

## The social construction of 'green building' codes

Competing models by industry, government and NGOs

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In 1992 the city of Austin, Texas, was the first in the country to create a residential green building programme and by the end of the century about 26 similar ones emerged in 16 different states. Moore and Engstrom argue two related points. The first is that 'green building' reflects the latent fusion of two powerful late-nineteenth-century ideas, preservation of the natural environment and protection of the public health. These two concepts were so ideologically opposed at the turn of the twentieth century that it took a full century of changing conditions to reconcile the opposing assumptions that motivated their respective supporters. Second, the authors hold that, once reconciled under the broad umbrella of 'sustainable development', green building programmes foreshadow North American building codes of the twenty-first century. Some US green building 'programmes' are departments within municipal governments, others are the products of homebuilder associations, and at least two are non-profit non-governmental organisations. Taken collectively, these 'programmes' reflect a changing cultural horizon with regard to public health and the built environment. Taken individually, however, they reflect contradictory social values that vie to redefine how a private house embodies a public 'good'. The authors' project is not to predict how these conflicting social values will become resolved, but to better understand the social construction of green building programmes as antecedents of twenty-first-century cultural values that will ultimately become realised as standardised building codes. Green building as good building

Building codes in the United States derive principally from English precedents. Their adoption can be understood as acceptance by mid-nineteenth-century Americans of those utilitarian values which made it possible to restrict some individual freedoms, like shoddy building practices, in favour of general health, safety and welfare. The political will to pass such legislation was, no doubt, strongly influenced by a series of devastating fires that damaged or destroyed eleven nineteenth-century American cities and the chronic outbreaks of typhus, yellow fever and smallpox that plagued many other cities (AIA 1990:9). These crises were inevitably followed by legislation and the founding of institutions intent on eliminating those building practices that would most obviously contribute to repeat fires and epidemics. Historians generally refer to this phenomenon as the era of 'sanitary reform' or the 'public health movement'.

If we accept this dialectical relation of crisis and reform it is tempting to interpret the appearance of 'green building programmes' in the US, not as a new phenomenon, but as a continuation of two nineteenth-century social movements: the public health movement and the environmental movement. The environmental crises experienced by contemporary city dwellers are, after all, not different in kind from those experienced by nineteenth-century urban dwellers. Poor air quality, fouled water and general environmental degradation are the unintended consequences of industrial development that are shared by both periods. It does not really matter if the sources of pollution have shifted from smokestacks to tailpipes – the threat is the same. What is different in our current situation is that the dramatic fires and epidemics of the nineteenth century have been replaced by more subtle and pervasive effects that derive from long-term industrial development. Energy scarcity, water scarcity, climate change and chemical sensitivity are environmental conditions that even the economically comfortable can no longer avoid by moving further out of town. It is now solidly middle-class citizens, not only the industrial proletariat, who experience the crisis of environmental degradation and seek environmental security from government, industry or third-party experts. The risks associated with environmental degradation have, then, been somewhat democratised. And with the democratisation of risk has come economic and political controversy (Beck 1992:191–9).

The production of environmental programmes and building codes is, of course, not entirely a matter of science. Rather, it is a highly social and contentious process in which some interests are suppressed and others are reinforced. The presence of competing interests is reflected in the confusing array of codes and green building standards that have emerged in response to contemporary environmental conditions. Commercial construction certification schemes like LEED (Leadership in Energy and Environmental Design), BEES (Building for Economic and Environmental Sustainability) and BREEAM (Building Research Establishment Environmental

Assessment Method) are just a few examples. Such conflicting standards tend to frame problems and propose solutions in ways that define opposing 'goods'. All manufacturing standards are, in this view, socially constructed agreements that favour a particular set of actors because they contain the interests of the standard-makers (Latour 1987:201).<sup>1</sup>

Beginning with the sociologist Max Weber (1864–1920), many have argued that the history of modernisation has been synonymous with standardisation (Weber 1958:181–2; Feenberg 1995:4). Weber understood that the institutions of modern commerce are better able to optimise exchange value by imposing a single structure on diverse populations and spaces. This logic suggests that those outside an emergent technological network run the risk of being excluded from certain exchanges. If your locomotive is of the wrong gauge, your motor of the wrong voltage or your software of the wrong operating system, you are excluded. The mechanisms of commerce, then, favour dominance by a single technological standard. It does not really matter what that standard is – DOS versus MAC, for example – so long as it is commensurable with the endless array of local conditions. If we apply the logic of modernisation to the home-building industry, it suggests that the emergence of multiple green building programmes and model environmental codes are competing attempts to standardise the many variables of 'good' building to include 'green' building practices.

On this basis, we hypothesise that standards designed by industry, government, and non-governmental organisation (NGO) environmentalists will differ. This hypothesis is based on the assumptions that these organisational types generally represent opposing political interests and that with authorship of a building code comes the power to regulate the social and technical constitution of the artefact. We also assume that, in practice, standardised codes represent, to one degree or another, the negotiated interests of industry, government and environmentalists. Building codes can, then, be understood as the temporary resolution of social conflicts that are, in turn, materialised as buildings. The establishment of codes, by any means, pushes the building industry down a particular technological path. Green building codes will, for example, push us away from paints that rely on volatile organic compounds to those that do not and from harvesting old-growth timber towards substitute technologies such as engineered wood products. In these and other similar cases some technological networks will benefit and others will necessarily suffer.

Green building programmes intend to challenge existing building codes and seek to redefine the agreements that shaped them on the grounds of the general welfare. According to this utilitarian logic, private dwellings contribute to or detract from several kinds of public resources or public goods. With regard to the construction of private houses, two types of damage to public resources can be assessed by environmental accountants. The first are those negative environmental impacts that derive from gathering building materials and energy from distant locales. Water pollution caused by timber 'clear-cutting' or strip mining is an example of this type, where costs are borne by downstream citizens reliant on access to clean water. The second is the public cost to maintain the health and welfare of those citizens who build badly, either out of ignorance or malice. An example of this type is personal injury and property damage derived from building on a flood plain, where costs are borne by taxpayers. In the eyes of utilitarians, the loss of either type of public good trumps private property rights because such ruinous acts increase the public cost to maintain the 'civic economy'. If we agree, then, that the general welfare is promoted by green building we have also agreed in principle that green building is a necessary if insufficient condition for good building.

The balance of this chapter is in four sections. The first section establishes the early linkage between building codes and the public health movement and the delayed linkage of building codes to the environmental movement. The second section examines how changing technological standards both reflect and attempt to resolve cultural conflict. To make these arguments concrete, we will, in the third section, empirically examine three cases that demonstrate how government, industry and environmentalists infuse technological standards with opposing values. Finally, our conclusion will argue that through a process of crisis, reform, codification and standardisation today's green building programmes foreshadow the social construction of twenty-first-century building codes.

## **Building codes, public health, environmental preservation**

In this section we argue that the long-term development of building codes related to human health is rooted in nineteenth-century utilitarian thought and becomes fused with the environmental preservation movement at the beginning of the twenty-first century.

The codification of building standards, as all architecture students learn early in their careers, begins with Article 229 of the Code of King Hammurabi (Mesopotamia 1780 BCE) (Sanderson 1969:5). The Greeks and Romans certainly contributed to the establishment of construction standards, but it wasn't until 1189 in England that a building act representing municipal legislative power was developed. Five hundred years later, in 1676, a document resembling a modern building code was created through an Act of Parliament to regulate the rebuilding of London after the devastating fire of 1666 (AIA 1990:8). These pre-modern codes were, in emphasis, fire-prevention ordinances. The emergence of the industrial revolution and rapid urbanisation in the nineteenth century, however, created new conditions that catalysed the codification of building standards.

The idea that there is a collective or 'public' health, and that it is linked to environmental conditions, emerged in mid-nineteenth-century England as 'the sanitary idea'. Most historians attribute the first or most prominent articulation of this idea to Edwin Chadwick, son of James. The elder Chadwick was a devotee of the revolutionary Tom Paine and had sufficient status among radical thinkers of his day to gain his son a position as the personal secretary to Jeremy Bentham, a progenitor of utilitarianism. It was Bentham who argued for the 'greatest happiness principle', that 'the end of life, ethically speaking is "the greatest good for the greatest number"' (Reese 1980:53). Although the younger Chadwick was profoundly influenced by the utilitarians in philosophical matters, he is remembered, not as a thinker, but as a civil servant and man of action. At the behest of Parliament, he published in 1842 his *Report on the Sanitary Condition of the Labouring Population of Great Britain*, which proved to be as historically influential as it was then controversial. Chadwick's report was considered radical because, first, it relied on rigorously gathered empirical data rather than deductive logic, and second, it employed such methods to reject the commonly held idea that disease was the fatalistic imposition of God's will. With equal temerity, Chadwick challenged the received wisdom that held poverty to be the main cause of ill health. Chadwick argued the reverse, that 'the attack of fever precedes the destitution, not the destitution the disease' (Chadwick 1965:210). For Chadwick and his fellow 'sanitarians', disease was not an outward sign of moral depravity, but the misfortune of those subjected to degraded environments. In the eyes of historian William Luckin, Chadwick was a 'proto-environmentalist' because he identified an environmental cause of disease before there was any scientific understanding of pathogenic organisms (Melosi 2000:46). It was not until some 20 years after the publication of Chadwick's report that 'germ theory', based on the work of Pasteur and others, would begin to supplant the then dominant 'miasma' theory of disease.

Chadwick's medical logic might have remained simply prescient were it not for the political implications of the sanitary idea. Beginning with the utilitarian formula of 'the greatest good for the greatest number', he reasoned that true 'civic economy' required 'preventative measures in raising the standard of health and the chances of life' (Chadwick 1965:246). It was a short mental step from advocating the economic value of public health to advocating the creation of a general building code backed up by a strong central government capable of enforcing such standards (Chadwick 1965:339–47). The utilitarians were, then, precursors of the modern welfare state.

In recent years utilitarianism has been much criticised for its easy disregard for the civil rights of minorities. Bentham, Chadwick and their followers constructed an attitude towards social order that we now regard as highly authoritarian and technocratic. They were not predisposed to trust in the ability of common citizens to make sensible choices concerning much of anything. Rather, their idea of 'civic economy' relied on an educated elite to manage efficiently the interests of society, which they conceived to be essentially economic in nature.

Such an efficiently managed or sanitised society was the nightmare of Michel Foucault (1975). In Foucault's view, the institutions of public health constructed by nineteenth-century utilitarians were little more than the illegitimate mechanisms of the modern bureaucratic state through which social deviancy might be eradicated. The ethical dilemma posed by the doctrines of public health, then, is characterised by a confrontation between two seemingly rational desires. First is the desire of those who, like Chadwick, wish to minimise the waste of

resources associated with environmental degradation. Second are those who, like Foucault, see the management of private, existential risks by the state as a totalitarian scheme intent upon the production of a monoculture constituted of happy and productive workers.<sup>2</sup> For the purposes of this discussion it will suffice to say that the social construction of 'the sanitary idea' was not without repressive tendencies (Moore: unpublished manuscript 2004).

We should take care, however, to understand Chadwick's proposals as a response, at least in part, to the social and economic chaos fostered by the industrial revolution and to the extreme laissez-faire political climate of the time. In this historical context the proposals by Bentham, Mill and Chadwick to limit the rights of landlords and industrialists on behalf of working citizens seem only reasonable, because we have benefited so much from them. The British Public Health Act of 1848 was the culmination of Chadwick's activism and is considered so significant because it marked a conceptual shift in how we understand the role of government. The sanitary idea that informed this legislation required, for the first time in history, that government act proactively to protect the health of the citizenry. And, like the industrial revolution that preceded it, the sanitary idea crossed the Atlantic about 1880 (Melosi 2000:48).

The utilitarian rationale to guard public health fell into very different political circumstances in North America. Here, citizens found no reason to organise strong municipal governments until they were faced with the capital-intensive need to construct the infrastructure demanded by rapid industrialisation and by the demonstrated need for fire protection (Melosi 2000:35). 'In the United States, New York ... was the first to enact laws governing the erection and alteration of buildings' (Fryer 1891:69). The New York Building Law was developed collaboratively in 1860 by the New York City Fire Department, the American Institute of Architects (AIA) and the Mechanics and Tradesmen's Society. But, as in England, such chaotic conditions stimulated the emergence of a new class of visionary technocrats pressed from the same utilitarian mould as Chadwick. Colonel George Waring, who at one time was manager of Frederick Law Olmstead's Staten Island Farm, became a major, if not the first, proponent of public health legislation and public works. First in Memphis, and later as Street Cleaning Commissioner of New York City in 1895, Waring articulated a progressive, if paternalistic doctrine that guided the American public health movement for nearly a century (Melosi 2000:157). We can characterise the movement as a hybrid of medical science and engineering pragmatism focused on the economic benefits of human health. By the turn of the twentieth century some observers argued that, through the leadership of Waring and others, the codification of health-related building standards in the United States had already exceeded English precedents (Cubitt 1906:180).

New York, of course, was not an isolated case. Other major cities, including Chicago, Seattle and Boston, developed health-related building codes that sought to protect citizens, particularly in public buildings. However, as early as 1891, observers understood that a 'building law can advance no faster than the prejudices of interested persons will allow' (Fryer 1891:82). When considering the large number of persons economically interested in how design and construction are regulated, it should come as no surprise that demands to standardise building codes rose simultaneously with the adoption of health-related building codes by American cities.

By 1908, not only were building codes deemed essential for large cities, but efforts were organised to implement standardised building codes for smaller villages and towns, too (Fitzpatrick 1908:54). As building codes spread out in space there was increasing recognition that older codes, like those of New York City, needed to be modernised. In 1921 D. K. Boyd argued that 'these codes fail to take into consideration the advances made in the scientific and efficient use of structural materials' and did not adequately address issues of quality, safety and public health (Boyd 1921:77). By the mid-twentieth century the often confusing jurisdiction of health-related building codes had become a complex network of competing interests in which what was permitted was as significant as what was not. The lack of standardisation made it increasingly difficult to apply the same products and design solutions in different locales.

In the eyes of contemporary environmental activists, however, the American public health movement was slow to relate its own agenda to that of nature preservation. In North America the concept of environmental preservation is almost as long-standing as that of the public health. It was actively promoted by the administration of Teddy Roosevelt (1901-9) and was famously, if differently, advocated by John Muir (1838-

1914) and Gifford Pinchot (1865–1946). Michael McCally, a professor at Oregon Health Sciences University, holds that nearly 100 years after the Roosevelt administration, at the time of the United Nations Conference on Environment and Development (UNCED) at Rio de Janeiro (1992), ‘the [human] health dimensions of environmental degradation had been neglected’ (McCally 2002:3). Public health officials, like most other Americans, have historically understood environmentalism as limited to nature preservation – an ecocentric doctrine, not directly related to the anthropocentric origins of the human public health movement. It took events like the 1962 publication of Rachel Carson’s *Silent Spring*, the 1969 burning of the Cuyahoga River in Cleveland or the 1977 Love Canal industrial pollution disaster near Niagara Falls to challenge that perception. It is important to recall that the very term ‘sustainable development’, which explicitly relates human well-being to environmental preservation, was not coined until 1980.<sup>3</sup> In this context, the historical distance between American institutions focused on human health and those focused on environmental health is less surprising.

A purely political lens might also serve to explain how, in spite of utilitarian doctrines, the public health and environmental movements remained estranged for so long. Put simply, their ideological roots were allergic to one another. Where the concept of public health emerged from the left wing, the concept of nature preservation emerged on the right. Those utilitarians and socialists who advocated the sanitary idea simply could not imagine common cause with those social elites who advocated nature preservation, and vice versa (Brulle 2000:133–72). From this dialectical perspective, fusion between these social movements would remain impossible until their ideological allergy was overcome by middle-class concerns that linked the health of humans to general environmental degradation.

Robert Rubin’s book *Critical Condition: America’s Health in Jeopardy* (1988) can be credited with renewing the conceptual link between environmental and public health conceptualised by Chadwick 146 years before. Although environmental philosophers, Murray Bookchin in particular, made this association much earlier (1962), followed by Barry Commoner (1971), the point here is that the connection between public health and environmental preservation had to be re-established by those within the public health movement, not by philosophers of environmental ethics. By the date of Michael McCally’s book *Life Support*, published 14 years after Rubin’s – on the eve of the UNCED-sponsored Johannesburg Summit in 2002 – McCally was able to document the existence of ‘an international environmental health movement’ (McCally 2002: viii).<sup>4</sup> On the basis of work by McCally and others we can argue that, although rigidly ecocentric environmentalists may reject human health as a dimension of ‘sustainability’, the public health movement and the environmental movement have belatedly, but irrevocably, become fused (Frumkin 2002:201–17).<sup>5</sup>

In sum, we can construct two related arguments that derive from the same utilitarian logic that informed Chadwick and contemporary public health advocates nearly 150 years apart. First is the proposition that health-related building codes initially appeared in response to local crises related to rapid industrialisation and urbanisation. This phenomenon occurred simultaneously in scattered locations affected by similar structural conditions of political economy. However, such local reactions were problematic for those whose interests extended across municipal boundaries. Second is the proposition that standardisation tends to follow codification. Not only do competing codes tend to reduce the exchange value of local goods and services, but cities that wish to be proactive in protecting the public or environmental health tend to appropriate and adapt the situated codes of others. Standardisation is the process by which exchange value is seemingly optimised and threats to public health are seemingly minimised. Utilitarian logic, then, tends toward the standardisation of codes intent upon securing the health of a majority of humans and non-humans alike. It was, however, just this kind of standardisation that so concerned Max Weber in 1905.

### **Conflicting constructions of ‘the good’**

By arguing that the concept of sustainable development can be understood as the fusion of the public health and environmental preservation movements, we do not mean to suggest that there is a single logic or set of ideas associated with the concept. Rather, we will argue two points in this section. First, that ‘sustainability’ has become an umbrella for a number of competing social values, and second, that contrary to an idealised model of sustainability in which competing values become balanced, it is far more likely that one set of values, or standards, will come to dominate the field.

In their exhaustive review of the literature concerning contemporary sustainable architecture, Simon Guy and Graham Farmer found not one but six coherent systems of social value (Guy and Farmer 2001). Employing the research methods and assumptions of social constructivists, Guy and Farmer were able to reconstruct the social values, or 'logics', employed in the production of works of architecture. The reconstructed values found in their study are exemplified by projects as diverse as Foster and Partners' technologically driven Commerzbank project in Frankfurt (Fig. 4.1) and Mike Reynolds' off-the-grid, romantic fantasies in rural New Mexico (Fig 4.2). Each of these projects makes explicit claim to being 'sustainable', yet few projects could be culturally, visually or technologically so dissimilar. Guy and Farmer did not challenge the validity of any claim to being an exemplar of sustainable architecture, but simply concluded 'that implicit within alternative technological strategies are distinct philosophies of environmental place making' (ibid.: 146).

Guy and Farmer's findings suggest that technological choices are prefigured by differing conceptions of economic, political and cultural realities. From these differing perspectives, both the problem of unsustainability and the transformation of those conditions are imagined, with sometimes conflicting values. Those values refer, in turn, to different power and authority structures. For example, the Commerzbank tower embodies the anthropocentric values of energy and corporate efficiency achieved through high technology. In contrast, the house by Reynolds embodies the ecocentric values of minimal environmental impact achieved through low technology. Our selection of a particular technological vocabulary, then, acts to legitimate and lend authority to all that comes with it. As Langdon Winner argues, 'we do not use technologies so much as live them' (Winner 1977:202). As these two cases suggest, the big umbrella of sustainability can shelter very different ways of living.



*4.1 Commerzbank Frankfurt, Foster & Partners Architects. This highly urban and technologically sophisticated project is commonly associated with the concept of sustainable architecture.*



4.2 New Mexico Earthship, Mike Reynolds, Earthship Biotope. This rural and very low-tech project is also commonly associated with the concept of sustainable architecture.

The planner Scott Campbell has developed a particularly elegant model of sustainable development, illustrated in somewhat modified form in [Figure 4.3](#). This model conceptualises sustainability as constituted of three competing variables: economic development, environmental protection and social equity. Equally important in Campbell's construction is the presence of three social conflicts (Campbell 1996:468). The heart of Campbell's proposal is that these conflicts, seemingly inevitable in a society as diverse as our own, might be mediated or balanced through democratic discourse managed by a skilled planner. The responsibility of planners, in Campbell's view, is to mediate technological choices that come to rest at the triangle's geometric centre. In this sense Campbell's model is an idealised one because the resolution of conflicting social values requires the presence of what Sandra Harding has called a 'valuable



4.3 The 'planner's triangle', derived from Campbell (1996:468).

stranger' (Harding 1991:124). Unfortunately, when valuable strangers are in short supply, the resolution of social conflict tends to drift to the corner of the triangle inhabited by the most powerful players. In Weber's terms, then, creative public conflict and alternative technological choices tend to be suppressed by the process of standardisation promoted by market forces and the state, which consistently favour the interest of economic development over those of environmental protection or social equity.

Another critique of Campbell's triangulated model is that it represents sustainability as a static or balanced condition existing only at the centre of the triangle. The advocates of complexity theory argue, in opposition, that systems capable of sustaining themselves are always in motion – no system ever comes to rest except at the moment before death. In their view, a state of equilibrium is a moment of exhaustion, not a moment of ideal community life (McDaniel 2001:22). If complex adaptive systems are ever-emergent we should consider the standards and codes that govern technological networks to be temporary agreements about how we will live together, not immutable laws. Donna Haraway has famously argued that all knowledge claims are 'power moves, not moves toward truth' (Haraway 1995:176). Arguing that one knows how to build better or more healthfully is, then, only a way to redistribute power relations within the triangle of competing interests constructed by Campbell. Selecting a particular building logic is akin to selecting a particular conceptualisation of the world.

### **Industry, municipal and NGO perspectives**

In this section we examine empirical evidence, in which competing conceptualisations of the world are inscribed. Specifically, we examined the publications of fourteen US residential 'green building programmes'. Where necessary, this textual data has been supplemented by interviews with representatives of those organisations. Our method has been, first, to categorise the implicit values contained in the various green building programme criteria, and second, to select one of the programmes in each category for further study. Third, we have attempted to articulate the values that inform each logic in simplified tabular form. The table that summarises our findings helps us, in the conclusion of this chapter, to test the hypothesis stated at the outset.

Each of the fourteen green building programmes we examined is operationalised by a rating tool, or checklist, in which the technical characteristics of the houses in question are quantitatively measured against established energy and environmental standards. This is a seemingly objective process. It is, however, our contention that although these rating tools are perceived as scientific definitions of 'green building', they represent highly selective and contextual values. By proposing definitions of 'green', these programmes act to condition our understanding of the public good embodied in private homes. It is important, then, to reconstruct the values that inform various green building standards if we are to critically evaluate them while they are still in a formative state.

One way of slicing the data is by recognising the organisational type of the fourteen sponsoring institutions. We found three: government, industry and NGOs. In the opening section of this chapter, we hypothesised that these three perspectives exemplify the competing viewpoints of stakeholders interested in the green building debate as well as the public health and environmental movements in general. To test this hypothesis we selected one case of each organisational type for further investigation: Austin, Texas, as a specific case of green building defined by government; the Built Green Colorado programme as a case defined by industry; and the Florida Green Home

Standard as a case defined by an NGO. The Austin, Colorado and Florida programmes were chosen for the high quality of available data and to provide for geographic and cultural diversity. The selected cases also represent the oldest (Austin) and one of the newest (Florida) of US green building programmes. The table provides an overview of these three green building programmes as well as eleven others that employ rating tools to assess new single-family homes.

Table 4.1 The competing logics of green building in the United States

	<i>Type of logic</i>			
	<i>Restrictive</i>	<i>Strategic</i>	<i>Adaptive</i>	<i>Expansive</i>
<i>Modes of qualification</i>	Membership, education, documentation	Inspection, submission, scoring	Regulation, review, rating	Verification, assessment, confirmation
<i>Modes of certification</i>	Review, testing	Checklist	Checklist	Checklist, programme inspection
<i>Definition of 'green' building</i>	Efficient use of resources	The rational trade-off of economic for ecological goods	The dynamic balancing of economic, ecological and social equity interests	The technological redescription of civilisational values
<i>Implicit worldview</i>	Positivist or post-positivist		Constructivist	Emancipatory
<i>Type and location of individual programmes:</i>				
<i>Government organisations</i>	• Frisco, Texas • Boulder		• Portland	• Austin* • Scottsdale
<i>Industry organisations</i>	• Albuquerque • Kansas City	• Atlanta • Denver* • Kitsap County • Madison	• Hawaii • King and Snohomish	• Florida*
<i>Non-governmental organisations</i>				

\* Selected case studies.

## **Austin, Texas – green building defined by government**

### **Austin Energy Green Building Program**

Austin has always listened to a different drummer. We have a style all our own, part Texas individualism, idealism from the 60s, a willingness to embrace high-tech, yet a love of things simple and common sense. Located in the heart of the state, we rest at a historical cultural crossroads. Around us are rolling hills, azure lakes and rivers, and below us is one of the country's most pristine aquifers. It was in this environment that some very forward thinking individuals created the Green Building Program, the first comprehensive program to encourage using sustainable building techniques in residential, multifamily, commercial and municipal construction.

(From the Austin Energy Green Building Program website)

Austin's market-driven, voluntary green building programme, housed in the city's municipal electric utility company, Austin Energy, is well known for being the nation's first residential green building programme and is a much copied national model. Before being known for green building, however, the city of Austin implemented a variety of municipal energy conservation programmes in the mid- to late 1980s. Over 6,000 homes were rated by one such, the Austin Energy Star Program. By the early 1990s, however, there was a growing local awareness of the negative environmental impacts of construction. In Austin, energy conservation activist Laurence Doxsey, along with Pliny Fisk III and Gail Vittori, co-directors of the Center for Maximum Potential Building Systems, developed the original concept for Austin's greenbuilding programme. The city of

Austin embraced these ideas as a natural evolution of its Energy Star Program. Since its inception in 1992, this green building programme has certified well over 3,100 homes as 'green' (Fig. 4.4)



4.4 A 'five star' rated home in Austin, Texas.

The single-family residential rating tool of Austin Energy's Green Building Program is a comprehensive, weighted checklist of items used to rate new homes on a scale from one to five stars. To receive a green building rating, the home must be built in the Austin Energy service area. The builder or architect must also be a member of the programme and have attended the requisite half-day training session. A self-certification rating application must be submitted for all homes, and additional energy tests administered by a third party are required for four and five star rated homes. The checklist is divided into six categories: energy, testing, materials, water, health and safety, and community. Under each is a series of building features, each in turn with a corresponding point value. Builders and home owners select a set of features whose cumulative point value is sufficient for the rating they desire. A one star home is required to earn a minimum of 40 points, a two starhome 60 points, a three star home 90 points, a four star home 130 points and a five star home 180 points, out of a maximum 274. In addition, there are 14 requirements as well as additional required checklist items for four and five star rated homes.

#### **Denver, Colorado – green building defined by industry**

##### **Built Green Colorado**

We're the second-oldest program in the country, and we're familiar with the pioneering Austin program. A group of progressively-minded builders, local government, and general LOHAS-types [Lifestyles of Health and Sustainability] began to launch the idea of a program, and the Denver HBA [Home Builder's Association] took on the job, in 1995, of hosting a program in one of the country's fastest-growing markets, along the Front Range of the Colorado Rockies ... [W]e're the only program funded by industry-types ('industry leaders') and are as such subject to the particular challenges working with for-profit parties in that capacity. Our main objective is to affect a shift toward sustainable building practices in as large a segment of the Colorado home-building industry as possible. We have done and continue to do this by building a marketable brand that adds value for participating builders, and by educating homebuyers of the value of an environmentally sensitive home.

(K. Slattery, Built Green Colorado, e-mail message to author, February 2003)

The Built Green Colorado programme was introduced in 1995 as a creation of the Home Builder's Association of metropolitan Denver, the Governor's Office of Energy Management and Conservation, Excel Energy and E-Star Colorado.<sup>6</sup> It is currently the nation's largest green building programme, with over 100 builder members, 45 sponsor members and 10 members of the Built Green Industry Leaders group throughout Colorado. In 2002 alone, Built Green Colorado certified approximately 4,000 homes as green, more than double the number of homes rated by the second most prolific programme in the nation (Fig. 4.5). Since its inception in 1995 more than 14,000 homes have been built green. Unlike some of the 13 similar programmes, Built Green Colorado derives its operating budget not only from the dues and fees of builder and sponsor members, but also from the substantial financial contributions of members of the industry leaders' group such as Excel Energy, Colorado Rockies Brick Council, James Hardie Building Products, Rheem Company, Boise Cascade, Trex Decking, Whirlpool Corporation, Kurowski Development Co., McStain Enterprises and US Home.



*4.5 A Built Green Colorado home constructed by Village Homes of Colorado, Inc.*

The Built Green Colorado rating tool is a comprehensive weighted checklist that rates new homes as 'Built Green'. Unlike the Austin rating tool, the Colorado programme does not currently issue tiered or graduated ratings (such as stars), although a change to a tiered system is planned in the near future to allow builders to further differentiate themselves in the marketplace. To receive a Built Green rating, builders must enrol, submit a home registration form and accumulate the required points. It is not required to select points from each category. Five per cent of all residential homes are inspected on a random basis by third party services, and many checklist items require documentation at the time of the random testing. The checklist is divided into four primary categories: energy efficiency, materials, health and safety, and resourceconservation. Each primary category consists of several related subcategories of increased specificity, such as 'envelope' in the energy efficiency category. Builders are required to choose one of three methods of meeting the energy efficiency minimum requirement and then reach a cumulative point total of 70 from anywhere in the checklist.

#### **Florida – green building defined by an NGO**

## Florida Green Home Standard

The Florida Green Building Coalition (FGBC) was conceived and founded in the belief that green building programs will be most successful if there are clear and meaningful principles on which 'green' qualification and marketing are based.

FGBC is devoting considerable effort to developing technical standards for a variety of green practices. The standards are developed to provide independent third-party verification, via FGBC, for a project's green planning and actions. As such, FGBC hopes that consumers and government agencies can rely on the FGBC symbol to assure there is no 'greenwashing'. Each of these standards requires appropriate environmental stewardship for certain activities. In this sense, green building is conceived as a process, not simply a noun.

(From the Florida Green Building Program website)

The Florida Green Building Coalition is a non-profit corporation in Florida whose expressed mission is to provide a statewide green building programme with environmental and economic benefits. Its primary means of achieving this goal is the development and implementation of certification for green building practices, the Florida Green Home Standard rating tool. Incorporated in 2001, the FGBC is a membership-based organisation governed by an eight member board of directors, elected by vote of the general membership. Membership is open to all interested individuals, non-profit organisations, government agencies and businesses willing and able to pay fees that range from \$25 for full-time students to \$475 for large businesses with 50 or more employees. The FGBC has five standing committees – education, nomination, research and technical, programme and promotion, and standards – established by the board of directors and charged with specific tasks outlined in the coalition's by-laws.



*4.6 The first home rated under the Florida Green Building Coalition's Green Home Standard.*

The Florida Green Home Standard features a comprehensive, weighted checklist with minimum point requirements for each category as well as maximum allowable points per category. The sum of the minimums is

190 points and an additional 10 points must be accumulated from anywhere on the list. If any category minimums cannot be achieved, point deficiencies may be made up by adding the deficiency to the total minimum score. Similar to the Colorado rating tool, the FGBC's does not feature a tiered or graduated rating system. To receive certification builders must complete the Florida Green Home Standard checklist, a certifying agent must verify specified measures and the FGBC must receive the required submittals for other selected measures. The FGBC standard is also geographically specific, with requirements for pools and spas as well as waterfront considerations. Similarly, it also contains a disaster mitigation category that contains required and optional items related to hurricanes, floods, wild fires and termites. Other categories include energy, water, site, health, materials and general. In 2002, only three homes were certified under the Florida Green Home Standard ([Fig. 4.6](#)).

### **Analysis of the three case studies**

Each case has been examined with regard to the modes of qualification employed, the modes of certification utilised, the definitions of green implicitly and explicitly articulated and the implicit worldview that guides each logic. By modes of qualification we refer to the processes by which builders or architects comply with the specific technical standards. Similarly, modes of certification address the concrete mechanisms used to rate a particular project. Definition of 'green' refers to the stated and implicit values contained within the modes of certification and qualification. In the final category of

analysis, implicit worldview, we refer to the four dominant paradigms of inquiry, or metaphysical traditions of science, that are generally accepted by social scientists. In this framework, positivists and post-positivists inquire so as to 'predict and control' nature; constructivists inquire so as to 'understand' or 'reconstruct' reality; and finally, critical theorists inquire so as to 'emancipate' or 'transform' history (Denzin and Lincoln 1994:112).

Using these four lenses, we then categorised each programme as consistent with one of four logics: restrictive, strategic, adaptive or expansive. Each of these logics prefigures a specific range of technological choices and seeks to associate such choices with the general public welfare on the grounds of protection to environmental and public health. The four logics are best understood as 'nested' or progressive values and can be summarised as follows ([Table 4.1](#)).

The organisations that employ restrictive logic tend to value efficiency for its own sake. This logic suggests that an unsustainable condition is a product only of inefficient industrial processes, thus a green solution will optimise both human and non-human resources and, at the same time, maximise economic growth through the use of advanced technology. This worldview relies on positivistic or post-positivistic assumptions in that it tends to characterise concerns related to social equity and environmental ethics as lying outside the realm of quantifiable knowledge. Where positivists see nature as knowable, post-positivists see it as describable within acceptable limits. In our view this logic conceptualises nature and human health through the reductive neo-classical economic models that have been thoroughly criticised elsewhere (Daly 1996). Many observers will identify this logic with 'greenwashing'.

The organisations that employ strategic logic also value efficiency, but as a means to protect the interests of both home owners and industry. The environmental problem is defined by these organisations not only in terms of inefficiency but also, more importantly, in terms of conflict between economic growth and environmental protection. This is what Andrew Feenberg refers to as the 'trade-off problem'—the perceived need to give up some economic good so as to afford either environmental protection or public health (Feenberg 2002:18, 187). A green solution for these organisations must balance the competing interests of environmental protection and economic growth through the same kind of positivistic or post-positivistic procedures as those who employ restrictive logic. Concern for social equity as a dimension of sustainable development is not emphasised. This is a more sociocultural approach that requires collaboration among stakeholders to reduce utility bills, increase comfort, lessen impact on the environment and pre-empt government regulation. The changes advocated by this logic are dependent on educating industry, government, environmentalists and the public of their common interests, which can be realised only through a politically strategic way of thinking.

The organisations that employ adaptive logic certainly value efficiency and strategic political thinking, but they are also proactive – as were nineteenth-century utilitarians – in seeking long-term solutions to social and environmental quality problems. Advocates of this logic perceive environmental problems as related not only to utility costs and human comfort, but also explicitly to public health concerns such as the off-gassing of highly processed construction materials. Adaptive logic seeks solutions that not only balance a variety of competing interests in the present, as in the strategic logic, but also continuously redefine relationships among industry, government, the public and the environment in the future. The implicit worldview of these organisations is constructivist – meaning that reality is a socially constructed agreement between individuals and groups associated with competing interests.

Finally, the organisations that employ expansive logic tend to value efficiency, strategic political thinking, adaptability and public health, but not for their own sake. For these organisations the environmental problem is understood not as a natural site in need of a technological fix, but as a social problem requiring reform. This logic requires a whole-systems approach to protecting the health and well-being of citizens and the natural environment alike. Such a project is what Feenberg refers to as ‘civilizational change’ – a discursive process through which society explicitly modifies its values through the revision of ‘technical codes’. Citizens who employ this logic give up the trade-off model in which economic goods are sacrificed on the account of environmental protection or social equity. Rather than looking for trade-offs, or rebalancing competing interests, these organisations seek two related goals. First, they seek what Feenberg refers to as ‘concretization’ – a (design) process through which buildings are integrated into the natural energy-flows of a place, as with passive ventilation, rather than attempting to overcome environmental problems by adding on appliances external to the building concept. Such add-ons are typically those that depend on fossil fuels, like air conditioning, but also might be those that depend on renewable energy, like photovoltaic solar collectors that are only stuck onto the envelope. In the latter case, the more expensive solar technologies are easily deleted during times of economic constraint (Feenberg 1999:220). Secondly, these organisations seek to fundamentally redefine the limits within which economic choices can be made. Green buildings defined expansively would not restrict otherwise desirable economic activity but would redefine the cultural values within which economic activity takes place (Feenberg 2003). This worldview is clearly emancipatory in that the purpose of creating better building science is not to predict and control nature (as is the case for positivists and post-positivists), nor only to better understand and thus balance competing reality claims (as is the case for constructivists), but to liberate humans and non-humans alike from unsustainable conditions.

From our analysis of these cases, it is apparent that competing definitions of green are being advanced by various organisations. However, as the table indicates, the logics of green building we have reconstructed do not correlate strongly to the organisational types of government, industry or NGOs as we had originally hypothesised. The industry-driven programme in Hawaii employs, for example, an adaptive logic, while the municipally driven one in Frisco, Texas, employs a restrictive logic. This finding is somewhat surprising. Like many observers, we hypothesised, on the basis of perceived self-interests, that industry-based organisations would consistently construct the most restrictive of green programmes, that environmental NGOs would consistently construct the most expansive ones, and that government would fall somewhere between.

The data contradict such an a priori bias and suggest three propositions. First, the values underlying each logic are strongly influenced by local political discourses. Second, local codes are freely appropriated by green building programmes in distant communities with differing organisational structures. And third, programmes implemented by one type of organisation – home builders in the case of Colorado – are negotiated in their formative stages with other organisational types – government – in order to gain credibility.

With such a limited sample and inconclusive data it is difficult to generalise about the social values of organisational types. Instead, a programme’s position within the table reflects the hybrid nature of green building logics in practice rather than the purity of ideological principles. This finding only enhances our ability to raise questions concerning the future of green building programmes and their influence on general building codes.

## Conclusions

In their current state of development, North American residential green building programmes should be understood as local attempts to resolve social conflicts, across organisational types, that have emerged in the residential construction industry. Were our analysis to end here, however, it would leave the reader pondering four separate and distinct definitions of green building. But, as we argued above, it is not likely that these four definitions will remain distinct for long. Rather, there are powerful incentives to standardise the definition of green building as a new social ‘good’ that is commensurable across political jurisdictions. The social construction of this definition will be highly contentious and will ultimately depend on enlisting those middle-class citizens who increasingly characterise their own health and environment as in a state of crisis and who seek security from any source that seems credible. Cities that wish to be proactive rather than reactive in satisfying public anxieties tend to adapt the codes of others towards their own unique goals and objectives.

Standardisation is, for better or worse, the process by which local conflicts are commonly resolved. Interpreting this phenomenon positively would be to argue that the standardisation of green building practices reflects a changing cultural horizon and anticipates new technical codes intent upon altering the definition of ‘good building’. To interpret this phenomenon sceptically would be to argue that standardisation tends to suppress those local discourses that constitute what Kenneth Frampton has called ‘tectonic culture’ (Frampton 1995). The question remains: who decides? The answer, in many ways, seems to be whoever acts first.

The US Green Building Council’s LEED programme is a prime example of early-market capture in the commercial construction industry – a position that foreshadows the residential construction industry. Initially organised in 1995, the Green Building Council has rapidly promoted the LEED standard to become the de facto rating tool for commercial buildings worldwide. They have achieved this through a commanding market presence, the creation of a value-added saleable product and impeccable timing that beat similar efforts out of the gate. LEED has succeeded so widely in the commercial sector because its authors have standardised the less comprehensive and sometimes less relevant codes constructed by local discourses in places like Austin, Colorado and Florida, among others, and made their LEED Green Building Rating System™ valuable to stakeholders. The degree to which LEED will be able to redefine ‘good building’ for the twenty-first century depends, of course, on the flexibility of its code and its ability to recruit the interests of environmentalists, public health advocates, government and the building industry.

The standardisation of green building practices will surely occur in the routine context of modernisation foreseen by Weber. However, too many interests are at stake to anticipate which logic – restrictive, strategic, adaptive or expansive – will be reinforced and which will be suppressed. The very proliferation of green building programmes, however, is a strong indicator that we are rapidly approaching the moment in history when green building will no longer be considered an add-on to basic values like durability, economy and style that are already demanded by citizens. Rather, protecting public health, as an indivisible element of ecosystem health, will be understood as a basic condition of civilisation from which retreat will seem no more possible than a return to slavery, child labour or unregulated construction. What remains unclear is whether the process of defining green building will be directed by market forces, special interest groups or local democratic discourse.

## Notes

1 This phenomenon is what Bruno Latour refers to as a ‘technological network’. He means by this term, not only networks of human interests, but the non-human resources tied to those human relations.

2 The same dilemma continues to be articulated between contemporary authors such as Ulrich Beck (1992) and Peter Marsh (2000). Beck argues that it is unjust that those who control the means of production generally escape the health risks associated with environmental pollution while those of modest means suffer such risks disproportionately. In contrast, Marsh, who describes himself as a left-wing libertarian, objects to ‘the level of concern (some might say “obsession”) with dietary, health and lifestyle correctness that characterises contemporary Western societies, and the UK and the United States in particular. This pursuit of novel, narrow concepts of so-called “health” and “fitness” has led us to create new outcasts – those who fail to conform to the

increasing catalogue of prescriptions for what is “best for us” – those who, contrary to the advice of self-appointed arbiters of modern rectitude, persist with “bad habits”.’

3 The term ‘sustainability’ was first used in its current environmental, economic and social context in *World Conservation Strategy*, a 1980 publication by the International Union for the Conservation of Nature and Natural Resources (IUCN 1980). That document defined ‘sustainable development’ as ‘those paths of social, economic, and political progress that meet the needs of the present without compromising the ability of future generations to meet their own needs’. In the first decades of the twentieth century Gifford Pinchot used the term in the context of sustained-yield forestry. However, he did not yet anticipate the concerns of social equity that the term now incorporates.

4 The University of Texas School of Nursing and Student Community Center (2003) is a concrete example of how public health educators and officials had, by the turn of the twenty-first century, become advocates and patrons of sustainable architecture.

5 Further support for this logic was found in a routine keyword search at the Environmental Policy Index database, EBSCO (<http://search.epnet.com.content.lib.utexas.edu:2048/>), which reported 551 links to articles related to ‘public health’ and ‘sustainable development’. A web search of *Rachel’s News* ([www.rachel.org/bulletin/index.cfm?St=4](http://www.rachel.org/bulletin/index.cfm?St=4)) provided a link to 764 articles that relate ‘environmental protection’ to ‘human health’.

6 E-Star is a Colorado non-profit making organisation working to advance energy efficiency in housing.