



Working Paper Proceedings

Engineering Project Organization Conference

Cle Elum, Washington, USA

June 28-30, 2016

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THE EMERGENCE OF MULTIPLE BUILDING ENVIRONMENTAL ASSESSMENT METHODS (BEAMS) FOR GREEN BUILDING: A SPOTLIGHT ON THE DYNAMIC INTERACTIONS BETWEEN INDUSTRY STAKEHOLDERS

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ABSTRACT

Following the emergence of the concepts “Green Building”/ “Sustainable Construction” in the early 1990s, much attention has been paid to developing Building Environmental Assessment Methods (BEAMs) to promulgate sustainable practices in the building industry. While BEAMs have emerged to operationalize the green building concept, the varied and sometimes conflicting interests of industry actors make their development and establishment anything but a trivial undertaking. Stakeholders may have conflicting views and interests over how best to operationalize the concept green building. However, little is known about how different BEAMs have been created, which actors participated and influenced the contents, and how their varied interests have influenced the establishment of BEAMs as green building standards. This paper sets out to provide a theoretical explanation of how the actions of industry actors have led to the emergence of a wide array of competing BEAMs in the same market. The point of departure is that the support received from actors (economic, social, political etc.), and the personal interests and biases of interested parties influence the development and establishment of BEAMs. Drawing on the theory of Strategic Action Fields proposed by Fligstein and McAdam, we explain the emergence of multiple schemes through an exposition of the dynamic interactions between the industry stakeholders that were involved in their development. Focusing on the power struggles between various interested parties vis-à-vis the delivery of green buildings, we show how actors have jostled for position and engaged in various strategic actions to advance their interest and promote BEAMs that resonate with their core ideologies. We argue that the strategies employed by multiple actors with varied interests and resources have not only culminated in the emergence of multiple BEAMs, but also a struggle for market dominance.

KEYWORDS: Building Environmental Assessment Methods (BEAMs), green building, field theory, Strategic Action Fields

INTRODUCTION

The importance of the built environment for sustainability is widely acknowledged by policy-makers and built environment stakeholders (Schweber, 2013). The rise of concepts such as ‘green building,’ ‘sustainable construction,’ ‘sustainable building,’ and various other neologisms encapsulates industry actors’ way of making sense of, and conceptualizing, the overarching concept of ‘sustainable development.’ Of all the various buzzwords, ‘green building’ has gained wide popularity, rising as a label for buildings which are deemed environmentally friendly, as well as associated practices. In most countries, initial attempts to aid

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the transition to sustainability focused on developing comprehensive methods of communicating green building features among industry professionals. These methods were designed to categorize the vast range of environmental criteria, and to assign appropriate indicators and weightages to aid the achievement of national sustainability goals. The emergence of Building Environmental Assessment Methods (BEAMs) in the early 1990s is one such attempt to provide a common means of communicating the vast range of environment criteria between industry stakeholders (Dammann and Elle, 2006).

Initially, the main objective for establishing BEAMs was to guide the delivery of green buildings (see Ding, 2008). Nowadays, BEAMs have become ubiquitous and are increasingly being used as policy instruments by national governments (Schweber, 2013). In Hong Kong, for example, four such assessment and certification schemes have emerged in the building industry – three domestic schemes, namely: the Hong Kong Building Environmental Assessment Method (HK-BEAM), the Comprehensive Environmental Performance Assessment Scheme (CEPAS), and a specialized Indoor Air Quality (IAQ) Certification Scheme; and one imported scheme, i.e. the Leadership in Energy and Environmental Design (US-LEED). The US-LEED also co-exists with the Green Globes and other specialized assessment schemes in the US Building industry. In the UK, BREEAM is generally recognized as the national standard (Schweber, 2013), and the Green Mark Scheme has since 2008 been used as a standard for development approval for building projects in Singapore (BCA, 2016).

Indeed, many countries now either have, or are in the process of developing, their own local assessment method (Cole and Valdebenito, 2013). Yet, while these methods are increasingly being upheld as standards for green building, with a view that they could possibly provide a common language to guide the delivery of green buildings (Dammann and Elle, 2006), the series of events leading to their development and establishment has received very little attention in academic research. Extant literature on BEAMs has paid little attention to the historical context from which they have emerged, and how the institutional context in which they are embedded has evolved over time. Specifically, there is a dearth of research exploring how the emergence of BEAMs has played out in the building industry, and the manner in which the actions of industry actors have influenced their development. Exploring these actions from a historical perspective provide a window into several themes in the shift towards sustainability in the building industry, illustrating the initial response to calls for environmentally friendly buildings, the subsequent struggle to categorize environmental criteria, and the later movement towards instituting green building practices.

Following on from the above, we set out to provide a perspective on the emergence of BEAMs, and how the actions of stakeholders with vested interest in green building have culminated in a wide array of methods coexisting in the same market. Our point of departure is that the support assessment methods receive from individuals and interest groups (economic, social, political etc.), and the personal interests of industry professionals, influence their development and establishment as green building standards. We use the theoretical lens of strategic action fields (Fligstein and McAdam, 2012) to explain the coalescence of different groups of stakeholders around different assessment methods. This lens allows for explanations of how actors with varied resource and influence have succeeded in promoting methods that possibly advance their interest. The discussion rests on the assumption that actors are motivated by the desire to maximize their influence over the development and establishment of assessment methods. They do this by acting strategically to mobilize other actors to support a conceptualization of green building that serves their interest - i.e. promoting practices that

resonate with their professional ideologies, or that serve to give them a competitive advantage in the industry.

The paper is conceptual in nature and draws on recent trends and observations from research work in various geographical contexts to provide a narrative reconstruction of the emergence of BEAMs. While we draw on research by other scholars, the particular synthesis of the argument that characterizes the paper is aimed at providing a new perspective on how to view the emergence and establishment of BEAMs. The paper is, thus, not just a narrative of the emergence of BEAMs, but a theoretical exposition of an analytical nature; moving beyond providing an account of the emergence of BEAMs to presenting a particular interpretation of current observations in the building industry. Hence, the narrative is not so much about what has happened since the emergence of the first BEAM in the early 1990s, but rather how these schemes have emerged. The paper begins with a brief account of the theory of ‘strategic action fields’ (Fligstein and McAdam, 2011, 2012), and a succinct theoretical conceptualization of BEAMs for green building. The next section is then devoted to exploring the development of BEAMs with a focus on the diversity of actors involved in operationalizing the green building concept. Particular attention is given to the challenge of achieving a consensus among the diverse interested parties, and the improbability of designing a single assessment method that could represent the interest of all actors. Next, we explore the role of industry stakeholders, and efforts made by some actors to mobilize stakeholders from diverse backgrounds to develop and establish BEAMs. Through the theoretical lens of field theory, we then make a case for how power struggle among various groups of stakeholders has culminated in the emergence of multiple BEAMs in some countries. The discussion section highlights some cases of multiple schemes existing in the same markets, and the actions of actors that made this possible.

STRATEGIC ACTION FIELDS

The theory of strategic action fields as put forward by Fligstein and McAdam (2012) is a meso-level conceptualization of social interactions that views societies as composed of strategic action fields (SAFs). It provides a conceptual framework that allows for understanding how social change occurs. It situates these changes in the social arenas that shape interactions and maps out the identities and interests of the individuals and collective actors who influence this process. These social arenas are constructed on a situational basis as collections of actors (who may be individuals or groups) come to define some issues and concerns as salient. These social arenas, or fields, are interlocked in complex webs with other nascent fields; either vertically or horizontally. A vertical relationship means the exercise of formal authority of one field over another, and a horizontal relationship means no such formal authority exists, but the two fields might yet influence each other. We use the theory to make sense of the emergence of various social groups, driven by their common interest in green building to support the development and establishment of BEAMs. In so doing, we view efforts to develop and establish BEAMs to provide a common language for stakeholders as the introduction of new action frames to alleviate ‘ontological anxiety.’ These frames show actors which actions are legitimate and reflect actors’ understanding of what actions make sense, based on their intersubjective understanding of green building.

Using Bourdieu’s conception of fields, field theory argues that actors in the field knows ‘what is at stake’ (cf. Bourdieu and Wacquant 1992), and have a common understanding of what is going on in the field. However, the different actors or groups of actors in the field have their own ‘interpretive frame’, which influences their view of the world. Fields are composed of two

distinct antagonistic groups of actors, namely incumbents and challenges. Incumbents are those actors who, at any point in time, wield greater influence within the field and whose interest and views are usually reflected in how the field is organized. The purpose and dominant ideas of the field are shaped in their interest. The rules in the field tend to favor them and shared meanings tend to legitimize and support their position in the field. The challengers are those actors with less influence in the field and they occupy a lesser position. While they recognize the dominant influence of incumbents on the shared meanings of the field, and may usually conform to the prevailing order of the field, they can propose new shared meanings that will enhance their own positions.

A core tenet of field theory is that; actors are constantly jockeying for position in fields, struggling over what is at stake; and taking each other into account in framing actions. The theory conceives of actors as including individuals, groups, sub-units of organizations, organizations, firms, professions, and states. These actors use their social skills to get the cooperation of others. Social skill is the ability to fashion agreements aimed at the creation of a collective definition of interest and political coalitions. Actors use their social skill to frame lines of action, and mobilize others in support of a particular action frame or conceptualization of the field (Fligstein, 2001). In order to secure the corporation of actors, these frames or shared understandings must resonate with the various members of the groups. Both incumbents and challengers can deploy social skills to mobilize support and articulate alternative visions of the field. Once a field is already in place, skilled strategic actors working for incumbent groups will act to produce and maintain the status quo by ensuring that the collective set of meanings that define the identities and interest of actors are maintained. Meanwhile, skilled strategic actors in challenger groups will use their skills to fashion new frames in order to advance their position in the field. Contention in the field is a result of actors employing various strategic social skills to advance their own interest. They mobilize their resources and use innovative forms of collective action to garner the support of other actors.

All actors can, of course, take their grievance to the state in an attempt to garner support for their group and to stabilize rules that favour their position in the field. State actors form their own unique fields, and these state fields usually have formal authority to intervene in, set rules for, and legitimize the position of, non-state fields. Actors in non-state fields rely on actors in state fields to legitimize their position and actions. The emergence of a field, according to Fligstein and McAdam (2011), can even be due to actions from state fields. For example, as soon as a law is set in place, organizations or groups can move in to take advantage of the new opportunities the law creates for strategic action. The emergence of a field for certified green buildings can, for example, be viewed as the actions of industry stakeholders in response to governments' call for a more environmentally friendly built environment. However, the states can also intentionally or unintentionally undermine an existing field through direct and indirect actions.

Following the arguments above, the building industry is conceptualized as a social space in which a relatively large number of individuals and organizations, who may belong in different fields/jurisdictions, engage with each other. Industry actors occupy various organizational fields, with each field comprising aggregates of organizations/professionals/actors providing similar services. These fields exist together with numerous other state and non-state fields and are nested within each other in a broader field environment. Industry actors operating in various fields interact with each other on the basis of shared (but not consensual) understanding about what is at stake in the industry (in this case, green buildings). Actors relate with each other with a shared

understanding of the rules governing legitimate actions in the industry vis-à-vis green building. Through this process of engaging with each other, taking each other's actions into consideration as they produce green buildings, actors create and sustain a social world by securing the cooperation of others. They do this not only to take advantage of emerging new ideas by behaving strategically to advance their individual interests in the industry, they also consider the benefit of a collective identity, of being part of a social group – a particular green building certification/labelling field. This is what Fligstein and McAdam (2012) labelled as “the existential function of the social”; i.e. the social status and benefits that come with achieving, for example, LEED, HK-BEAM or UK-BREEM certification label.

Theoretical Conceptualization of BEAMs for the Green Building Certification Field

In the building industry, the central field where green building is at stake is the field of green building certification, where BEAMs have emerged to operationalize the green building concept by specifying which practices are sustainable and which are not. While these schemes have emerged to promulgate a particular understanding of ‘green building,’ actors with varied professional backgrounds and expertise may have different views on how best to operationalize the concept (cf. Schweber, 2014). The fluidity of the concept means that multiple interpretations will constantly be at play, competing for dominance as actors negotiate the meaning of green building. The heterogeneous nature of professional practice and expertise in the building industry means that different professional actors may hold different views about the concept green building, influenced by their respective interpretive frames (cf. Bresnen, 2013). Moreover, since professional actors are affiliated with different stakeholder groups in the industry, and will have varied interests, even actors with similar professional background may espouse different conceptualizations of green building. That is, in operationalizing the green building concept, it is axiomatic that an engineer's conceptualization of the concept will be different from an architect's; and an engineer or architect working for a property developer may espouse different views from his/her counterpart working for a consultancy firm or builder; with these views possibly influenced by the interests and biases of the respective stakeholder groups they are affiliated with.

In line with the views of Schweber (2013), this conceptualization is based on the assumption that the meaning of the concepts ‘sustainability’ and ‘green building’ is the object of ongoing negotiation. That is, as the definition of ‘sustainability’ and ‘green building’ keeps changing, triggered by changes in national and international policy initiatives, the various groups of industry actors with interests in green building will frame the new definitions based on their collective intersubjective understanding and interpretation of the concept. Due to this fluidity of the concept, green building practices codified in assessment schemes will keep on changing and the boundary of the field defined by any assessment scheme will also be in constant flux; shifting as the shared meaning of actors keeps changing.

The concept ‘green building’ can, thus, be conceptualized as a historical construct that has been evolving since its emergence and which will keep on changing as new environmental issues become salient. In consequence, the field defined by a particular assessment method can be conceptualized as an intersubjective social order that mutates as the views and conceptions of collective groups of actors espousing a particular view of the concept changes. This suggests that one should try to understand green building not as a static concept, but as a historical and cultural phenomenon that reflects the power of some actors over others. BEAMs emerging from operationalizing the green building concept should thus be viewed as the outcome of negotiated

shared meanings/understandings of green building; a product shaped by political contestation over which practices are ‘green’ and which ones are not, and influenced by how actors jostle over reification of the concept. It follows that, at every stage in the evolution of assessment methods, it is possible that the different stakeholder groups in the building industry (developers, contractors, consultants, suppliers, etc) will influence the framing of the concept green building, with different groups attempting to promulgate a particular conceptualization that resonates with their logic of operation, and which possibly advances their own interests in the industry. The development of assessment schemes can, therefore, be fraught with power struggles among industry actors; as to who wins and who loses in the debate over which standards and practices become adopted (Janda and Killip 2013).

THE EMERGENCE AND DEVELOPMENT OF BEAMS

Up until fairly recently the building industry lacked a common means of communicating sustainability measures across various stakeholder groups. Environmental issues were dealt with on an *ad-hoc* basis, with individual actors responding to particular issues as they arose (Theaker and Cole, 2001). Simple qualitative templates, or checklists, were used to communicate sustainability practices. BEAMs, therefore, emerged in the 1990s to provide a more rigorous platform to rate environmental performance; one which could at least reflect the relative importance of different environmental criteria. Nowadays, several assessment methods have been developed for various levels of assessment; from cities, neighborhoods, individual buildings, to building components, materials and appliances (cf. Ding, 2008). BEAMs provide a framework for stakeholders to coalesce around common standards to measure the environmental performance of buildings. Among various other functions, the use of BEAMs ensures the documentation of performance for rigorous independent review. Thus, serving as a powerful motivator for practitioners to undertake analysis of alternative design and building practices. By providing a structured approach to communicate performance indicators across diverse professional jurisdictions, the discussions BEAMs generate have been reported as fostering a fundamental change in the culture and collective knowledge of the industry and how practitioners engage with each other (cf. Schweber, 2014).

To foster a more integrated way of addressing sustainability issues, the development of BEAMs has sought to provide a common language to encourage stakeholder collaboration in the industry (Dammann and Elle, 2006). This necessitates the participation of, and input from, various stakeholders, as well as co-operation and co-ordination across professional and organizational boundaries (Bresnen, 2013). Considering the wide variety of environmental issues related to buildings, with some unfamiliar to most design professionals and even exoteric to most industry actors, one major question in the development of assessment methods is how environmental goals are arrived at. In other words, who decide which environmental criteria best represent industry sustainability goals? Deciding on specific environmental objectives to articulate industry sustainability goals and the indicators to achieve these environmental objectives is not an easy task. There is also the challenge of deciding on which detailed practices could best measure the various environmental indicators; and how to decide on weightage criteria for various indicators (see, Dammann and Elle, 2006). While these decisions are heavily influenced by national sustainability goals, or based on the advice of industry experts, consultations and technical teams are usually setup to engage various stakeholders in the development process for new BEAMs. For example, in Hong Kong, the BEAM steering committee, established in 1995, spearhead the development of the Hong Kong Building

Environmental Assessment Method (HK-BEAM Society, 2016). In the US, the decision to develop the US-LEED by the US-Green Building Council (USGBC) was made by a ballot of its diverse membership. The developmental process of new versions of the US-LEED is also informed by comments from members and stakeholders on various drafts. This consensus-based approach has remained a constant feature throughout LEED's evolution (Cole, 2006).

These examples show efforts by developers and owners of BEAMs to foster consensus among the multitude of stakeholders with interest in green building. These efforts to achieve consensus among myriad stakeholders, by taking into account multiple viewpoints and objectives are aimed at building broad industry-wide acceptance around a particular method of assessment. Yet, the question as to whether a single assessment method can rise to facilitate the dialogue as a common integral part of decision-making in the delivery of green buildings is heavily debatable (see for example, Dammann and Elle, 2006). Aside the fact that actors have varied interests and may want to promote standards that advance these interests, the vagueness of the green building concept means that the different stakeholders might not all agree with how the concept is operationalized. This is evidenced by the emergence of multiple complementary, and sometimes competing, assessment schemes in some countries (see, Cole, 2006).

THE EMERGENCE OF STAKEHOLDER GROUPS FOR BEAM DEVELOPMENT

Stakeholders are in general industry parlance typically described in terms of their roles: architects, engineers, developers/owners, government agencies, financial investors, builders/contractors etc. While individual stakeholder groups can be considered quite homogeneous, with participants in each group sharing common priorities and motives, the broader stakeholder environment is very heterogeneous. The different stakeholder groups and institutions have varied goals, different field activities and responsibilities, as well as different areas of influence. These actors play by different rules in the delivery of green buildings, both internally within their distinct realms of responsibilities and within the broader environment in which all actors operate.

In such an environment, if the key issue in furthering green building centres on the need for more cooperation and collaboration, the question is how to engage various stakeholders to promote a unitary set of acceptable practices (cf. Bresnen, 2013). Some researchers have called for fundamental rethinking of the approaches needed to secure the commitment and actions of key stakeholders associated with the delivery of buildings (e.g. Ürge-Vorsatz, *et al.*, 2007). With regard to the establishment of BEAMs, there is the argument that the key success factor is the personal commitment of key stakeholders and the promotion of various assessment methods and strategies within their networks. This approach assumes that if actors are all treated as equal partners in the development of schemes, a vision of potential actions and solutions based on common interests can be developed (Du Plessis and Cole, 2011). Feige, *et al.* (2011), for instance, observed that stakeholders generally support the need for a structured network and an approach which offers the possibility for active stakeholder involvement. These networks provide opportunities to have their needs and interests discussed and to overcome several uncoordinated activities and uncertainties. A strong network, according to the authors, permits the different and often conflicting points of view and interests of stakeholders to be considered while adhering to a common purpose (see also, Cole, 2011).

In expatiating the above argument, Feige, *et al.* (2011) describe the emergence of the 'Network for Sustainable Construction Switzerland', which is an organization designed to

influence business and enhance their participation in sustainable construction in that country. The aim of the initiative was to create a network with all the relevant stakeholders in the building industry, working collectively on a set of measures to foster sustainability. A similar case is reported by Theaker and Cole (2001) in their study of how private sector and public sector stakeholders came together to commission a consulting team to develop Green Building Design and Construction Guidelines for the City of Santa Monica, USA. In Hong Kong, the partnership between the Buildings Department and private sector consultants to develop the Comprehensive Environmental Performance Assessment Scheme (CEPAS), and the mobilization of various stakeholders by the Hong Kong Real Estate Developers Association to develop the Hong Kong BEAM can be viewed in the same light as those described by Feige, *et al.* (2011) and Theaker and Cole (2001). These actions are attempts to move from the *ad hoc* uncoordinated way of dealing with environmental concerns that existed in the early years of the green movement.

In Hong Kong, the above described actions of industry actors have led to the establishment of an assessment method recognized by most industry actors (HK-BEAM), as well as the establishment of the HK-BEAM Society and the Hong Kong Green Building Council to promote the adoption and implementation of green building practices. Similarly, in the US the US-GBC which owns the US-LEED and the GBI which owns the Green Globes can be viewed as initiatives by various stakeholders in the US market to coalesce around the development of particular assessment methods. The emergence of various organizations that own and operate assessment methods can, thus, be viewed as efforts by various stakeholders, both within the public and private sectors, to create and establish assessment methods that advance the interests, and reflect the ideologies, of its members. These organizations, thus, represent efforts by stakeholders to engage with each other in providing a platform for consensus building around green building issues.

However, even with the emergence of such stakeholder groups there is still the question of how to deal with the diverging interests, i.e. diverging priorities of group members with respect to categorization of the myriad environmental criteria related to buildings. Simply put, not all stakeholders have equal stakes in the built environment or equal abilities, capabilities and resources to engage. The different stakeholders in the building industry are driven by different goals. Hence, the drivers for developing, constructing, acquiring, maintaining and occupying green buildings are different for different stakeholders. Thus, although some actions will be pursued for the benefit of the collective good, one also needs to consider those pursued on the basis of self-interest. For instance, as noted by Lutzkendorf, *et al.* (2011), while more financial stakeholders may want to be involved in furthering sustainability in the building industry, this will not be due to altruistic reasons. Rather it will be in order to meet their own interests and goals. This observation might not be unique to only financial stakeholders, but could be a key driver for most stakeholders associated with the delivery of green buildings.

Arguably, attempts in some countries, e.g. US and Hong Kong, have succeeded in fostering cross-sectional, multi-stakeholder collaboration and corporation, by providing a platform shared by various groups of stakeholders. But the disparate interest of stakeholders means that, even within these emerging organizations or social groups, different views will constantly be at play. Forging a common language for actors to communicate green building practices across diverse professional fields is not an easy task, and is perhaps improbable, even in the near future (Dammann and Elle, 2006). The process can be fraught with power struggles as the different actors strive to advance their own interests. There is, therefore, the possibility for different groups to emerge, even in the same industry or market, with each group using resources

at their disposal to develop and promote assessment methods that resonate with their ideologies and that best represent their interest.

Organizational Context and the Mobilization of Support for BEAMs

The organizational context in which assessment methods reside (i.e. the makeup of the stakeholder group) depends on whether the assessment method is being championed by state actors, industry actors or both. This is critical in terms of the credibility of the assessment method for the broad range of industry and client stakeholders, and for the human and financial resources available to maintain and implement the method (Cole, 2005). These resources, especially political support from state actors, are significant in mobilizing stakeholders and ensuring widespread use of assessment methods. In the case of state-led BEAMs, adoption and use can be enforced through legislation. State-led assessment methods, such as the Singapore Green Mark Scheme, are implemented as mandatory assessment methods. In the case of Singapore, minimum certification from the method is required for development approval (BCA, 2016). The development and establishment of voluntary industry-led methods, however, faces significant challenge in terms of the organizational skills needed to mobilize actors and ensure collaboration. There is also constraint on the regulatory power as, unlike state-led methods, voluntary industry-lead methods can receive opposition from industry professionals (Schweber, 2013, 2014).

From the foregoing argument, a key issue appears to be finding a way to unite actors with diverging interests voluntarily. Notions such as improved cooperation and dialogue, partnering, inclusion, public involvement and others are usually trumpeted as critical elements in fostering integration and uniting actor towards the goal of advancing sustainability (Cole, 2011). Yet, while actors may on their own engage with each other in myriad ways, and form their own groups, such groups may end up competing with each other. Each group will be advocating for their standard set of practices to the recognized by others in the industry, or be seen as the industry or national standard. Different groups of actors promoting different standards will engage with each other in multiple ways, employing various strategies with the objective of gaining recognition by state agencies. Thus, enabling them to influence policy, develop their social networks, protect their interests and concerns, and increase their own status. Concomitant with Boström *et al.* (2011, p 8) assertion, the actions of actors to engage with other actors, and all the cooperation and collaboration with actors can be seen as “a way for actors to keep an eye on other stakeholders”; to know what others are doing, and to act strategically in their own interest. Cooperation and collaboration among actors is therefore not truly altruistic; and actors with different views about green building will deploy various strategies to mobilize other actors to uphold an alternative conceptualization of green building which favours their position.

In such an environment, the emergence of multiple assessment methods is inevitable. Various groups will emerge to develop and promote different methods. This could further trigger competition, or the different methods may serve different purposes and thus complement each other (Cole, 2006). Actors will form alliances and cooperate with some, while competing with others and deploying various strategies to coopt other actors in support of various assessment methods.

DISCUSSION

For the purpose of this paper, the green building field is conceptualized as those actors involved in the realization of certified green buildings. It is within this field that individuals and

groups of stakeholders have coalesced around the development of assessment methods to categorize and certify green building practices. The struggle in this field is about who gets to decide what ‘green building’ is, and what qualifies as a legitimate green building practice. While actors in the building industry may have a common understanding of “what is at stake” (i.e. green building), it is self-evident that involved actors may have varied views about how to address environmental issues. In such an environment, stakeholders who seek to develop a particular assessment method must employ myriad social skills to develop action frames, or schemes that resonate with other actors. These actors must possess adequate resources (financial, social, political etc.) to undertake collaborative projects aimed at mobilizing the diverse groups of actors interested in green building. For example, in the City of Santa Monica case mentioned earlier, Theaker and Cole (2001) observed the presence of industry champions who initiated the collaborative projects of mobilizing diverse stakeholders to come together to develop the green building guidelines. According to the authors, and concomitant with one of the propositions of field theory, the more influential these champions are the better their chances of being able to mobilize others. These champions should be able to communicate the benefits of such endeavor to others. They can use their social skill and influence to lobby and garner the support of state actors to establish the assessment method.

From a field theory perspective, the collective understanding of green building in a particular social group will be influenced by the most powerful actors in the group, and these actors will have greater influence in the development of assessment methods. These incumbents will have greater influence on the operationalization of the green building concept, and are more likely to support, promote and advance practices that resonate with their ideologies and that serve their interest. However, marginalized actors (challengers) in the field can use their social skill to change the underlying meaning of green building by promoting their own set of practices that advance their interest. These actors can engage in various strategic actions by, for example, making sure that they are part of the technical committees set up to develop new or amended versions of assessment methods. They can achieve this by mobilizing other actors with shared interests and understanding of green building to garner the necessary support (collective action), or they can lobby for support from state actors. Although the state can influence the actions in the field, for example through the introduction of a new environmental policy, government agencies can be lobbied to support the development of assessment methods, and they can be instrumental in mobilizing support and reassure other actors. A case example is the green building market in Hong Kong, where some marginalized actors who were not involved in the development of the first set of HK-BEAM (BEAM for New Office Designs (Version 1/96) and Existing Office Premises (Version 2/96)), partnered with the Hong Kong Buildings Department to introduce a second assessment method in the industry (The Comprehensive Environmental Performance Assessment Scheme) (CET, 1999, Cole, 2006).

It follows that, if challengers in one group fail to advance their views, and thus fail to influence the development of BEAMs, they can decide to move to a different group and support the development of practices that resonate with their core beliefs and that advance their interest. They can also decide to mobilize other actors to support the development and establishment of a new BEAM. This observation is congruent with the actions of the Wood Promotion Network and a number of other industry groups who objected to various provisions in the US-LEED, but later decided to provide support to establish the Green Globes in the US. Cole (2006) observed how owners of the US-LEED and the Green Globes position these two schemes as competitors in the US market, i.e. creating two adjacent fields. Similarly, in Hong Kong, the second assessment

method (CEPAS) was touted as offering something different, by addressing issues not considered in HK-BEAM. Actors championing the development of CEPAS, who were mainly consultancy firms, probably disagreed with how HK-BEAM, a scheme pioneered by a group of real estate developers, conceptualized green building. In this case, it is clear that actors who disagreed with how green building was framed in the existing assessment method, or who felt marginalized by their exclusion in the development of the first set of schemes, decided to introduce another assessment method. This is evidenced by how the second assessment method (i.e. CEPAS) was positioned, not just as a competing scheme, but as offering a more comprehensive method of assessment (Cole, 2006).

This kind of competition between different assessment methods also shows the relationship between incumbent groups and challenger groups. As challenger groups (i.e. groups of actors attempting to introduce a new assessment method) will try to change existing definitions of green building, the incumbents will try to resist this change, either by using their social skill and resources to maintain existing definitions, or by proposing something new that will ensure their position as incumbents. Thus, even as there will be contention within individual social groups promoting separate assessment methods, these groups will also be competing with each other in the broader field environment. For the case in Hong Kong, attempts to introduce CEPAS failed when the scheme was integrated in the existing assessment method (i.e. HK-BEAM) under the label of HK-BEAM Plus. This could be viewed as a case of ‘hostile takeover’ of one group by the other; where the challenger assessment method was coopted into the incumbent assessment method.

CONCLUDING REMARKS

Beginning with the development and use of *ad hoc* templates and guidelines and moving on to the establishment of comprehensive systems for assessing the environmental impact of buildings, the adoption of the green building concept has relied on a bevy of industry professionals, specialists, and various other interest groups; both within and outside the boundaries of the building industry. While it might be difficult to predict how BEAMs will evolve in the future, some valuable observations can be made by exploring how these methods have emerged, and how the actions of the various interested parties have influenced their development and establishment. With the multiplicity of actors involved in green building, one major issue has been how the plurality of espoused definitions of green building, and the varied interests, resources, and biases of actors, influence the development of assessment methods. We have shown that, while efforts have been made by some actors to mobilize stakeholders from diverse backgrounds to support the development of BEAMs, competition within individual collective groups and competition between various collective groups is inevitable.

With such competition among various groups of stakeholders with vested interest in green building, calls by policy makers and suggestions by some researchers for BEAMs that will provide a common unifying language for all stakeholders seems unattainable. In the future, it is possible for new assessment methods to emerge when groups of marginalized industry actors recognize an opportunity to change existing practices. These actors may want to advance their interest by trying to change the underlying meaning of green building in the industry, thereby introducing new practices in existing BEAMs, or developing an entirely new assessment method. This means that, during the development of BEAMs, or updated versions, we may expect that the multitude of actors in the building industry will each seek to advance a perspective of green building influenced by their conceptualization of the concept, and which advances their interest

in the industry. Change in the existing underlying meaning of green building will occur when actors championing an alternative conceptualization of green building are positioned to change practices codified in BEAMs. Even so, as long as existing conceptualizations of green building continues to support the interest of the most powerful actors in the industry, these powerful actors will work to maintain the status quo.

The ability of actors to influence this process will depend on their bargaining strength, and actors will mobilize several resources at their disposal to achieve a designed outcome. This conflict over how best to operationalize green building, i.e. which sustainability indicators to use, what weightage criteria to adopt, and even which sustainability objectives these indicators should address, could lead to variations in the framing of green building and the possible emergence of multiple schemes in the same market.

The adoption of field theory to shine a light on the how such multiple BEAMs have emerged in the building industries of some countries offers a great deal of conceptual clarity to the evolution of green building in the past 20 years. By focusing on stakeholders with vested interest in green building, what the basis of their power is, and the tactics they employ to enforce that power, field theory can help understand the historical process by which new conceptions of green building have emerged. It could also illuminate our understanding of how some groups of professional actors have risen to dominate the framing of green building in BEAMs, which stakeholder groups they are affiliated with, and why other industry professionals may have tweaked their professional practices to align with the views of dominant actors.

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