the past, that valued a non-hierarchical working relationship, and that shared a common vision for the school. By having “an empathetic understanding of why another stakeholder would take a particular view,” (Innes and Booher 2000, pg. 11) they were able to build up “reciprocal relationships that become the glue for their continuing work.” They learn that it is in their self interest, not only to work together, but also to offer something to others because others have something to offer them.” (Innes and Booher 2003, pg. 42)

As the team considered LEED Certification, they realized that their alignment on issues had allowed them to achieve a higher level of certification than they had initially anticipated, LEED Gold or higher. According to Atkins, this allowed them to relax about hitting a target, and “some of the more subtle benefits of sustainability started to creep into the process. At a certain point, by being able to stop thinking about the technical aspects of accruing points in a protocol, a wall goes down. Then, you have a permeable relationship with things that can happen which are not based on accruing points. You actually have an opportunity to go into some new territory, explore things, and come up with some solutions that may not have been tried before.” (Kwok et al. 2009, pg. 13) One goal proposed by the architect that went beyond LEED was similar to Oberlin College, using solar energy to provide all of the electrical energy for the school.

While the project was considered to be very successful by all members of the design team, and won several local, state and national design awards, not all issues were resolved at the conclusion of construction. According to architect Scott Shell, “the occupant training on Chartwell was an area where we could have done better. It’s easy for the design committee to get excited about the project, because they know all the details. We spend a lot of time together and they’re all excited when they move in. Meanwhile, people move in who haven’t been involved in that process, and they don’t know what all this stuff does or why it was done a certain way.” (Kwok et al. 2009, pg. 28) One such person was the facilities manager, Roy Williams, who was not hired by the school until 2005 when the project had already broken ground. (Kwok et al. 2009, pg. 73) According to Williams, he “was disappointed in our as-built drawings; they left a lot to be desired…I also would like to have been able to edge in a few things a little earlier, before the design was locked down.” (Kwok et al. 2009, pg. 73) However, Williams noted, energy bills from the facility indicate that the systems are largely performing as designed, and anecdotal evidence he has gathered indicates that the teaching staff are very pleased with how the building supports the educational mission.

Although LEED and a collaborative planning process allowed the team to exceed initial expectations, the daylighting consultant to the Chartwell project, George Loisos, cautioned that LEED may not be a solution for every site. "We need to create a situation where we identify what is important to the site. As we all know, each site is different, and LEED is struggling with that. Light pollution in New York is different from light pollution in a national park, and that's not the end of it." In addition, he notes that the system may not be diverse enough on issues related to sustainability, such as social equity, and laments that because these are not included in the system that project teams may not discuss them. (Kwok et al. 2009, pg. 69) But as someone who had participated in the Oberlin College project, he states that although he complains about LEED it has helped green building, has focused the dialogues to relevant issues, and has helped to grow the green building market. "I complain about [LEED] to make it better." (Kwok et al. 2009, pg. 70)

To summarize the Chartwell School case study, to achieve collaboration among players with different interests, backgrounds, or professions, the dialogue must be authentic. There must also be a diversity of stakeholders present early in the process who recognize the interdependence of their actions. Both conditions are necessary to take full advantage of the creativity that comes from collaboration. Finally, the outcome of the process depends on the group being able to follow a discussion where it leads rather than being artificially constrained by rules about what can be discussed or what cannot be changed. (Innes and Booher 2003) The group needs to be able to challenge assumptions and question the status quo, a feature of LEED lost when it becomes a de facto building code.

<u>LEED as Public Policy</u>

As described by the USGBC, the LEED Rating System is "voluntary, consensus-based, and market-driven." (USGBC, 2009, pg. xi) However, many public entities are beginning to encourage the use of LEED as an incentive for faster project review (City of San Francisco), as a prerequisite for supplementary funding (New York State Energy Research and Development Authority), or as a requirement for all new construction (General Services Administration). In the move from a voluntary activity to a de facto building code, the perception of LEED has significantly shifted, opening the rating system to new types of criticism.

Part of the frustration voiced by the building industry is linked to the punctuated equilibrium nature of the building code process. Where required and enforced, building codes are generally revised in the United States on a three-year cycle. In many rural locations, there may not be regular meetings of a code committee or any local enforcement; revisions are tackled only as the need arises or there has been an egregious violation of the health, safety and welfare of the public. Because this political process is characterized by such stability and incrementalism, any sudden departure from past practices, such as the sudden adoption of a green building standard, is likely to cause friction and resistance.

Borrowing from Udall and Schendler (2005), the resistance to LEED takes several common forms:

1. *LEED Costs Too Much:* This argument states that the use of the LEED Rating System is an unfair burden on building developers and contractors because the technologies required for green building are too expensive, are not widely available, and are often costly to install. This additional cost is above and beyond "standard practice," and therefore represents an unfunded mandate. Several studies (Kats et al. 2003; USGBC 2000; Eichholtz et al. 2008) have offered a legitimate rebuttal, citing data from projects showing little to no incremental cost for LEED certification—because it is impossible to conduct a side-by-side comparison of projects from location to location and building type to building type the likelihood of ever determining the true cost of LEED is slim.
2. *Overblown Claims of Green Building Benefits are Misleading:* This argument states that the health and productivity benefits of green building have been inflated, and should not be counted as a credit toward the first cost of a building. The difficulty in resolving this argument is similar to the cost debate.

While both of the above arguments are valid criticisms of the LEED Rating System, the discussion is essentially about the limit of neoclassical economics. One camp argues that all positive externalities of green building should be credited toward the first cost of the building while the other camp argues that these externalities cannot really be quantified and therefore do not relate to the cost of construction. It is unlikely that this issue will be resolved, and past experience from the Title 24 code process in California indicates that the building industry will continue to use these arguments to stall code proceedings in the future.

The final two arguments leveled against the LEED Rating System by Udall and Schendler, that of a crippling bureaucracy and a flawed logic, are actually one issue split into two arguments, and warrant further discussion because it represents a negative reaction to the power of the USGBC and the sudden adoption of LEED by many jurisdictions. As an example, take the following quote from the Pritzker Prize winning architect Thom Mayne. In the last decade he has completed a number of buildings for the General Services Administration that have been required to pursue a LEED certification:

> LEED should give performance requirements and let the architect solve the problem. The point system doesn't scale. A bike rack and air conditioning get you the same point. I'd much rather see BTU and CO_2 requirements and let the professional community solve the problem. If you give proscriptive requirements, it stagnates new development and research. It's like taking a blue book test. You don't need to know the subject. Because architects deal in creative problem solving, some of that will be curtailed by proscriptive systems. (Bowen 2009)

Part of Mayne's statement is a reaction to the loss of power by the architect over the design process. Part of his statement is a criticism of prescriptive requirements being imposed on architectural design. But his most damaging attack, stating, "A bike rack and air conditioning get you the same point," is a reframing of the debate in a way that calls to question the logic of the entire LEED framework. By doing this, Mayne has avoided attacking the theory of any individual credit, or the models used to support these theories. In essence, Mayne has rejected the boundaries of LEED. Because LEED was designed as a voluntary system, it was considered a given that a green building professional had accepted the bounded rationality of the system prior to it being applied to a project. When Mayne rejects this boundary he has done something unanticipated by the progenitors of LEED, undermining the pragmatic and plural nature of the system.

To illustrate how the USGBC has constructed a framework from a series of arguments, each credit of the 2009 LEED Rating System has been categorized by the general and specific functions they perform in a knowledge transaction in Table 2. According to Dunn, these general functions are:

(1) *empirico-analytic:* knowledge adequacy is certified by assumptions about the logical consistency of axioms, laws, propositions, hypotheses, or principles and/or their correspondence to empirically observed regularities;
(2) *interpretive:* knowledge adequacy is certified by assumptions about the action motivating the significance of purposes, intentions, reasons, or motivations;
(3) *pragmatic:* knowledge adequacy is certified by assumptions about the effectiveness of past experiences in producing desired outcomes in parallel contexts;

(4) *authoritative:* knowledge adequacy is certified by assumptions about the achieved or ascribed status of knowledge producers, the orthodoxy of knowledge, or the use of approved methods; and
(5) *critical:* knowledge adequacy is certified by assumptions about the consequences of such knowledge in emancipating individuals and collectives from unexamined or tacit beliefs that impede the realization of human potential. (Dunn 1993, pp. 274-277)

Table 2: LEED Credits, Values, References, and Warrants/ Backing

	Credit Name	Value	Reference/ Requirement	Warrant/ Backing
SS (26 Points)	Construction Activity Pollution Prevention	Req.	2003 EPA Construction General Permit	Empirico-analytic
	Site Selection	1	5 Federal Standards + 1 Criteria	Interpretive
	Density and Community Connectivity	5	Map Analysis or Calculation	Interpretive
	Brownfield Redevelopment	1	ASTM E1903-97	Empirico-analytic
	Public Transportation Access	6	Calculation	Interpretive
	Bicycle Storage and Changing Rooms	1	Calculation	Interpretive
	Low-Emitting and Fuel-Efficient Vehicles	3	ACEEE Vehicle Guide + Calculation	Interpretive
	Parking Capacity	2	Calculation	Interpretive
	Site Development—Protect or Restore Habitat	1	Calculation	Interpretive
	Site Development—Maximize Open Space	1	Zoning Ordinance or Calculation	Interpretive
	Stormwater Design—Quantity Control	1	Calculation	Pragmatic
	Stormwater Design—Quality Control	1	"Best Management Practices"	Pragmatic
	Heat Island Effect—Non-roof	1	ASTM E1980	Empirico-analytic
	Heat Island Effect—Roof	1	ASTN E1980	Empirico-analytic
	Light Pollution Reduction	1	ASHRAE Standard 90.1/ IESNA RP-33	Empirico-analytic
WE (10 Points)	Water Use Reduction—20% Reduction	Req.	Adaptation of Energy Policy Act of 1992	Empirico-analytic
	Landscaping – Reduce Water Usage by 50%	2	Calculation	Interpretive
	Landscaping – No Potable or No Irrigation	4	Calculation	Interpretive
	Innovative Wastewater Technologies	2	Calculation/ Public Health Standards	Pragmatic
	Water Use Reduction – Reduce by 30%	2	Adaptation of Energy Policy Act of 1992	Empirico-analytic
	Water Use Reduction – Reduce by 35%	3	Adaptation of Energy Policy Act of 1992	Empirico-analytic
	Water Use Reduction – Reduce by 40%	4	Adaptation of Energy Policy Act of 1992	Empirico-analytic
E&A (35 Points)	Commissioning of Building Energy Systems	Req.	LEED Reference Guide, 2009 Edition	Interpretive
	Minimum Energy Performance	Req.	ASHRAE Standard 90.1-2007	Empirico-analytic
	Fundamental Refrigerant Management	Req.	Montreal Protocol	Empirico-analytic
	Optimize Energy Performance	1 - 19	ASHRAE Standard 90.1-2007	Empirico-analytic
	On-Site Renewable Energy	1 - 7	Calculation	Interpretive
	Enhanced Commissioning	2	LEED Reference Guide, 2009 Edition	Interpretive
	Enhanced Refrigerant Management	2	Montreal Protocol	Empirico-analytic
	Measurement and Verification	3	IPMVP Protocol Volume III	Empirico-analytic
	Green Power	2	Green-e Energy Program Requirements	Interpretive
M&R (14 Points)	Storage and Collection of Recyclables	Req.	Prescriptive Requirement	Authoritative
	Building Reuse – Walls, Floors, and Roof	1 - 3	Calculation	Interpretive
	Building Reuse – Interior Non-Structural	1	Calculation	Interpretive
	Construction Waste Management	1 - 2	Calculation	Interpretive
	Materials Reuse	1 - 2	Calculation	Interpretive
	Recycled Content	1 - 2	Calculation	Interpretive
	Regional Materials	1 - 2	Calculation	Interpretive
	Rapidly Renewable Materials	1	Calculation	Interpretive
	Certified Wood	1	Forest Stewardship Council (FSC) Criteria	Empirico-analytic
IEQ (15 Points)	Minimum Indoor Air Quality Performance	Req.	ASHRAE Standard 62.1-2007	Empirico-analytic
	Environmental Tobacco Smoke (ETS) Control	Req.	Prescriptive Requirement	Pragmatic
	Outdoor Air Delivery Monitoring	1	Carbon Dioxide Sensor	Empirico-analytic
	Increased Ventilation	1	ASHRAE Standard 62.1/ CIBSE AM 10	Empirico-analytic
	IAQ Management Plan—During Construction	1	ANSI/ SMACNA 008-2008	Empirico-analytic
	IAQ Management Plan—Before Occupancy	1	Calculation or EPA Methodology	Empirico-analytic
	Low-Emitting Materials—Adhesives & Sealants	1	SCAQMD #1168	Authoritative
	Low-Emitting Materials—Paints and Coatings	1	Green Seal Standard/ SCAQMD #1113	Authoritative
	Low-Emitting Materials—Flooring Systems	1	Carpet and Rug Institute Green Label	Authoritative
	Low-Emitting Materials—Composite Wood	1	No added urea-formaldehyde resins	Empirico-analytic
	Indoor Chemical and Pollutant Source Control	1	Prescriptive Requirement	Interpretive
	Controllability of Systems—Lighting	1	Prescriptive Requirement	Pragmatic
	Controllability of Systems—Thermal Comfort	1	Prescriptive Requirement	Pragmatic
	Thermal Comfort	2	ASHRAE Standard 55-2004	Empirico-analytic
	Daylight and Views	2	Prescriptive Requirement	Interpretive
	Innovation and Design Process Category	**6**	Innovation or Exemplary Performance	N/A
	Regional Priority Credits	**4**	"Bonus" for addressing local issues	N/A
	Total	**110**		

Source: LEED 2009 For New Construction and Major Renovations (USGBC, 2009); "Policy Reforms as Arguments" (Dunn, 1993)

If we consider Mayne's statement in Dunn's terms, he is saying that we are comparing an empirico-analytic argument (Optimize Energy Performance) to an interpretive argument (Bicycle Storage and Changing Rooms). The logic and epistemic value behind an air-conditioning system is not equal to that of providing for bicycle transportation.

Next Steps for LEED

How can the USGBC encourage more practitioners to accept the boundaries of green building? Part of the solution may be to work on green building standards that cross disciplinary boundaries such as ANSI/ASHRAE/USGBC/IES Standard 189, "Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings." This standard, essentially a reformulation of the LEED Rating System in code adoptable language, is intended to provide minimum requirements for the design of sustainable buildings "to balance environmental responsibility, resource efficiency, occupant comfort and well-being, and community sensitivity." (Dunlop 2009; ANSI/ASHRAE/USGBC/IES 2009) By engaging the two main building engineering professional societies in the United States (the American Society of Heating, Refrigerating and Air-Conditioning Engineers [ASHRAE], and the Illuminating Engineering Society of North America [IESNA]) the proposed standard and requirements may appeal to each of these professions because they will feel that their representatives were able to participate in a process.

With these new formulations of green building requirements in hand, the USGBC may be able to tap local volunteers to work with code officials and code councils to include the standards into state and local building codes. By engaging the local design community in a collaborative process, and addressing local issues, the USGBC may find that they are able to engage more of the practice community in green building and receive valuable feedback to inform new versions of the system or green building codes. One caution from the collaborative planning literature is that this may take a large amount of time and resources, but the net benefit may be double loop learning and a greater valuation of the concept of green construction by governing bodies.

The final process for the USGBC to consider would be to openly discuss the LEED framework, the theories behind each credit, and the models used to support the achievement of each credit. Authors such as Guy, Farmer, and Moore (Guy and Farmer 2001; Guy and Moore 2007) have reviewed the literature concerning sustainable architecture and have found a diverse and divergent set of ideas that they claim defy categorization. They argue that rather than lament the inability to standardize a singular approach to green building, we should celebrate and engage pluralism. Their articles propose reflective engagement on the issues of sustainability that would be sympathetic to the pragmatist tradition, promote social learning, and allow for a greater set of discourses to be considered. All of these approaches would fit the mission of the USGBC, and will allow the USGBC to be critical of its own power and its singular approach to green building. While the competing dialogues will not necessarily mesh with the USGBC concept for green building, it may reduce some of the fragmentation in the field and lead to wider ranging results.

Conclusion

By describing the design process for the Adam Joseph Lewis Center at Oberlin College and the Chartwell School, this paper outlined how the use of the U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Rating System can promote a collaborative planning process. This new form of practice has emerged as an institution that recognizes the interdependence of design decisions and promotes an authentic dialogue necessary to achieve successful green buildings. With the introduction of new standard contracts by the American Institute of Architects (AIA) and the emergence of new technologies such as Building Information Modeling (BIM), a shift in practice has occurred, and most designers recognize that they cannot produce the necessary results when they work alone.

But the LEED rating system has serious limitations, and when it is used as a building code, it loses the ability to promote collaborative practice because critics often reframe it in a negative light. To continue their goal of market transformation, this paper argues that the USGBC should recognize the punctuated equilibrium nature of the building code process and begin to engage local policymakers in an incremental, collaborative process to encourage green building in the United States. This process will mirror the collaborative nature of LEED but will require recognition by the USGBC of its own power and the competing dialogues that may not mesh with their concept for green building.

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