

THE MULTI-LEVEL PERSPECTIVE ON SUSTAINABLE BUILDING DESIGN: AN ACCOUNT ON BUILDING ENVIRONMENTAL ASSESSMENT TOOLS

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Summary

Based on the middle-range theory in the field of socio-technical transitions, the Multi-Level Perspective (MLP), the paper considers the practice of ‘sustainable’ building guided by building environment assessment tools (LEED, BREEAM or la Procedure HQE) as a niche activity under the mainstream construction regime. The MLP views transitions as a result of the interplay between three analytical levels: Niches (for radical innovations), socio-technical regimes and socio-technical landscapes. This perspective reveals how structuring effects reflect upon practices and thus how practices (re)produce structures. Where regimes tend to produce ‘normal’ innovation process pattern, niches refer to activities mostly protected from the structuring effects of regimes. In this framework, higher levels are more stable than lower ones and transitions are the shifts from one regime to another.

In Turkey, although the number of certified buildings in one of these assessment tools remains small, these tools have gained significant appeal in marketing the projects. Regardless of the inadequacies of these tools in encouraging professionals towards environmentally sensitive buildings, their assessment methodology and criteria are seen to be highly influential on orienting the local discourse on sustainability. Considering the call for attaining a regenerative paradigm for a sustainable built environment, such an orientation might favor only one type of structure, by relinquishing others and, maybe more fruitful alternatives. Following the MLP, this paper discusses how such a niche activity interacts with the overarching construction regime in Turkey. It examines if such a niche-regime translation occurs and dwells upon possible counterproductive consequences for the future.

Keywords: Multiple-level perspective, socio-technical transitions, building environmental assessment tools, sustainability, Turkey.

1 Introduction: Systemic problems vs. outdated worldview

Our (un)sustainability is explained to be the result of an outdated modernist/mechanistic worldview [1]. This worldview has not only shaped the socio-technical systems that permitted ecological degradation and that ceased the synch between human’s time and nature’s time, but has also rendered human minds unable to comprehend the challenge of sustainability, while favoring notions such as simplicity, certainty and immediacy. The major problems of our times, as maintained by Capra, cannot be understood in isolation, “[t]hey are systemic problems, which means that they are interconnected and interdependent” [2]. Therefore the field calls for a shift in paradigm from the current one framed by

a mechanistic worldview to one informed by whole/living systems, that is, an ecological worldview [1]. This new paradigm, called regenerative, foresees architectural design processes from systemic, context-specific, complexity-oriented and holistic approaches [3,4]. This call indicates the need of innovating ways of designing. This is not an easy task, since buildings and cities result from socio-technical systems guided by deep structures sharing a number of systems of provision, such as energy, transportation, policy, and technology. Therefore innovation requires a systemic approach.

Regardless of these calls and the growing number of alternative design and assessment tools, we observe that a particular set of tools appears to dominate the ‘real’ market. The building environmental assessment tools (BEATs), such as BREEAM, the Procedure HQE, and LEED have significantly shifted both the public and the market awareness and perception of what a sustainable building is. Therefore we need to understand what would be the promise of these tools in steering us towards a new paradigm, possibly through a number of radical innovations, which diverge from cognitive, regulatory, and normative rules of the context, at the socio-technical system of the built environment. We might not expect this to happen due to the old-dated mechanistic worldview underlying these tools, which actually operate at a lower leverage point for effectively changing a system [2]. However, the growing interest in these tools, especially in Turkey, drives this paper to explore how they interact with ‘the rules of the game.’

Currently in Turkey, the future direction of sustainability in architectural design seems to rely on the abilities of BEATs. In fact, due to the lack of better alternatives, these tools are used as design guidelines, instead of their original objective as assessment of projects. Consequently it is crucial to reveal the interactions between these practices and the socio-technical system of built environment. With respect to the systemic approach to innovation, the paper refers to a middle-range heuristic tool, the multi-level perspective (MLP), developed in the field of sustainability transitions. Following the MLP, this paper discusses how practices with the international tools, BREEAM and LEED, in Turkey, as niche activities, interact with the overarching construction regime in Turkey. It investigates if such a niche-regime translation occurs and considers what might be its possible counterproductive consequences for the future. The paper benefits from qualitative analysis of three case study projects based on interviews and project meeting documents, and three projects surveyed through secondary sources. To gain a holistic understanding about the appreciation of these tools in the field, the paper also conducts a survey on two groups of professionals – those who worked on certified projects and those without prior experience in certified projects.

2 The Multi-Level Perspective (MLP)

The MLP was developed by Rip and Kemp, and subsequently applied most prominently by Smith and Geels [5,6], but there are only a few researches that applied this heuristic tool in the study of green innovation [6,7]. MLP defines three levels of structuration in systems: Landscape, regime (the locus of established practices and associated rules that stabilize existing systems), and niche as the locus of technological innovations [5]. It studies the conditions for the dissemination of technological innovations in niches in existing socio-technical regimes. Regimes are defined as “the rule-set or grammar embedded in a complex of engineering practices, production process technologies, product characteristics, skills and procedures, ways of handling relevant artefacts and persons, ways of defining problems; all of them embedded in institutions and infrastructures” [9]. When a major change alters the

way particular societal functions are fulfilled, it is conceived as regime shift [5]. This study considers the practices with LEED and BREEAM as niche activities, because compared to the number of buildings built in a year (100.764 in 2011) the number of certified/in certification process buildings is very low (183 between the years 2008–2012). Regarding the shared cognitive, normative, and regulatory rules, the paper represents the socio-technical system of the built environment in Figure 1:

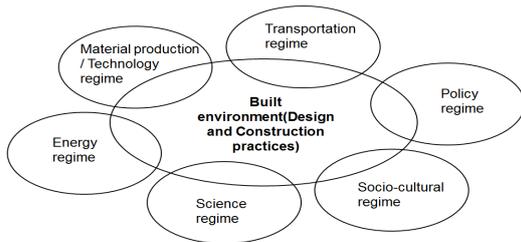


Fig. 1 Meta-coordination through socio-technical regimes impacting the ST-system of built environment

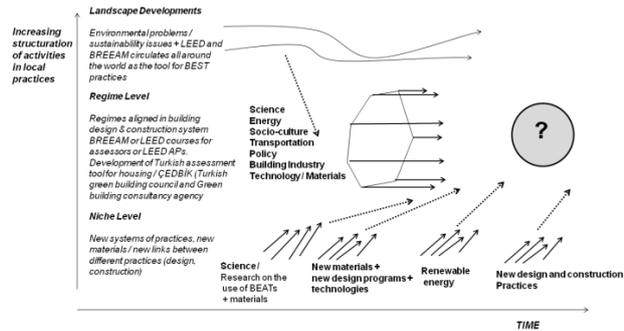


Fig. 2 Possible transition pathways in regimes, developed after Geels [5]

In order to understand niche-multi regime interactions, the study elaborates a heuristic tool, first developed by Hargreaves *et al.* based on an analytical framework originally developed after Shove's study on practice theory [10]. The focus of the study is on the possible intersection points of the vertical cycle, which represents the practice with BEATs, and the horizontal circles, which represent horizontal regimes and landscapes.

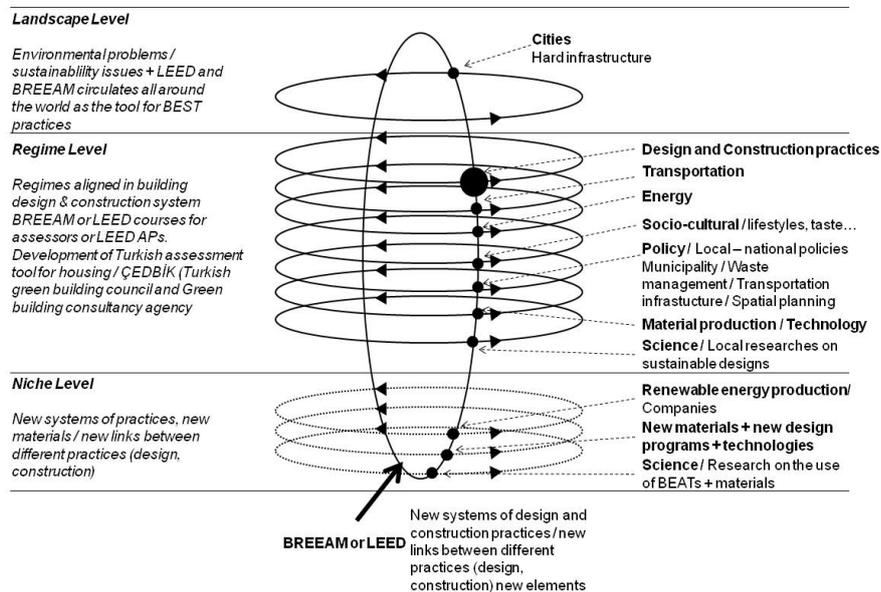


Fig. 3 Practices with BREEAM or LEED: Intersecting regimes or practices

3 Findings

At the socio-technical level, in a number of cases, practices had positive influences on the planning of public transportation, raised awareness about the need of new functional

requirements in sites, and triggered developments in material regime. In some cases, the socio-cultural regime obstructed the uptake of certain criteria. In a country where planning decisions are not taken in advance, where decisions are taken during the process, these tools show good pathways for design and daily life practices. However some of these pathways are not supported by the regime owing to two reasons. First BEATs, used in countries other than their origin, cannot meet the exigencies of the local context. For example in the Turkish context, BEATs should award credits for the following issues: Choice of building function, optimum transportation plan that considers the neighborhood scale, and the contributions of the architectural design features with respect to local users' daily life practices. Secondly BEATs focus on parts of the system rather its whole. These niche practices remain at the building scale, do not enforce breaking the rules of the regimes, and therefore remain inadequate to make the sustainability transition in regimes as required by the regenerative paradigm. In Turkey, BEATs appear to guide the transition in regimes towards a 'reconfiguration pathway,' defined in the MLP based on the landscape pressures of marketing rather than sustainability.

References

- [1] DU PLESSIS, C., COLE, R. J. "Motivating Change: Shifting the Paradigm," *Building Research & Information* 39, no. 5 (2011): 436–449.
- [2] CAPRA, F. "Deep Ecology: A New Paradigm." In *Deep Ecology for the Twenty-First Century*, ed. Sessions, G., Boston, MA: Shambhala, 1995, pp. 19–25.
- [3] GUY, S., MOORE, S. "Sustainable Architecture and the Pluralist Imagination." *Journal of Architectural Education* 60, no. 4 (2007): 15–23.
- [4] HENSEL, M.U. "Sustainability from a Performance-Oriented Architecture Perspective – Alternative Approaches to Questions regarding the Sustainability of the Built Environment." *Sustainable Development* 20, no. 3 (2012): 146–154.
- [5] GEELS, F. W. "The Multi-Level Perspective on Sustainability Transitions: Responses to Seven Criticisms." *Environmental Innovation and Societal Transitions* 1, no. 1 (2011): 24–40.
- [6] SMITH, A. "Translating Sustainabilities between Green Niches and Socio-Technical Regimes." *Technology Analysis & Strategic Management* 19, no. 4 (2007): 427–450.
- [7] JENSEN, J. O., SØGAARD, M., ELLE, M, LAURIDSEN, E. "Has Social Sustainability Left the Building? The Recent Conceptualization of "sustainability" in Danish Buildings." *Sustainability: Science, Practice & Policy* 8, no. 1 (2012): 94–105.
- [8] RIP, A., KEMP, R. "Technological Change." In *Human Choices and Climate Change*, ed. Rayner, S., Malone, E. L., Columbus, OH: Battelle Press, 1998, pp. 327–399.
- [9] Hargreaves, T., Longhurst, N., Seyfang, G. "Understanding Sustainability Innovations: Points of Intersection between the Multi-Level Perspective and Social Practice Theory." 3S Working Paper 2012-13, Norwich: Science, Society and Sustainability Research Group.