Cultural Values Embedded in Building Environmental Performance Assessment Methods:

A Comparison of LEED-Canada and Japan’s CASBEE

by

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Abstract

This thesis examines cultural values embedded in the LEED-Canada and CASBEE building environmental performance assessment methods, with particular emphasis on those that relate to collective attitudes toward nature in two different contexts: Canada and Japan. The structure and content of LEED-Canada and CASBEE are compared through the lenses of biophilia, technology, and information to expose how the implicit factors that shape society’s composition, structure, industries and understanding influence the priorities and emphases in the two assessment methods. The consequences of the study are fourfold. Firstly, it provides a critically important lens through which to view side-by-side comparisons of building environmental assessment systems. Secondly, by contrasting the differences and identifying similarities in the two countries, the work provides a more informed basis for understanding the transferability of green building design ideas from one culture to another and what problems/opportunities could potentially arise. Thirdly, the study adds weight to the argument that it is critically important to look at buildings as an integral part of natural, cultural, social and economic systems rather than isolated entities. Finally, it seriously questions whether the lack of culture-specific considerations has potentially adverse effects when promoting built environment sustainability in the long term.
Preface

A version of chapter 2 and chapter 3 were presented in the World Sustainable Building Conference (SB11) on 20th October, 2011. The paper was published in the conference proceedings. [Aiste Blaviesciunaite].


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Part of the research for this thesis was conducted in Japan.
# Table of Contents

Abstract .......................................................................................................................... ii

Preface............................................................................................................................ iii

Table of Contents ........................................................................................................... iv

List of Tables ................................................................................................................... ix

List of Figures ................................................................................................................. x

Acknowledgements ......................................................................................................... xi

## Chapter 1: Background and Methodology ................................................................. 1

1.1 Research Statement ............................................................................................... 1

1.2 Research Goals ....................................................................................................... 1

1.3 Background ............................................................................................................ 3

1.3.1 Building Environmental Assessment Methods in a Wider Context ................. 4

1.3.2 The Two Objectives ......................................................................................... 9

1.4 Methodology .......................................................................................................... 12

## Chapter 2: Canada and Japan – Core Cultural Values ............................................... 16

2.1 Apparent Differences ............................................................................................ 16

2.1.1 Far East – Far West ......................................................................................... 16

2.1.2 Cultural Coherence ......................................................................................... 18

2.1.3 Market-Place and Building Industry ............................................................... 19

2.1.4 Social Structure ............................................................................................. 19

2.2 Relationship to Nature ......................................................................................... 20

2.2.1 Ancient Attitudes Towards Nature ................................................................. 20

2.2.2 Humans Separate from Nature ....................................................................... 24

2.2.3 Wilderness Versus Human-made Nature ....................................................... 27

2.2.4 The Understanding of Nature in Canada ...................................................... 32

2.2.4.1 Origins .................................................................................................... 33

2.2.4.2 Cultural Poesis ......................................................................................... 35
2.2.4.3  The Role of the Group of Seven ................................................................. 37
2.2.4.4  Environmentalism .......................................................................................... 40
2.2.4.5  Summing up .................................................................................................... 43
2.2.5  The Understanding of Nature in Japan ............................................................. 44
2.2.5.1  Developing Sensibilities (1): Evanescence, Simplicity and Contextuality ...... 45
2.2.5.2  Developing Sensibilities (2): Suggestion and Irregularity ............................. 47
2.2.5.3  Uchi / Soto Boundaries .................................................................................. 52
2.2.5.4  Solving Contradictions in the Daily Encounters of Life ............................... 54
2.2.5.5  Contrapuntal Tensions .................................................................................... 57
2.2.6  Differences Between the Canadian and Japanese Understandings .................. 62
2.2.6.1  The Nature Continuum ................................................................................... 63
2.2.6.2  Vertical-Horizontal Relationships ................................................................... 65

Chapter 3: Relationship to Nature Evidenced in LEED-Canada and CASBEE ...... 67
3.1  The Coexistence of Humans and Nature: Biophilia .............................................. 67
3.1.1  Biophilia References in LEED-Canada ............................................................ 73
3.1.2  Biophilic References in CASBEE ..................................................................... 74
3.2  Key Differences Between the Way the LEED-Canada and CASBEE Embody Biophilic Needs ......................................................................................................................... 75
3.2.1  Row 1 ................................................................................................................... 75
3.2.1.1  Language / Intentions to Follow-up ................................................................. 76
3.2.1.2  Emphasis on Continuous Improvement in Japan ......................................... 76
3.2.2  Row 2 ................................................................................................................... 77
3.2.2.1  Understanding of Space ................................................................................. 77
3.2.2.2  Subtleties Communicated Through Chinese Characters ............................. 79
3.2.3  Row 3 ................................................................................................................... 81
3.2.3.1  Comparison: Regional Importance / Place-focus ........................................... 82
3.2.3.2  Cultural Underpinnings (3): Unified by Belonging to Place vs. the Group .... 82
3.2.4  Row 4 ................................................................................................................... 82
3.2.4.1  Comparison: Views and Daylight ................................................................. 83
3.2.5  Row 5 (only in CASBEE) ................................................................................... 86
3.2.5.1  Cultural Underpinnings (5): Cultural Coherence ........................................... 86
### Chapter 4: Expected Interactions Between the Building and its Inhabitants

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 The Relationship Between Nature, Culture and Technology</td>
<td>89</td>
</tr>
<tr>
<td>4.2 Technology in Canada and Japan: An Understanding Derived from the Attitudes Towards Nature</td>
<td>91</td>
</tr>
<tr>
<td>4.2.1 Deriving Technology Continuum</td>
<td>91</td>
</tr>
<tr>
<td>4.2.2 Implications to the Understanding of Technology in Canada and Japan</td>
<td>95</td>
</tr>
<tr>
<td>4.3 Indirect Aspects of Technology in LEED-Canada and CASBEE</td>
<td>96</td>
</tr>
<tr>
<td>4.3.1 Formulation of the LEED-Canada and CASBEE</td>
<td>96</td>
</tr>
<tr>
<td>4.3.1.1 Definite vs. a Range of Possibilities in Assigning Points</td>
<td>97</td>
</tr>
<tr>
<td>4.3.1.2 The Fixed North American Reality vs. Changing Circumstances in Japan</td>
<td>98</td>
</tr>
<tr>
<td>4.3.2 Structure of the LEED-Canada and CASBEE</td>
<td>99</td>
</tr>
<tr>
<td>4.3.2.1 Inherent Simplicity vs. Complexity in Scoring, Weighting and Presenting the Results</td>
<td>99</td>
</tr>
<tr>
<td>4.3.2.2 Vertical-Horizontal Framing and the Distribution of Credits</td>
<td>101</td>
</tr>
<tr>
<td>4.3.2.3 Canada and Japan: Simplified Diversity vs. Elaborated Homogeneity</td>
<td>103</td>
</tr>
<tr>
<td>4.4 Direct Aspects of Technology in LEED-Canada &amp; CASBEE</td>
<td>104</td>
</tr>
<tr>
<td>4.4.1 Technical Approaches that Support the Interaction Between Inhabitants and the Building</td>
<td>104</td>
</tr>
<tr>
<td>4.4.1.1 Comparison (4): Personal Controls vs. Service</td>
<td>104</td>
</tr>
<tr>
<td>4.4.1.2 Canadian Individualism vs. the Shared Experience in Japan</td>
<td>107</td>
</tr>
<tr>
<td>4.5 Summary</td>
<td>109</td>
</tr>
</tbody>
</table>

### Chapter 5: Information Provision in LEED-Canada and CASBEE

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Information Flow</td>
<td>112</td>
</tr>
<tr>
<td>5.2 Different Origins</td>
<td>118</td>
</tr>
<tr>
<td>5.2.1 Cultural Origins</td>
<td>118</td>
</tr>
<tr>
<td>5.2.1.1 Nature Paintings</td>
<td>118</td>
</tr>
<tr>
<td>5.2.1.2 Comics</td>
<td>120</td>
</tr>
<tr>
<td>5.2.2 Origins of LEED-Canada and CASBEE</td>
<td>122</td>
</tr>
<tr>
<td>5.3 Information Flow / Input</td>
<td>124</td>
</tr>
</tbody>
</table>
5.3.1 Centralized vs. Dispersed Structures

5.3.1.1 Information Sources: LEED-Canada’s Green Building Rating System and CASBEE’s Technical Manual

5.3.1.2 Participation

5.3.1.3 Random vs. Hierarchical Organization

5.3.2 Comprehensibility and Clarity

5.3.2.1 Level of Detail

5.3.3 Straightforward & Direct North Americans vs. Detailed Ambiguity in Japan

5.4 Information Flow / Output

5.4.1 Structure

5.4.1.1 Scales of Measurement, Benchmarks

5.4.1.2 Targets: “The best” vs. “better”

5.4.2 Presentation of Results

5.4.2.1 Singular vs. Diverse

5.4.3 Deterministic Western Attitudes vs. Incremental Improvement in Japan

5.5 Anticipated Future Development

5.5.1 Assessment Method Used for GOVERNMENT Purposes: CASBEE

5.5.2 Assessment Method used in PRIVATE SECTOR and as an EDUCATIONAL TOOL:

5.5.3 Dissemination: Domestic vs./and International

5.6 Summary

Chapter 6: Discussions and Conclusions

6.1 Consequences Domestically and Internationally

6.2 Buildings that are Integrated into the Larger Systems and Processes

6.2.1 Full Recognition of Culturally Embedded Attitudes: Consequences Domestically

6.2.1.1 The Importance of Locality/Place

6.2.1.2 Encouraging Involvement

6.2.1.3 Building as Part of the Larger Systems and Processes

6.2.2 Questioning the Importation and Exportation of the Assessment Methods:

Consequences Internationally

6.2.2.1 Individual vs. Collective
6.2.2.2 Simplicity vs. Complexity ................................................................. 167
6.2.2.3 Fixed vs. Dynamic ............................................................................. 170
6.3 Limitations .............................................................................................. 172
6.4 Future Possibilities of this Study ............................................................... 175

References ..................................................................................................... 182
List of Tables

Table 1 Cultural Aspects and Daily Practices. .................................................................57
Table 2 LEED-Canada Credits and the Biophilic Design Guidelines. ......................73
Table 3 CASBEE Credits and the Biophilic Design Guidelines.................................74
Table 4 Qualitative Aspects of Technology.................................................................93
Table 5 Summary of the Requirements in LEED-Canada and CASBEE.................98
Table 6 Dispersed and Centralized Tendencies in LEED-Canada and CASBEE......132
Table 7 Reasoning in CASBEE.....................................................................................134
Table 8 Organized Diversity in CASBEE. .................................................................144
List of Figures

Figure 1 Edward Burtynsky, Nickel Tailings #34, Sudbury, Ontario, 1996.......................... 41

Figure 2 Edward Burtynsky, CN Track No. 8, Thompson River, British Columbia, 1985........ 42

Figure 3 The Nature Continuum.................................................................................................. 65

Figure 4 Vertical and Horizontal Relationships in Canada (left) and Japan (right)............... 66

Figure 5 Elements and Attributes of Biophilic Design (Kellert, 2008).................................... 70

Figure 6 Selected Biophilic Design Attributes (emphasized). .................................................. 71

Figure 7 LEED-Canada (left) and CASBEE (right) Comparison: The Five Categories........... 72

Figure 8 The Technology Continuum.......................................................................................... 92

Figure 9 Interpretation of the LEED-Canada and CASBEE Structures................................. 103

Figure 10 Chandler (1962) and Galbraith (1980) Theories...................................................... 114

Figure 11 Information Flow. ....................................................................................................... 116
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Chapter 1: Background and Methodology

1.1 Research Statement

This thesis examines the cultural values embedded in building environmental assessment methods with particular emphasis on those that relate to collective attitudes towards nature in two different contexts: Canada and Japan.

1.2 Research Goals

The research provides an additional perspective by including the analysis of cultural attributes in the discussion of the green building design and assessment in Canada and Japan. Three main themes were selected to reflect several of the many ways in which cultural values can shape building environmental assessment methods. Further, these themes were selected bearing in mind different characteristics, roles and purposes of the assessment methods:

1. The collective attitudes towards nature with particular emphasis on the relationships between human and natural systems as understood and supported by the culture.

2. The cultural attitudes toward building environmental controls and methods of engaging
them by looking at both the direct and indirect consequences of technology.

3. The different communication patterns by distinguishing between the input information used during the design of the building, the output information in the form of assessment results and the particular aspects emphasized in one or the other assessment method.

Collectively, these themes permit a comparison of Canadian and Japanese cultural values and their manifestations in their respective environmental assessment methods used to guide and evaluate building design.

The two main goals of the research are: (1) to define the core values rooted in Canadian and Japanese cultures and (2) to analyze, explore, and illustrate how they are embedded in the corresponding building environmental assessment methods.

The consequences of the study are four-fold. Firstly, it provides a critically important lens through which to view side-by-side comparisons of building environmental assessment systems. Secondly, by contrasting the differences and identifying similarities in the two countries, the work provides a more informed basis for understanding the transferability of green building design ideas from one culture to another and what problems or opportunities
could arise. Thirdly, the study adds weight to the argument that it is critically important to look at buildings as an integral part of natural, cultural, social and economic systems rather than isolated entities. Finally and perhaps most importantly, it raises the question of whether the lack of culture-specific considerations have adverse effects when promoting built environment sustainability in the long term, which should include these regionally specific systems.

1.3 Background

Building environmental assessment methods are used extensively in both North America and Japan to shape the design of green buildings, evaluate their performance and, on a larger scale, transform their respective markets. The US Green Building Council’s (USGBC) Leadership in Energy and Environmental Design (LEED) green building rating system is finding worldwide adoption and use with registered and certified projects in 131 of the world’s 196 countries, with a total floor area of almost 3 billion square feet (~14-million square meters), making LEED the dominant global green building certification brand (Watson, 2011). The Canadian Green Building Council (CaGBC) adopted LEED in 2004 and created LEED-Canada “tailored specifically for Canadian climates, construction practices and regulations” (CaGBC, 2012a). While there are many differences between Canada and the US, there are also significant similarities in priorities and approaches to building design and construction.
Japan created its own method in 2002, the *Comprehensive Assessment System for Built Environment Efficiency* (CASBEE). One of the core principles in its development was to “take into consideration issues and problems peculiar to Japan” (Japan Sustainable Building Consortium, 2012). CASBEE was developed later than the other major systems such as UK’s BREEAM (1990) and LEED (1996), and is therefore considered as “belonging to different generation” (K. Iwamura, personal communication, February 15, 2011). While acknowledged as one of the major assessment methods, CASBEE has yet to be used significantly outside Japan. Exceptions to this use are its adoption as the conceptual basis of the Chinese 2003 Green Olympics Building Assessment System (GOBAS) (Murakami, 2009) and an evaluation of vernacular architecture in Turkey, Malaysia, Iran, Canada, Indonesia, Cameroon, Morocco and Vietnam (Murakami, 2008).

The assessment methods are continuously evolving and changing. The research in this thesis is based mostly on the LEED-Canada NC 2009 and CASBEE NC 2010 versions.

### 1.3.1 Building Environmental Assessment Methods in a Wider Context

Bordon and Dunster (1995) acknowledged that architecture is part of the conflicting and contradictory struggle of differing forces, interest groups and movements and therefore
contingent on the particular “social organization of a culture . . . its priorities and aspirations” (Roslin, 1996, p. 8). Building environmental assessment methods are also affected by the cultural background of the country and carry the values and priorities of their authors, either implicitly or explicitly. However, this aspect is often overlooked and, as Cole (2003) pointed out, “Much of contemporary green design involves too literal a transfer of technical strategies from fundamentally different climatic and cultural contexts without any serious critique of either their validity locally or their acceptance and engagement by building occupants” (p. 63). The increasing tendency to adapt the assessment methods worldwide make the “environmental design “guidelines” generic in nature, devoid of local or regional overlays, and by necessity giv[ing] equal weighting to all aspects” (Kibert, 1999, p. 281).

The prevalent understanding and practise of the green building design is overwhelmingly technically framed. Guy and Farmer (2000) observed that in the green building assessment frameworks, “The dominant approaches are characterized by performance threshold models, which assess the impact of a building against a range of criteria, which can be directly measured and weighted” (p. 74). Thus, “green, but culturally unsustainable technical fixes situated within existing building typologies” (Ujam & Stevenson, as cited in Guy & Farmer, 1996, p. 47). Ujam and Stevenson continued:
Without cultural awareness . . . [they] are likely to falter [in the creation of a more sustainable environment] as it encounters but fails to recognize very deeply structured personal responses to particular places that will tend to override shallow environmentalism (Ujam & Stevenson, as cited in Guy & Farmer, 2000, p. 81).

Currently accepted standards of what constitutes best green building practice does not incorporate a holistic approach, where a building would be seen in a harmonious relation with its inhabitants and as an integral part of natural, cultural, social and economic systems and processes. Having been derived from the technically framed priorities and criteria, current assessment methods focus on individual buildings largely in isolation of these systems and the opportunities available in their immediate and broader context. The isolation is particularly evident when, “despite the contingent and multidirectional character of environmental concerns, which are both time and space specific and are shaped by a particular image and interpretation of Nature,” (Farmer & Guy, 2002). The environmental performance assessment methods employ reductionist approaches, which “explicitly address environmental issues with little, if any, reference to other building performance concerns. . . [and without] a broader range of performance issues so as to illustrate synergies and conflicts” (Daily, 1997, p. 285).

McDonough (2004) stated:
While emerging "green" codes have created considerable improvements in the environmental performance of new buildings, they are still the product of a consensus-based exercise largely focused on trying to be "less bad," on minimizing the impact of the old industrial system by making it more efficient.

Jenkin and Pedersen-Zari (2009) noted the importance of changing attitudes toward sustainable built environment:

While aiming for neutral or reduced environmental impacts in terms of energy, carbon, waste or water are worthwhile targets, it is becoming clear that the built environment must go beyond this. It must have net positive environmental benefits for the living world.

To achieve this goal, the built environment has to be set within a broader context and "understood as a complex social-ecological system, where multiple-related metabolisms interact at different scales" (Moffatt & Kohler, 2008). The ultimate challenge, as argued by Mang and Reed (2012), requires “to move between different sustainability approaches that are products of very different worldview complexes . . . [in order to create] the increasing and mutually beneficial integration of human and natural systems that supports their coevolution"
and, to reach that, it is necessary “to define built environments as systems by exploring what might constitute a balanced, sustainable relationship between natural and built” (Moffat & Kohler, 2008). Buildings would thus be increasingly seen as part of a larger socio-ecological system rather than as isolated entities.

Similar connotations have been brought to the forefront by Reed (2007), who tries to establish that “to positively address global human-caused environment degradation at a local level . . . a place-based approach is needed . . . that will allow to achieve tangible, potentially visible results that directly benefit their local ecosystems and communities”. Further, Loomis (2000) pointed out “a growing realization that indigenous knowledge can contribute to the success of a development project,” which is distinguished as a potentially positive aspect for the built environment by Kellert (2005), as follows: “When this relationship among culture, environment, and architecture is pronounced, these places become alive for us, a part of our collective consciousness and identity” (p. 165). As a result, the research presented in this thesis explores the culturally embedded values, perceptions, attitudes and understanding in order to confront the lack of proper or regionally sound adaptations when the assessment methods travel outside their countries of origin.
1.3.2 The Two Objectives

Building environmental assessment methods are deeply interwoven with the organizational practices that develop and operate them in specific cultural contexts. Further, their aspirations include:

- “Lead[ing] and accelerat[ing] green buildings, chang[ing] industry standards, advocat[ing] green buildings, develop[ing] educational tools…” (CaGBC, 2012a);

- “Rais[ing] the level of environmental performance assessment” (Japan Living Environment Assessment Center, 2009);

- “Facilitat[ing] dissemination of environmentally friendly buildings” (Environmental DD Stock Department, 2006); and

- “Provid[ing] means for comprehensive evaluation and improvement…” (Sakai city, 2012).
Both LEED-Canada and CASBEE share the overarching goals to guide the built environment in support of a sustainable future, which makes it necessary to better understand how the assessment methods embody Canadian and Japanese cultural values.

Many studies of assessment methods in North America and Japan have acknowledged that “the formation and the philosophy of each building standard are fundamentally different” (Vare, 2010), but there is no comprehensive explanation of why those differences evolved and which cultural features influenced them. It is necessary to recognize and learn from the values fostered in the core cultures of focus, because “different human societies have elaborated a startling diversity of ways in which traditional resource use practices were organized and natural capital used without depletion” (Berkes & Folke, 1991).

Schwartz (2011) emphasized,

> Cultures, social institutions, and individual experiences provide opportunities to express or attain particular values and constraints against doing so . . . [and therefore] encourage members of a society to identify with one another, to accept common goals, and to agree on how these goals should be achieved.
Cultural collective attitudes recognize the co-evolution of human and natural systems as an important and “local process. . . [which is] specific to local cultural knowledge, technology and social organization” (Norgaard, 1987). Understanding that “there are differing expectations . . . [and] the culturally agreed attitudes or what constitutes the ‘appropriate’ [would allow someone to] recognize the full potential of a building’s contribution to the genius loci or spirit of the place” (Wood, 2003).

The primary objective of this thesis is to examine the cultural values embedded in building environmental assessment tools in Japan and Canada, with particular emphasis on those that relate to collective attitudes toward nature. More broadly, the work relates to the ways and extent that such methods, without significant adaptation, can be meaningfully adopted by other countries. This will become increasingly acute as and when the range of considerations in the discourse of green building design is expanded to address social and economic aspects of sustainability and, as suggested by McMinn and Polo (2005), “understood within the broad cultural scope it clearly embodies”.

Building environmental performance assessment methods define what constitutes the highest aspirations in green building practice and offer guidance on the design of the built environment. As such, the methods implicitly take on the role of integrating the buildings in
their natural, cultural, social and economic contexts. These aspects are place specific, however, so it is important to learn how different objectives rooted in different cultures affect the formation and implementation of the building environmental performance assessment methods.

Cole (2010) noted, "Architectural practice currently suffers from a lack of engagement with the unique qualities of place – culturally and climatically". In other words, current research does not offer a basis of understanding how buildings connect with the inhabitants and larger systems but still respond to the uniqueness of their place. The secondary objective of the thesis is, therefore, to expand the discussion of buildings being considered in isolation to being an integral part of natural systems and processes. The study will address these issues by analysing different aspects of the cultural values in Canada and Japan and, how they relate to and affect the decisions in the design and assessment of green buildings.

1.4 Methodology

The thesis first defines Canadian and Japanese cultural values in respect to nature and then analyses how they are embodied in LEED-Canada and CASBEE versions for new construction. The research is based on literature review, analysis of the assessment methods
and abductive reasoning (Levin-Rozalis, 2004) in order to formulate explanations for the cultural differences between LEED-Canada and CASBEE. These differences are difficult to expose because they defy clear definition and, more importantly, because they are so ingrained into the predominant societal values that they become second nature. Therefore, abduction as a technique best summarizes the type of logic flow in this research. After providing an exhaustive literature review, the best explanation is inferred. Since there is no similar comparison in previous knowledge, the study shifts from correlation, analogy, metaphor and parallelism to subjective intuition in order to explicate the broad cultural factors in the two countries with the assessment methods. The following concepts are some of the many used to deliver the explanations:

**Cultural factors:** values, attitudes, perceptions, understanding, practices, etc.

**Assessment methods:** development, application, scope, structure, performance requirements, credit formulation, intentions, priorities, emphases, etc.

Firstly, the aforementioned aspects of the two assessment methods are analyzed, understood and compared. Then, the differences are summarized in several categories. The arguments are initially derived from the analysis of the values in the Canadian and Japanese cultural
contexts. Whereas other assessment methods (e.g., the UK Building Research Establishment Environmental Assessment Methods, BREEAM) could have been included in this study, the marked differences between Canada and Japan are sufficient to expose and illustrate the substantive issues.

Kajikawa, Inoue and Goh (2011) acknowledged several characteristics of the assessment methods:

That is, comprehensiveness, design guideline, signaling, and communication tools . . .

[and identified some of their potential roles] as hub[s] promoting integration of diverse knowledge, as design guideline[s] encouraging better design and action, as signaling environmentally friendly design and action, and as a communication tool[s].

Further, Hezri and Dovers (2006) noted the variety of purposes, including:

Instrumental use for action and problem solving, conceptual use to sensitize users’ understanding about green issues, tactical use as a deploying strategy, symbolic use to appeal to emotion, and political use when the content of indicators becomes ammunition to support the pre-determined position of a user.
Possible interpretations and applications of the assessment methods are immense and diverse, and not limited to the few mentioned here. Cole (2005) suggested that “building assessment methods remain constrained by a lack of clarity regarding their emerging roles”.

For the purpose of this thesis – to explore how cultural values are embedded in LEED-Canada and CASBEE – three themes that facilitate the comparison were selected. They all have slightly different foci and therefore represent a variety of characteristics, roles, and purposes of the assessment methods.
Chapter 2: Canada and Japan – Core Cultural Values

Attempts to incorporate cultural values and show respect to nature in architecture are not new and have been demonstrated in traditional and contemporary architectural design practice in both Canada and Japan (Kellert, 2005; Kellert, Heerwagen & Mador, 2008; Loomis, 2000; Borden & Dunster, 1995; Buchanan, 1984; Kibert 1999; Kibert, Sendzimir & Guy, 2002; Kroebe & Kluckhohn, 1963; Kuma, 2008; Minteer, 1998; Nitsche, 1993, etc.). However, the way the relationships between the natural and built environments have been interpreted evolved differently in the two countries.

2.1 Apparent Differences

2.1.1 Far East – Far West

Canada is part of the Far West while Japan is part of the Far East, and they are separated by the Pacific Ocean, which spans half the globe. They are therefore located on opposite sides of the Earth. Japan stretches 3,000 kilometres from north to south. Canada occupies an area 25 times bigger than that of Japan, has a quarter of its population, which is mostly spread along the boundary with the United States (CIA, 2012; Statistics Canada, 2012; Ministry of Internal Affairs and Communications, Statistics Bureau, 2008).
Even though the Arctic zone is not easily habitable, a panoply of various geographic and climatic regions in Canada strongly reinforces human activities and commonplace beliefs of “the Land that has everything: vast reaches of tall forest, mile on mile of rich black prairie soil, sparkling lakes, broad rivers, and fish-abundant seas” (Payne, 2007, p. 157). In contrast, Japan is limited by the characteristics of its terrain: “over 70% of the country’s land mass is mountainous . . . only about 10% . . . is arable” (Essential Japan Guide, 2011). These restrictive conditions and the Japanese ability to sustain themselves and flourish in it reveals their attitudes towards their country: “the Japanese landscape mirrors the cultural affinity for smallness . . . and compactness. The people of Japan adore the miniaturization of the bonsai tree, they scale down space in their rock gardens . . . and they regard tiny flowers with reverence” (Mather, Karan & Iijima, 1998, p. 35).

Canada’s diverse climate accounts for significant differences depending on the region. Northern cold wilderness contrasts with the mild climate of the Pacific coast, and in turn is distinct from the west-central prairies, east-central industrial heartland and the Atlantic provinces. In Japan, even though the great latitudinal stretch marks major differences between the northern part (Hokkaido) and the south (Kyushu), Japan is still recognized as a four-season country. Cold winters and “in summer, high temperatures and high humidity make
much of Japan sultry” (Mather, Karan & Iijima, 1998, p. 7), but “the turning of the seasons is magnified by abundant flora and fauna” (Inoue, 2008, p. 6) and adorned and emblazoned landscapes, providing relief after the harsh winters and exhausting summers. As a result, the Japanese express a preference for autumn and twilight followed by spring: “The hours and seasons of light at its greatest metamorphosis . . . when poised on the brink between maturity and death, between the final moments of one ending cycle and the interlude of rest before another begins” (Plummer, 1995, p. 46).

2.1.2 Cultural Coherence

Canada is a country that “speaks 130 languages (only two of them officially), [and] the land conditions, climate and people are more varied than those found in most nations of the world” (Whiteson, 1983, p. 7). In contrast, Sasaki (2001) described Japan as a country having no adjoining land borders and which has never been under the rule of any other ethnic groups with different cultures. The society is composed of the same nationality, race, and religion, and shares the same language and way of life. Despite a similarly wide range of regional differences in both Canada and Japan, cultural homogeneity evidently exists only in Japan.
2.1.3 Market-Place and Building Industry

The North American building industry is highly individualised and fragmented. In contrast, Japan’s construction industry is dominated by a relatively few major construction companies. The five largest (Kajima, Obayashi, Taisei, Takenaka and Shimizu) Japanese general contractors "dominate the thinking of the Japanese building industries . . . are amongst the largest construction companies in the world . . . [and] have achieved standards of consistent, reliable quality in many aspects of their work that are unmatched elsewhere" (Bennett, 1993).

2.1.4 Social Structure

Democratic and individualistic expectations are defining characteristics of North American society while in Japan a predetermined set of rules and group-conscious interdependency are valued. Even though Western culture had arrived in Japan at the beginning of Meiji Restoration (1868), some Japanese were reluctant to adopt Western values because they were seen to be “corrosive to the hierarchical Neo-Confucian order and oblivious to the identity-giving manners of Japan’s very orderly, civilized, and polite society” (Inoue, 2008, p. 107). Japan, although retaining many distinct regional and cultural differences, has been less influenced by immigration than Canada and has maintained a stronger continuity in cultural identity. Cultural
coherence and tradition may emerge as significant factors in the creation of a shared vision and environmental ethic required in the transition towards a sustainable future.

2.2 Relationship to Nature

2.2.1 Ancient Attitudes Towards Nature

Wilhelm (as cited in Reed, 2009) identified,

There were at one time more than 260 different Native American languages spoken in North America, and not a single one of them contained a word for nature. This derives from the fact that these cultures did not conceive themselves as disconnected from natural systems; nature as a separate and distinct concept did not exist. [He discussed aboriginal people, who recognized] that every place was unique unto itself, quite apart and different from all other places on the earth . . . understood that there were limits . . . [and that] their daily existence depended on it (p. 49).

Originally, Canada was inhabited by the First Nations, whose customs were shaped by their immediate environment. Each cultural group was bounded by the similarities in language and social culture, manifest in distinctive housing, tools, clothing, transportation, weapons, religion,
mythology, and ceremonies that helped to interpret the world around them (Canadian Heritage, 2007). Intimate relationships between man and nature developed by the Plains People – influenced by the weather extremes and generally dry climate – differed from those in the Northwest Coast communities, which evolved in a relatively milder climate and adapted to high levels of precipitation. However, aboriginal view of nature represents only a minority in Canada.

The ability to blend with the natural environment so that it becomes part of one’s understanding is acknowledged as an important aspect in contemporary building practice. Kapelos (1994) suggested that it is necessary to explore a site’s character, community conditions, the history of its people, local customs, climate, substance and culture. For the built environment as a whole to interact organically with the Canadian natural environment, design should define, direct and enrich society’s cultural life and to foster a sense of community, belonging, and identity. The latter, according to Frye (1971), “is closely linked to Canadian ‘place’ (p. 220). McMillan and Polo (2005) discussed the distinct regional responses to local climatic phenomena and landscape conditions: the West Coast style exploits the opportunity for extensive glazing afforded by a mild climate; the Prairie style was developed as a boldly expressionist architecture that relates both to landscape conditions and to traditional forms such as tepees and grain elevators, a tactile, humanistic modernism that grew out of the long-
standing tradition of masonry architecture; and in Atlantic Canada, a modest contemporary language was suited to the craft traditions of the region.

Pre-modern Japanese culture shows similarly respectful attitudes. No single word meaning “nature” existed in contrast to the built environment. Akira (1997) declared that “the vocabulary slides among terms such as “tenri”, “tenzen”, “tenpu”, “tenchi”, “uchu”, and “banbutsu” before stabilizing in the 1890s with the term “shizen”” (p. 7). In an examination of Japanese culture, Thomas (2001) acknowledged “the so-called Japanese love of nature, which, has uniquely distinguished Japan since before the advent of agriculture” (p. 239). References to this attitude include the works of Ishida (1972), who showed the essential continuity of Japanese approaches to nature from prehistory to the present. Watanabe (1990) discussed chrysanthemums in the tokonoma, the tea ceremony, the aesthetic preparation of Japanese food, the shape of Japanese sweets, and Japanese place names, all of which, he concluded, “points to the special love of nature on the part of the Japanese” (p. 103).

From the distant past to the present, a key feature of Japanese religious life and art has been Shinto – or “the way of the kami”¹. Kami, here, “can refer to Japanese mythological deities, but

¹ Shinto was used by the new government after Meiji Restoration as a tool to strengthen national and cultural unity among Japanese. Termed “State Shinto” by Murakami in 1970, it has since become an ideological source for the extreme right-wing nationalists.
also can mean divinity manifested in natural objects, places, animals, and even human beings” (ORAS, 2000). Shinto could be considered as a defined way, method or technique of religious exercise for reaching harmony between the natural world and human beings. It has been “closely associated with the activities of everyday life, [and therefore] came to play an important role in the Japanese psyche, with its tendency to give precedence to the immediate, direct experience of nature” (Young & Young, 1955, p. 51). The principles of this belief were expressed through Shinto architecture, which “lives and dies, always renewed and reborn” (Dallas Art News, 2012). Shinto architecture, as opposed to the Buddhist and other building styles subsequently introduced to Japan, “go[es] back to the very beginnings of Japanese civilization and has their own unique form” (Kazuo & Kazuo, 1985, p. 12).

While in Canada the relationship between people and nature is one of the country’s connecting aspects and tends to be place specific, Japanese experience with nature takes on a more immediate, direct approach and is less defined and less tactile. However, despite these past culturally rooted attitudes towards nature in both Canada and Japan, the current predominant view in both is a human dominance over nature.
2.2.2 Humans Separate from Nature

The worldview held by a society operates silently to “channel attention, filter information, categorize experience, anchor interpretation, orient learning, establish moods, secrete norms, and legitimizes narratives, ideologies, and power structures” (Gladwin, Newberry & Reiskin, 1997, p. 245). Worldviews typically take centuries to mature and become manifest in the shaping of human settlement and building practice.

The prevailing Western worldview still emphasizes humans as separate from nature. Nature is considered a commodity, valued primarily as a “constellation of near-commodities that yield value in production or consumption . . . [and is] as nothing but a warehouse of resources and services available for our selective use and enjoyment” (Bromley, 2008, p. 13). Such beliefs, White (1968) suggested, led Western cultures to view themselves as “superiors to nature, contemptuous of it and willing to use it for our slightest whim” (p. 90). The roots of this split, Worster (1985) noted, lie deep in Judeo-Christian traditions and in the philosophical questions posed by the Enlightenment. These were consolidated into scientific thought and practice with Descartes’ proposition that the subjective and objective can be separated, are independent, and therefore subject to deductive reasoning.
As Parkes (2002) pointed out, however:

A traditional Western perspective informed by Cartesian dualism . . . is only one among many, however practically efficacious it may be . . . [and] such term as ‘panpsychism’ might better denote worldviews that see humans on an unbroken continuum . . . with natural phenomena (p. 51).

Watsuji Tetsuro, one of the most influential Japanese philosophers, acknowledged that this dichotomy in particular, was the main reason why the Marxist and Christian positions failed to be fully accepted in Japan. In his analysis of Watsuji Tetsuro’s seminal work, “Climate” (fudo), Harumi Befu (2004) referred to him:

Fault[ing] Marxism for not being able to establish firm ground in Japan [due to] its neglect of environmental considerations . . . [and] (in considering the failure of Christianity in seventeenth-century Japan) . . . blam[ing] the Jesuits’ unawareness of environmental relevance for religion (p. 113).
Art has been universally used in human cultures to express and emphasize certain collective attitudes over others. Paintings with nature scenes in Canada and Japan and especially the importance given to the human figure, further illustrate their different worldviews.

During the so-called “mechanical age,” discernible by its focus on nationality and class when forming the sense of identity, absence of the human figure was often used as a predominant approach in Canadian art. This, in turn, communicated the emptiness and availability of land to be claimed by the human being. Watson (2001) even evidenced an apparent self-deprecative irony by observing that in mapping the landscape, the Group of Seven was facilitating its development by “identifying sites that were fit for industrialization, canyons ideal for hydro-electric dams, navigable waterways, huge tracts of forests and Pre-Cambrian hills waiting for open-pit mines” (p. 281).

In contrast, the absence or presence of the human figure was not as relevant to the Japanese painters as the artist’s ability to evoke the dialogue between the natural scene and the human being. On one hand, the human being was allowed to imagine the preferred interaction. Thus, “landscapes, birds and flowers became the favorite subjects for depiction rather than the human figure, the latter being present in the person of the beholder himself” (Okakura, 1964).
On the other hand, woodblock prints like Edo’s *ukiyo*\(^2\) manifest a fleeting, ephemeral quality and a pervasive human presence. *Ukiyo* was created to imply the ever-changing human-nature relationship, which was further enhanced by inscribing a poem on a print in order to engage the viewer in “the conversation” with the natural scene.

2.2.3 Wilderness Versus Human-made Nature

The North and its perceived wilderness, which was conceived as great and powerful, sometimes even heroic, capable of inspiring and replenishing, historically signified the meaning of nature in Canada. Wilderness was inter-related with the identity of Canadians as the most famous Group of Seven artists contended: “National identity . . . was indivisible from the nation's northern geography and climate . . . it was "wildercentric" (O'Brian, 2007, p. 21).

While the appreciation of wilderness was largely popularized by the combined efforts of different parties and it “often concealed more than . . . revealed about the social life of the nation and its tensions” (O'Brian, 2007, p. 21), it formed a reference to “how Canada has

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\(^2\) Japanese woodblock prints known as *ukiyo-e* were especially popular during the Edo period (1600-1868) also known as Tokugawa period. Japan was completely isolated then. Woodblock prints were both art and popular culture for the Japanese then. Lenoir C. Wright explains the ‘floating world’ as “the fleeting, ephemeral quality of pleasure and all human experience . . . [which] consisted of actual places such as the entertainment districts of Edo” (Hockley & Doll, 2002, p. 11). However, it was the snow, the cherry blossoms and the maple leaves; singing songs, drinking wine, diverting ourselves in just floating, floating; caring not a whit for the pauperism staring us in the face, refusing to be disheartened, like a gourd floating along with the river current: this is what we call the floating world” (Ryo as cited in Art Gallery of South Australia, 2008).
conventionally understood itself” (White, 2007, p. 11) and, most importantly, it helped to develop “what may be called a wilderness “ethos,” a new appreciation of the physical, aesthetic and spiritual values” (Cole, 2007, p. 129).

The interpretations of “natural” in Japan are the opposite of those in the West, and so less familiar and difficult to comprehend by Westerners. A Westerner is more likely to think about “natural” as “untouched” or “just as it is”, but the Japanese expect “natural” to perfectly represent “natural” or, in other words, to be so well cultivated that the impression would be that of “natural”.

Wilderness in nature (as in the West) is often juxtaposed to evil in Japan, which in turn should be avoided. This mindset has existed from ancient times, when “village dwellers in old Japan regarded [forest] as a wilderness, as the source of evil” (Donahue, 1988, p. 168). In the current era, “wildlife and wilderness might appear threatening . . . people may even have . . . disdain for the wilderness” (Tyler, as cited in Asquith & Kalland, 2004, p. 16).

However, not all forms of nature are considered evil. There is a clear distinction between “bad, negative” and “good, positive” nature, and human beings are perceived as being able to take
certain actions in order to come nearer to the latter. Only the tamed and cultivated forms can be appreciated.

Analogous connotations can be found in how human behaviour is understood and evaluated. Many Japanese texts idolize natural behaviour, implying it is the correct way to behave for both the individual and society. If understood directly, it is a paradox for everyone who has experienced strict Japanese protocol. Natural behaviour as referred to by the Japanese combines two essential aspects: spontaneity and expected, normal, appropriate behaviour. Asquith & Kalland (2004) explained:

There is a contradiction between the requirement of expected behaviour and spontaneity, but this contradiction is solved by training to behave “spontaneously” (without thinking) according to expectations. S/he must be thoroughly socialized, that is instructed or cultivated, so that the expected behaviour can be performed seemingly devoid of artificiality (p. 2).

In other words, the naturalness in one’s behaviour means one’s sophistication and level of refinement. It does not refer to freedom of expression and uncivilized, uncontrolled conduct,
likely apprehended as “wild” and therefore “evil,” which, analogous to “wild” nature, should be avoided.

Kellert (as cited in Asquith & Kalland, 2004) concluded that the Japanese place “greatest emphasis on the experience and the enjoyment of nature in very controlled, confined, and highly idealized circumstances” (p. 14). A Japanese garden is a perfect example of this understanding.

“As the pine-needle strewing gardener reminds us, nature must be controlled and improved upon, lest it lose the essence of its naturalness” (Ashkenazi, 2004, p. 218).

In order to allow the true, pure essence of nature to appear, Japanese masters apply a technique known as mikiri, “whereby the view is ‘trimmed’ (or framed) to capture only certain desired parts” (Hendry, 2004, p. 88), the ones that show and enhance the essence or other ones based on the principles of “reductionism, reducing diversity, the visual field, quantity or size” (Kalland & Asquith, 2004, p. 18). As a result:

This small garden . . . depicts the totality . . . in a condensed, or miniaturized, form . . .

[is a] model of the outside world [that] help[s] us to face that world by mediating
between the fearful, wild nature located somewhere “outside” . . . and the “security of
the inside world of social and cultural life” (Kalland & Asquith, 2004, p. 18).

The human being is there to apply the techniques in order to:

   Link the distant scenery with the foreground of the garden through intermediary objects
   such as arrangement of stones . . . [so that] the garden is not exclusively “inside” . . .
   for it literally draws on a part of the “outside” . . . [and] allows a part of the surrounding,
   very often a “wild” mountain to be safely viewed from within its walls (Hendry, 2004, p.
   88).

Tendencies to appreciate wild nature or the human-created gardens suggest that attitudes
differ between the two countries. Even though Canada and Japan have formed their own
interpretations of and associations with both wild and tamed forms of nature, the importance
given to one or the other is uneven. The image of greatness in nature as held by Canadians
does not conform to the aspects aspired and emphasized by the Japanese.
2.2.4 The Understanding of Nature in Canada

To feel “Canadian” was to feel part of a no-man’s land with huge rivers, 

lakes and islands that very few Canadians had ever seen. . .

One wonders if any other national consciousness has had so large

an amount of the unknown, the unrealized, the humanly undigested,

so built into it (Frye, 1971, p. 220).

An incredibly diverse and dynamic cultural mixture in Canada contrasts with the relatively uniform ethnic compositions that exist in most countries. As such, the Canadian diversity is often regarded as one of the core country’s defining characteristics. Canada has been successful in mitigating population decrease by absorbing large immigrant populations. The 2011 Census concluded that “Canada’s population growth between 2006 and 2011 was the highest among G8 countries (5.9%), as was the case in the previous intercensal period (2001 to 2006 with 5.4%)” (Statistics Canada, 2012). Nonetheless, this factor complicates any attempt to define the country’s identity, values and belief systems.
The qualities assigned to nature in Canada emphasize two main ideas: (1) nature as a powerful, great wild North, a source for the human spiritual and physical well-being (regenerative power) as well as society’s wealth, and (2) nature as a unifier, something distinctive that becomes (or rather is conceived to be) the basis of the national identity. In Canadian culture, nature has served as a signifier of “Canadian-ness” (Payne, 2007), enunciated as a function of nordicity (Stacey, 2007), a distinct race found in the wilderness (Housser, 1926), covering the total expanse of Canadian geography” (Lamourex, 2007). These attitudes not only ascribed the predominant values of the individualistic, conservative, loyal, independent, virile, industrious, dignified nation (O’Brian, 2007) but it also positioned the Canadian as the controller or the owner of all the goods in nature. It was assumed that the wealth and the hope of her [Canada] future lie in the wilderness (Reid, 2007), which is a cornucopia overflowing with natural resources (Walton, 2007), “empty” land for the taking (O’Brian & White, 2007) the Land that has everything (Payne, 2007) and therefore promise unlimited growth (Walton, 2007).

2.2.4.1 Origins

Canada was founded on two distinct European cultures, English and French, both of which had differing values, beliefs, practices, symbols and norms. The initial stance prioritized by the
new Canadians was to create a version of Europe in a faraway land, which did not necessarily have to be united. This approach was very different from that of the United States, where Independence was announced as early as 1776, and whose people emphasized separateness from Europe from early on. Canadians, on the contrary, “were united, mainly in the conviction that they did not wish to become part of the United States” (Cook, 2011).

Europeans soon regarded Canada as “theirs.” While expeditions were organized with the intention to claim the “lands yet undiscovered in these northern regions” (Rabinovitch, 2011), artists recognized the urge to define the perceivable non-existent Canadian culture. Traill wrote that “here [in Canada] there is no historical associations, no legendary tales of those that come before . . . its [Canada’s] volume of history is yet blank, that of Nature is open” (Peterman, 1977, p. 155). F.R.Scott’s well known poem starts by describing Canada as “inarticulate, arctic, not written on by history, empty as paper” (Scott, 1981, p. 255).

Canada’s history was not as “blank” as described from the inherently Western point of view by Traill or Scott. While it could be acknowledged that there was no culture similar to the European one and thus easily acceptable and recognizable, it cannot be denied that different cultures yet unknown to the Europeans inhabited the Canadian land. Failure to recognize such
cultures and implied willingness to conquer the "blank" or "empty" land reveals only the then narrow European mind. It is not that these cultures did not exist, they were simply different.

The original cultures inhabiting Canada conceived themselves as part of the comprehensive whole and thus did not aim to declare ownership over the other part, nature. The European approach, based on written culture and “intend[ing] to determine boundaries and fix empirical truths” contrasts with the Aboriginal oral cultural practices that were “often sung, charting a person’s spiritual connection with the land” (New, 1997, p. 31). The clearly stated attitudes of “undiscovered land” and “blank history” illustrates the incapacity to learn from the region’s native cultures. The European viewpoint was that “‘here’ was separate from ‘there’; ‘cultivation’ was separate from ‘wilderness’; mapping the world was a way to declare the territoriality of rule” (New, 1997, p. 48). The “natural right” to territorial expansion was exercised first before establishing the power and laws.

2.2.4.2 Cultural Poesis

Once the Europeans declared their presence, the unification of those who newly inhabited the Canadian land became an issue. In other words, the plurality of cultures and uncertainty about Canada’s identity initiated a tension-driven process of cultural poesis (“making of culture” from
Greek, used by Sherbert, Gerin & Petty, 2006, to convey the Canadian experience in constructing identity). Ironically, even though the Canadian dismissed his southern counterpart, he followed the same course when constructing the meaning of Canadian identity: the immediate environment, that is, nature, was made into “a metaphor . . . a code word for both the vast Canadian frontier and an idealized Canadian personality” (Rabinovitch, 2011).

Not only was the “Northern Vision” used as a weapon in the John Diefenbaker’s 1958 election campaign, but it became a source of optimism and hope for the future. In Governor General Georges Vanier’s words: “For those who have seen the Northland there can be no pessimism. The vitality and freshness of the country, the integrity and humanity of its people proclaim its destiny” (Rabinovitch, 2011). The north was gradually shaped into the representational icon of Canada’s Identity despite the fact that it was unknown to the majority of its people, who, “remained, of necessity, and outsider . . . [and] the north remained a convenient place to dream about, spin tall tales about, and in the end, avoid” (Rabinovitch, 2011). Despite this attitude, it must been inescapable, as adduced by Frye (2007):

The imaginative Canadian stance, so to speak, facing east and west, has on one side one of the most powerful nations in the world; on the other there is the vast hinterland of north . . . If the Canadian faces south, he becomes either hypnotized or repelled by
the United States: either he tries to think up unconvincing reasons for being different and somehow superior to Americans, or he accepts being “swallowed up by” the United States as inevitable (p. 110).

2.2.4.3 The Role of the Group of Seven

Art played a significant role in constructing identity. The Group of Seven (A. Y. Jackson, J. E. H. MacDonald, Francis Johnston, F. H. Varley, Arthur Lismer, Lawren Harris and Franklin Carmichael), in particular, came to embody the unity of Canada. Supported by a number of powerful and influential patrons as well as the National Gallery, “the group insisted that what needed to be done, and what they were doing, was emancipating Canadian painting and Canadian culture, from Europe” (Cook, 2011). Whitelaw (2007) declared that slowly but firmly:

The promotion of a visual symbolic that was “native” to Canada was seen as a mechanism that would differentiate Canada as much from the United States as from Great Britain, as well as bring together under the aegis of a single institution (the National Gallery) the cultural products of Canada’s disparate regions (p. 177).

Each of the artists had applied their own particular style to the common theme of “wilderness”.

To name a few, Jackson, for example, painted wilderness by following its “logics”: 
In Autumn it flamed with red and gold, in Winter it wrapped itself in a blanket of dazzling snow, and in springtime it roared with running waters and surged with new life. So why stick to the barnyard, why paint cows and sheep and rural tranquility? (Lefolli & Kilbourn, 1966, p. 32)

Harris, on the other hand, “was convinced that the ideal painting was impersonal and universal . . . sought in the pale and open arctic, a spiritual climate that might enable Canadians to achieve ‘a more certain conviction of eternal values’ in their art” (Lefolli & Kilbourn, 1966, p. 43). Arthur Lismer’s paintings were recognized as “great human documents” (Lefolli & Kilbourn, 1966, p. 39) and MacDonad “spent his life trying to capture . . . the “larger” vision . . . [what] was the ‘inner life’ of nature” (Lefolli & Kilbourn, 1966, p. 41). Their idea was simple: to discover Canada in a new way and to express it through the paintings.

Supported and encouraged by the private railway company (Canadian Pacific Railway) and later by the government, the artists took on the role of not only satisfying the aesthetic senses, but also of depicting how Canada should be perceived. Lismer and Jackson acknowledged that “the main and truly Canadian subject was . . . the land” (as cited in Lefolli & Kilbourn, 1966, p. 32). The ideas of the Group of Seven paintings as “distinctively Canadian” (the term
coined by Arthur Lismer) were actively promoted. Besides a number of regular national exhibitions, Arthur Lismer is considered to have “probably expended more of his energies on art education throughout his life than on painting” (Reid, 2007, p. 101). He circulated the Group’s works and facilitated its dominance in schools and for art students. These and other strategies contributed to the Group’s “incredible staying power” so that:

A whole generation of Canadians who grew up following the Second World War learned of the Group almost entirely from reproductive silk screen prints that seemed to hang in every school library, bank, and doctor’s waiting room in the country (Zemans, 2007, p. 181).

The ideology was established:

Historians, writers and artists, and the tourism industry have all colluded with colonial history by contributing to the image of Canada as a wilderness, variously welcome, rich and forbidding, but always “Other”, whose destiny is defined – and limited to – its beauty, wildness and natural wealth (Berland, 2007, p. 91).
2.2.4.4 Environmentalism

The situation started to change in the 1970s with Prime Minister Trudeau promoting multicultural policy and declaring, “Although there are two official languages [in Canada], there is no official culture, and nor does any group take precedence over any other” (O’Brien, 2007, p. 29). Attitudes towards the north as “an empty land for the taking” shifted to the characterizations rooted in environmentalism as those in the works of Joyce Wieland, recognized as “connecting ecological concerns to questions of national sovereignty” (Sloan, 2007, p. 75).

Edward Burtynsky presented a number of luminous photographs aiming not only to depict the abstract and endless landscape but also to show the human effects on nature, namely, engineering and industrial development. Figure 1 (Burtynsky, 1996) comes from a series of photographs showing nickel tailings in Sudbury, Ontario, and creates visual impact by contrasting two strong colours – red-orange and black. It also contrasts different moods: the stunning impression of the discarded mine residue as seen from a distance, and the feeling of satiety, which is stirred up by taking a close look revealing the effects of environmental degradation. Gilber (2008) refers to the image as follows: “The colours are intense: a fiery red
stream courses through tar-black earth. The effect is stunning. The bright colors are set against a misty grey backdrop, dotted with a few fragile, leaf-shorn trees”.

Figure 1 Edward Burtynsky, Nickel Tailings #34, Sudbury, Ontario, 1996.

Figure 2 (Burtynsky, 1985) of British Columbia railcuts juxtaposes the close-up of railway incisions into the mountain with an apparently harmless impression when seen from distance. As such, it illustrates an attempt to present the shape and form of human engineering effects on landscape. According to Langford (1988, p. 6), “the mountain face covers the whole image:
there is no expansive horizon. Light from the sun passes across the land, accentuating the lush
green of the pine trees, the reds and yellows of the rock. A ‘bold dividing line’ of the railway
slices across the bottom of the image”.

photo © Edward Burtynsky, courtesy Nicholas Metivier, Toronto

Figure 2 Edward Burtynsky, CN Track No. 8, Thompson River, British Columbia, 1985.
Margaret Atwood, the writer, draws attention to the negative effects of industrial development on landscapes by raising questions in her speculative tales (i.e., Oryx and Crake). By presenting “an exaggerated parody of what is nascent today [or, more particularly, by depicting] a not-so futuristic society in which science and technology are harnessed to capitalist development without restraint, with no consideration of the long-term implications” (Gilber, 2008), Atwood questions the existing technological and engineering expansion.

These works deny the “Northern Vision” imaginaries, provide an alternative perspective, and demand that the existing relationship between human beings and nature be reevaluated. However, even though insisting that protecting nature appeals as a good deed, “Green” environmental consciousness directs us to register and respect the realm of physical nature and, at the same time, abstracts us from it (Buell, 1995, p. 31).

2.2.4.5 Summing up

The predominant ideologies in Canada are based on a deeply rooted understanding that demarcated human and natural worlds. It could be observed that the discussion of the evolution of understanding nature in Canada is based on (a) the local conditions of “place,” but (b) the understanding of nature has been directed towards the unifying vision of the north and
wilderness values. Nature stands apart from the human beings as “the other.” Human beings are considered superior to nature since they have managed to “conquer” it by being united and equal among each other or, as in the environmental discourse, as intruders and destroyers of nature. In one way or another, the distinction between humans and nature is evident, reinforcing not only the dichotomy, but also a hierarchical understanding of the relationship between them.

2.2.5 The Understanding of Nature in Japan

In Japan, nature is generally interpreted as closely associated with the life of human beings. As a result, the discussion is not so much about defining the qualities and the role of humans in opposition to nature, but rather about defining the interaction between humans and nature. This interaction is twofold. On the one hand, nature is altered to be part of the human world by “taming” it and hence enabling an indication of an “insider,” that is, by changing the “other” (i.e., like in the Japanese garden, section 1.2.3) so that it could be idealized for its beauty and aspired to as an ideal. In contrast, humans are taught to accept the changeability or the evanescence of things by observing and understanding nature (i.e., as in the Rikyu story discussed below).
2.2.5.1 Developing Sensibilities (1): Evanescence, Simplicity and Contextuality

Both processes require a set of ways, methods, and techniques that have been passed from generation to generation from as early as when Taoist thought reached Japan and then was subsequently sculpted and molded into a unique style. These ways, methods, and techniques are often known as a “Way” = ‘dou’ (‘tao’ from Taoism in Chinese), symbolized and popularly recognized overseas through activities like the tea ceremony=‘sadou’, bushidou, etc. (Obayashi, 2005). One of the most famous stories teaches that the laws of nature dominate the Japanese understanding, namely, evanescence, simplicity, and contextuality:

In the sixteenth century the morning-glory was as yet a rare plant with us. Rikiu – the greatest of all tea-masters, who brought to a high state of perfection the formalities of the Tea-ceremony – had an entire garden planted with it, which he cultivated with assiduous care. The fame of his convulvuli reached the ear of the Taiko (patron), and he expressed a desire to see them, in consequence of which Rikiu invited him to a morning tea at his house. On the appointed day Taiko walked through the garden, but nowhere could he see any vestige of the convulvus. The ground had been leveled and strewn with fine pebbles and sand. With sullen anger the despot entered the tea-room, but a sight waited him there which completely restored his humour. On the tokonoma,
in a rare bronze of Sung workmanship, lay a single morning-glory—the queen of the whole garden! (Okakura, 1964)

Firstly, evanescence is pronounced as the symbolic meaning of the flower itself and its brief existence. The act of cutting all the flowers strengthens the intrinsic perishability of the moment. Secondly, the magic of simplicity is enhanced by the choice of placing a single flower in the alcove (tokonoma). Finally, the timing is perfectly chosen to express respect for the patron by showing him the rare miracle – the queen of the whole garden – that exists in its best shape for a very short time.

A number of carefully elaborated ways, methods, and techniques aimed at harmonizing the coexistence of what is considered “separate categories” in the Western world is based not on analysis and understanding, but rather on the set of activities that are involved the whole experience, perceptual as well as social. As such, they define how one should relate to his/her context. When the set of practices assigned to humans was perfected, any contextual change could be encountered without losing one’s inner peace. In other words, these strictly defined approaches are not questioned until they become one’s second nature and come out “naturally” or spontaneously without a second thought. Human sensibilities, thus, become developed well enough. One needs: (1) a sharp mind to understand multiple meaning
conveyed in brief poems, (2) a fine palate to distinguish barely perceptible differences between foods, (3) a perfected sense of touch to feel the texture of natural materials, (4) a rich imagination to induce colour to the paintings, (5) an educated smell to enjoy the faint perfume of the chosen flowers, (6) a good eye and major pitch to recognize slight gestures and subtle changes in voice during the Noh plays, and (7) the ability to read hidden symbolism in a Japanese garden. Once these and other aesthetic sensibilities are heightened, one can discover why “the elimination of the insignificant” (Satler, 1999) to its simplest form and neatly cultured nature is perceived as superior. Incompleteness, irregularity, imperfection and suggestion – other traditional Japanese techniques derived from observing and learning from nature – can now be regarded as delightful and pleasant for the human soul.

2.2.5.2 Developing Sensibilities (2): Suggestion and Irregularity

The aspects of suggestion can be noticed in Japanese paintings, most markedly in the meanings of colours. Different from those by Western painters, Japanese paintings are filled with the so-called cultural colour scheme:
The effect of colour on their spirit is more important than the effect of color on their visual sense... [the reason of which] there is much spiritual significance attached to it... and expressed as the meaning of a painting (Tsuda, 1940, p. 13).

Other examples come from the brief and strictly contained haiku poems: “The smallest language construct that can generate enough complexity to create tension and resonance between its parts and take on symbolic power” (Marsh, 1999). Regarded as a qualitative measure of Japanese poetry, suggestion is the primary feature associated with and permitting the brevity of these poems. At first it is difficult to explain why the renowned poet Basho Matsuo (1644-1694) left only a single haiku about one of the most sacred symbols in Japan, Mount Fuji, and described the day he could not see it (Ueda & Basho, 1995):

"in the misty rain
Mount Fuji is veiled all day –
how intriguing!“ (p. 102)

However, Basho’s choice to leave only one haiku (the act echoes the Rikiu story about placing the single flower and as a result making it queen of the entire garden) and to describe the mountain on a cloudy day is particularly intriguing and could even be regarded as showing
respect to his readers. Precisely because Mount Fuji is so admired by the Japanese, each person should have the right to enjoy her/his moment with this sacred mountain. If Basho described the splendour one experiences when glazing on the peak silhouetted against the blue skies, he would impose his impression on others, thus depriving them of experiencing the magic. Suggestion, here, implies intimacy that is amplified by refraining from stating the facts because, Kuki (2004) is convinced, “The essence of pleasure is maintaining a dualistic relationship, that is to say, protecting the possibility as a possibility” (p. 19).

Further, imagination can be stirred by applying the technique of suggestion in traditional music, conversation, and theatre as expressed by Tanizaki (2006):

Japanese music is above all a music of reticence, of atmosphere . . . In conversation, too, we prefer the soft voice, the understatement. Most important of all are the pauses . . . In the Noh only the merest fraction of the actor’s flesh is visible . . . even the face is hidden; and so what little flesh can be seen creates a singularly strong impression” (p. 17, 39).

Paintings devoid of colour, the brevity of poems, the reluctance to use excessive decoration and lighting in Noh theatre, the miniaturist nature of the gardens, together with the seemingly
meagre range of flavours, the naturalness of materials employed in traditional architecture, preference for scentless flowers – all this and more – represent the Japanese culture, in which simplicity and naturalness are emphasized as intrinsic characteristics.

Irregularity is similarly appreciated in art, because it represents the reality of nature. Asymmetrical shapes and forms are therefore created in order to celebrate this quality and ease human struggles in daily life by reminding that one should search for the harmonious interaction with nature. Japanese books on floral art describe how to purposely twist a tree and cut some branches in order to create an unbalanced shape. The way of writing (literal meaning of calligraphy from the Japanese word “shodou” – a way, method, technique with “dou” derived from “tao”) dismisses perfectly copied characters and encourages lopsided drawing and writing, even when it is apparently ugly. A perfectly round bowl is undesirable and the potter is expected to leave a mark peculiar to his workshop. Architectural plans of Japanese temples were contrasted to those of the Chinese by Soper (1955), who concluded: “What remained from the first generation was a sensible irregularity of plan . . . as if by deliberate rejection, the main elements, though they face south, are on independent axes” (p. 210). Japanese gardening is usually described as the opposite of French gardening, without rational order and
lacking a geometric aspect. Meals are served on plates of different colours, shapes and textures unlike the uniform dishes in the West.

Whether it is flower arrangement (“ikebana” in Japanese), calligraphy, pottery, an architectural plan, a traditional garden or the choice of dinner plates – Japanese people value irregularity. In her philosophical analyses, Saito (2008) explained:

Challenging conditions, such as insufficiency, imperfection, and accidents beyond our control . . . would be characterized by Western existentialism as despair, nausea, or angst . . . [and] the Japanese . . . tradition provides a means of coping with this . . . by changing our attitude and outlook” (Everyday Aesthetic Qualities and Transience section, iii para. 5).

It is this process of “coping” that requires a carefully elaborated set of ways, methods and techniques.

It is generally believed that triggering somebody’s imagination encourages his or her involvement and participation, like the viewer’s attempt to ascribe a colour when looking at a painting of a colourless flower with vague contours, and it has a much more powerful effect.
Or, as simple as it could be in Kenko’s explanation: “In everything, no matter what it may be, uniformity is undesirable. Leaving something incomplete makes it intriguing, and gives one the feeling that there is room for growth” (Keene, 1995).

2.2.5.3 Uchi / Soto Boundaries

Previous discussions and examples illustrate some of the key elements of Japanese culture and establish the importance of learning the precisely defined ways, methods and techniques. However, in order to comprehend the complex ways of defining the interaction between humans and nature, analysis of the former cannot be isolated from tendencies to shift the contextual boundary between “inside”/uchi and “outside”/soto. These attitudes “are the inherent part of the collective understanding, [with uchi and soto being] inclusively recursive . . . [and] moving from Japan as uchi and the world as soto down through regional identities and intimate social relations” (Ball, 2004).

Japan is not the only group-oriented society, but it is said to differ in its structure from others such as China and India due to the absence of competition among groups in the former and the focus on blood connections in the latter (Stockman, 2000, Sinha, 2004 as cited in Andrew & Kiyoshi, 2009). The most distinctive feature of Japanese groupism, often referred to as
insular collectivism, is the dynamic relativity of the group’s boundaries. When uchi means the inside of the group and soto the outside of it, “the clear division of uchi and soto is less of interest than the shifting of boundaries depending on changing circumstances . . . [based on] a sense of the relative psychological distance between people” (Andrew & Kiyoshi, 2009). The situational nature of the uchi/soto distinction underlies the order and hierarchy of the society.

In one’s home, a certain level of hierarchy exists between children and parents, elder and younger siblings. However, they all become equal once they encounter somebody from outside, i.e., a neighbouring family. A similar situation exists in the business world: Inside Company “A” one’s status and position on the vertical ladder is strictly defined, but once the members of Company “B” are present, no matter how high or low in rank, all members of Company “A” become equal to each other. This pattern extends to Japan as a nation in relation to other countries and Japanese as humans in relation to one another, including the natural world. It goes without saying that the perceived equality comes as the result of hierarchical order, but is overridden by “the uchi/soto distinctions . . . build[ing] the flexibility to our understanding” (Hendry, 2003, p. 102).

In this context, nature can be regarded as an “insider” or “outsider” with wilderness in the latter sphere being potentially dangerous and therefore having negative associations as discussed in
section 1.2.3. Analogous connotations have been presented by Ohnuki-Tierney (1984) drawing on Japanese tendencies to refer to “soto” with negative attitudes, i.e., associating sickness with the “dirt” of the “soto.” Satoko Suzuki (2006) expanded the argument when trying to explain why, in Japan, contrary to many other cultures, surprise is not so enthusiastically welcomed. She concluded that unexpected and surprising information is unassimilated because it belongs to the unknown “soto” and thus often receives a negative evaluation.

It is therefore important to become sensitive enough to readjust to the inevitable shift of boundaries and as a result preserve the harmony of uchi. It is necessary to be aware that the human world is inseparable and exists within the larger natural world that can become dangerous. Learning the defined ways, methods and techniques enhances cooperation and agreement among the members of the “inside”, which, stabilized and strengthened by the hierarchical order, is considered to be necessary to reach the harmonious interaction with the “outside”.

2.2.5.4 Solving Contradictions in the Daily Encounters of Life

Even though it is often agreed that “the predominance of aesthetics in the conceptualization of Japanese culture maybe unmatched elsewhere” (Kuki, 2004, p. 2) and that the principles in art
and traditional practices discussed earlier form the core of Japanese society, observations of daily activities and routines in Japan can make one wonder why everything is just the opposite. In an attempt to present rational explanations and enthralling representations in literature and arts without destroying the power of both, it could be argued that, especially in Japan, survival and prosperity depends on the ability to combine these two contradictory aspects without denying either. Buddhists would refer to it as “Yin” and “Yang” or the constant interchange between the two. Charles Shiro Inoue titles his book “Evanescence and Form” in order to address this opposition. To put it in simpler terms, he questioned: “[why] in a place that celebrates dreams, ambiguity, and even confusion . . . do the trains run on time? [and steers the reader towards a belief that this meticulous] formality . . . emerges as a lasting response to change” (Inoue, 2008, p. 4).

Indeed, everyone who has been to Japan or has had relations with the Japanese has noticed their meticulous nature. Every action is carefully planned with a heap of documents requiring approvals and detailed descriptions in order to ensure that everything is predetermined and fixed. Public spaces are filled with manuals with detailed instructions with such apparently unnecessary (or hardly imaginable in the West) posts like “Do not turn upside down” (on the bottom of tiramisu dessert box). “Caution: knives are sharp” (on a knife sharpener) or the
manner-up program initiated by Tokyo Metro that teaches citizens proper behaviour in trains. The latter is especially interesting because the contents of the posters differ depending on whether they are in English or Japanese. For example, one of the posters has a line on the bottom saying: "Please refrain from putting on make-up in the train" and on top it uses quite rude form of Japanese saying "Let's do it at home". Another image has a line on the bottom saying: “Please be aware that applying make-up on the train may be bothersome to others” in English and “Absorbed by the make-up? Rather than looking at the mirror, you better were looking around” (Tokyo Metro, 2012). Even though a marginal aspect in this discussion, it is another example how uchi/soto distinction is manifest in daily life (refer to Section 1.2.5.3). As read from the posters, a more polite language form used for the “soto” people (written in English) contrasts with a more educated and strict form (written in Japanese) – for the Japanese.

Further, there is the precision of time! The author, for example, has witnessed a meeting in which more than ten people discussed for 30 minutes when the bus should depart – at 9:00:00 or 9:00:59 if in the schedule it is written 9:00. The main concern was that for the people who were in the bus at 9:00:00, departing at 9:00:59 is considered to be late. On the other hand, for
the people who come at 9:00:30 when the bus has gone – it is also unfair. The issue remains unsolved.

Table 1 summarizes some of the “real-world” oppositions in regard to the cultural aspects (evanescence, simplicity and contextuality (2.2.5.1), suggestion and irregularity (2.2.5.2)) in order to illustrate the coexistence of both. The table lists four of the five cultural aspects with contextuality not included because it is assumed that all the situations are dependent on context. Contextuality is the connecting aspect which facilitates the interplay of the other four.

<table>
<thead>
<tr>
<th>Culture</th>
<th>Techniques</th>
<th>Opposite</th>
<th>Real examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simplicity</td>
<td>Reducing diversity, quantity or size; aiming for pureness, emptiness, freshness, miniaturization, etc.</td>
<td>Abundance</td>
<td>Apparent “chaos” from the excess of goods and people</td>
</tr>
<tr>
<td>Evanescence</td>
<td>Observing and learning from nature and worshipping the moments when the change is most obvious: autumn, spring, dawn, dusk, twilight, falling cherry blossoms, etc.</td>
<td>Stability and permanence</td>
<td>Aspirations for “life-time employment” and central control and pre-determination of events</td>
</tr>
<tr>
<td>Suggestion</td>
<td>Allowing space for imagination by not pronouncing (silence), not painting the colour or not describing the emotion.</td>
<td>Describing every detail</td>
<td>Manuals and instructions</td>
</tr>
<tr>
<td>Irregularity</td>
<td>Aspiring to twisted (interesting) flower arrangements, calligraphy, gardens, etc.</td>
<td>Regularity</td>
<td>Square houses, streets, punctuality, etc.</td>
</tr>
</tbody>
</table>

Table 1 Cultural Aspects and Daily Practices.

2.2.5.5 Contrapuntal Tensions

Following the above, an understanding of opposites should emerge by recognizing a cyclical, situational and continually changing Japanese mind. In other words, both human and natural
worlds are placed on a continuum with more than two options, thus enabling the observation of slight differences in a range of options rather than ultimate distinctions.

As one of the most elaborated forms of cultural communication requiring not only education but also skill, art contrasts with the daily practices in society. In a culture where there are more than two options, adherence to the stage before achieving the “most elaborated form” (the penultimate stage) is the basis of the activities in Japanese society. Not everyone can become an artist, but everybody is given a possibility to by being encouraged to reach this penultimate stage. In this case, the penultimate stage is very strictly defined by frameworks, application forms, detailed schedules and hierarchical bureaucracy. Art, as the ultimate stage, is not really freed from this framing and structuring in the penultimate stage, but rather evolves from it as the next step. Japanese perception communicates that creativity is born from accuracy and stability as it is the “form that reveals change” (Inoue, 2008, p. 80). This is not very difficult to comprehend since similar processes are evident world-wide. Almost all professions require strong knowledge and an experience base before permitting the expression of one’s improvisational capabilities. The difference is that the homogeneity of Japanese society (including the centrally controlled and supervised educational system) and the focus on
elaborate domestic culture over years allow for more things to be expressed without being explicitly stated.

Finally, all the meanings are dynamic and relative. Therefore, even though the real-life examples in Table 1 can be regarded as explicit, most would be difficult to understand for foreigners. Similarly, no matter how many manuals and descriptions are provided for the company employee, the inability to understand the high-context communication subtleties like “a/un no kokyuu” (lit. “a-un breathing”), indicating an inherently harmonious relationship or non-verbal communication (Wikipedia, 2011) or “ishin-denshin” (lit. “what the mind thinks, the heart transmits”) and the ability to pass on thought without words (Carraro, 1992) can leave one beyond the psychologically situational “uchi” border.

To make things more complicated, these cultural aspects (2.2.5.1; 2.2.5.2) are not isolated from each other and do not have a clearly defined meaning because it changes according to the context. The four aspects listed in Table 1, are inseparable and overlap or complement one another in dynamic interchanges between the different relationships that can be created. Further, they are tightly linked with their opposites or, the penultimate stage in the range of options.
It is important to notice that “the Japanese aesthetic has traditionally sought beauty not in an abundance of power, wealth, or virtue but in a realm of purity devoid of any pollution or blemish” (Japan Echo, 2007). This tendency is illustrated in Rikyu’s single morning glory but, the same result could had been achieved if Rikyu grew a single flower, cut it and placed it in the alcove. Although the result would have been the same, the approach would be significantly different. In addition to confirming the commonplace idea that Japan is a process-oriented society, this illustrates that simplicity is beyond abundance in Japanese understanding. That is, one can achieve simplicity only after having passed through the abundance stage. Proper simplicity implies a process on which an enormous amount of effort is spent and thus is regarded with respect. Similarly, irregularity is understood as:

An irregularly shaped and cracked tea bowl, a vase missing one handle, and a crooked tree trunk used for alcove support of a tea hut are all aesthetically effective because they are placed in a space with strict geometric lines of a tatami mat border, the regular pattern of the mat’s woven straws and the regular geometric shapes of windows (Saito, 2008, Everyday Aesthetic Qualities and Transience section, v para. 12).

The relative interconnectedness of these aspects reveals and strengthens the intrinsic Japanese belief that everything is inseparable and mutually dependent. Simplicity could be
thought of as tightly linked with suggestion because miniaturization creates a generally ambiguous effect, which in turn can lead to various interpretations (simplicity → suggestiveness). Suggestion, then, could have been derived from the observations of continually changing natural processes. Since everything is perceived to be temporary, plain expressions are replaced with vague allusions, which are most applicable in the context of change (evanescence in nature leads to suggestion). Both simplicity and suggestion are regarded as the core ideas behind the brief Japanese poems or Noh theatre, while simplicity and irregularity are shared characteristics of traditional gardens (simplicity + suggestiveness). Lastly, carefully selected singular flowers are arranged irregularly as an expression of beauty (simplicity + irregularity).

The notion of evanescence, in itself, implies change and temporality. Suggestiveness is the result of change. Simplicity allows suggestiveness to take place and is therefore easily contextualized according to the changing conditions. Irregularity is associated with something incomplete, having room for growth (as in the previous quote by Kenko (2.2.5.2, Ch. 2), which means that with time it is expected to change.
2.2.6 Differences Between the Canadian and Japanese Understandings

There is an obvious difficulty when attempting to define natural versus cultural or human-made in Japan as it is defined in the West. Everything in accord with its context can be perceived as natural, and a number of ways, methods, and techniques are employed to “polish” the surroundings in order to achieve this “natural” state. In Japan, it is difficult to find “an opposition between culture and nature . . . Rather, nature and culture are inscribed on each other. Contextual variations in culture, including social relations, are understood in terms of variations in nature” (Rosenberger, 2004, p. 147). Kyburz (2004) noted that a fundamental difference exists in the way Western and Japanese cultures conceive the world and existence. He further argued, “Japanese culture is not characterized by the conceptual fracture which in Western consciousness and anthropological usage opposes ‘culture’ as a distinctively human sphere, and ‘nature’ as that which lies outside of it” (Kyburz, 2004, p. 258). As Kyburz observed:

The Japanese world view does not conceive of man and nature as polarities, but as mutual parts of an all-comprehensive whole . . . [and] mankind . . . is felt to be one of the numerous potential forms of existence, with no particular vocation for supremacy (Kyburz, 2004, p. 258).
This understanding can be illustrated through “Nature Continuum” and Vertical-Horizontal Relationships.

2.2.6.1 The Nature Continuum

Japanese perception tends to emphasize a continuum rather than mutual exclusion composed of:

Pairs which in their ideal states are to be found at opposite poles of a continuum, with actual cases located somewhere in between depending on the context . . . [and] the emphasis is placed on processes . . . something being or becoming . . . always in the making . . . [and therefore regarded as] more important than the absolute state (Kalland & Asquith, 2004, pp. 11, 12).

Examples of this understanding permeate traditional Japanese culture, as follows:

- Chikamatsu Monzaemon, a developer of a genre of puppet theatre during the Edo period, emphasized the fact that “art lies in the interspace of the skin membranes, between unreal and real beings” (Ryosuke, 2002, p. 29). Even though the interface between real and unreal
per se is difficult to grasp, it makes sense when it refers to the puppet theatre that can create real life by means of skin membranes.

- Great Noh actor and theoretician Zeami (1364-1443) developed the art form based on the principle that “various degrees of difference exist between thick and thin” (Ryosuke, 2002, p. 29), again suggesting that continual search to match the contextual situation should be favoured over a mere choice between either/or.

- The magical roji is an interspace between the magical occurrences at the teahouse and the mundane human world:

  A passage into self-illumination . . . intended to produce a fresh sensation conducive to full enjoyment. One who has trodden this garden path cannot fail to remember how his spirit, as he walked in the twilight of evergreens over the regular irregularities of the stepping stones, beneath which lay dried pine needles, and passed beside the moss-covered granite lanterns, became uplifted above ordinary thoughts. One may be in the midst of a city, and yet feel as if he were in the forest far away from the dust and din of civilisation (Okakura, 1964).
This continuum is illustrated in Figure 3 (Kalland & Asquith, 2004, p. 13). It shows the binary division of the opposite poles as commonly interpreted in the West. It also suggests a range of “in betweens” that take on different meanings with the changing context.

Figure 3 The Nature Continuum.

2.2.6.2 Vertical-Horizontal Relationships

The distribution of vertical-horizontal relationships also differ. It was discussed earlier (2.2.2, 2.2.4.5, Ch. 2) that in Canada, the human world is understood as separate from nature. Thus, equality among humans, manifested in predominantly free and flexible relationships among members of society, is highly valued. As such, prevailing attitudes that people are capable of conquering nature (vertical tendency) contrasts with the assumed equality among humans (horizontal relationships). In Japan, however, there is no clear definition of natural, and the goal is to come as close as possible to the harmonious balance between the human world and nature by harvesting the collective human effort. Therefore, the relationships among humans
on the “inside” tend to be more hierarchical (vertical) as the expression of the unanimous cooperation among the members of the “inside”. Once the agreement is reached, nature is approached with gratitude when it presents gifts and it is feared with loyalty, implying that the interaction between the human world (“inside”) and natural world (“outside”) is understood horizontally (Figure 4).

![Diagram showing vertical and horizontal relationships in Canada (left) and Japan (right).]

*Figure 4 Vertical and Horizontal Relationships in Canada (left) and Japan (right).*
Chapter 3: Relationship to Nature Evidenced in LEED-Canada and CASBEE

It is increasingly acknowledged that human activity, including the design of buildings, must be modeled more closely on natural systems and processes. The rationale has been considered from the sustainability point of view, emphasizing the symbiotic human-nature relationship over the long term.

3.1 The Coexistence of Humans and Nature: Biophilia

The term “biophilia” was first used by E. O. Wilson in the 1990s to describe "the human propensity to affiliate with other life forms . . . [in order to] bring about a new cultural commitment to the environment" (The EnviroLink Network, 2000). Wilson suggested that humans have an “innate tendency to focus on life and lifelike processes” (Wilson, 1984, p.1), and the ability to interact with nature can enhance overall well-being. His hypothesis was based on the premise that humans have evolved over thousands of years by being closely dependent on natural processes, which, in turn, imply that the human tendency to affiliate with nature is hereditary. Later, psychologists have claimed that biophilia is “grounded in human evolutionary development occurring in a natural environment . . . disprov[ing] the notion that
“modern” human beings can ignore their own genetic make-up and detach themselves from natural settings without consequences” (Salingaros and Masden II, 2008a). As a result, “human beings gain improved mental and physical health by being close to nature” (Salingaros & Masden II, 2008a).

In terms of the built environment, biophilia is considered the “missing link in sustainable design” (Kellert, as cited in Wilson, 2008, p. 325) and necessary to counter the current technical framing of building environmental practice and to foster a stronger connection of inhabitants with place and, more generally, nature. Especially because of “the emotional and sensory attraction that people have toward things in the natural world: habitats, activities, and living objects in their immediate surroundings,” (Wilson 2008) “biophilia is helping to shape a new adaptive and sustainable design movement, [which creates] a new effort [necessary] to reconnect human beings to the buildings and places they inhabit” (Salingaros & Masden II, 2008a). This development, in turn, will require greater recognition, understanding and accommodation of cultural distinctions in the design of green buildings.

Chapter 3 illustrates how the notion of biophilia is evidenced in both LEED-Canada and CASBEE. Within the cultural underpinnings of significance described in this chapter, those that are directly and indirectly related to nature are of particular interest.
Beatley (2011) in "Biophilic Cities" presented a variety of evidence from researchers in the Netherlands, Denmark, Sweden, England and the United States. He argued that human beings “need nature in their lives; [that this] is not optional but essential [because] few elixirs have the power to heal and restore and rejuvenate the way that nature can” (pp. 3, 6). Further, Beatley (2011) stated, "Designing and planning for biophilia . . . makes economic and environmental sense . . . [since] the economic, environmental, and quality-of-life payoff is undeniable and considerable" (p. 8). If, as argued by Wilson (2008), “architecture [is] an extension of biology,” the built environment acts as an intermediary that can facilitate or obstruct human connection with nature.

As an attempt to incorporate the notion of biophilia into the design practice, Kellert (2008) offered a series of biophilic design guidelines. Recognizing the importance of “adopting a radically different paradigm for development of the modern built environment that seeks reconciliation if not harmonization with nature,” Kellert (2008) introduced these guidelines in search for ways to inculcate into people a strong attachment to place. Only by creating associated positive benefits, he noted, “[would] people exercise responsibility or stewardship to keep them in existence over the long term” (p. 5).

Kellert (2008) identified six biophilic design elements: two from the organic or naturalistic
dimension (shapes and forms), and four from the place-based or vernacular dimension (links and synergies to culture and ecology of the place). These elements were revealed in more than seventy biophilic design attributes (Figure 5).

<table>
<thead>
<tr>
<th>Environmental features</th>
<th>Natural shapes and forms</th>
<th>Natural patterns and processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Botanical motifs</td>
<td>Sensory variability</td>
</tr>
<tr>
<td>Water</td>
<td>Tree and columnar supports</td>
<td>Information richness</td>
</tr>
<tr>
<td>Air</td>
<td>Animal (mainly vertebrate) motifs</td>
<td>Age, change, and the patina of time</td>
</tr>
<tr>
<td>Sunlight</td>
<td>Shells and spirals</td>
<td>Growth and efficiency</td>
</tr>
<tr>
<td>Plants</td>
<td>Egg, oval, and tubular forms</td>
<td>Central food point</td>
</tr>
<tr>
<td>Animals</td>
<td>Arches, vaults, domes</td>
<td>Patterned wholes</td>
</tr>
<tr>
<td>Natural materials</td>
<td>Shapes resisting straight lines and right angles</td>
<td>Bounded spaces</td>
</tr>
<tr>
<td>Views and vistas</td>
<td>Simulation of natural features</td>
<td>Transitional spaces</td>
</tr>
<tr>
<td>Foliage growing</td>
<td>Biomorph</td>
<td>Linked series and chains</td>
</tr>
<tr>
<td>Geology and landscape</td>
<td>Geomorphology</td>
<td>Integration of parts to wholes</td>
</tr>
<tr>
<td>Habitats and ecosystems</td>
<td>Biomimicry</td>
<td>Complementary contrasts</td>
</tr>
<tr>
<td>Fire</td>
<td></td>
<td>Dynamic balance and tension</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Light and space</th>
<th>Place-based relationships</th>
<th>Evolved human-nature relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural light</td>
<td>Geographic connection to place</td>
<td>Prospect and refuge</td>
</tr>
<tr>
<td>Filtered and diffused light</td>
<td>Historic connection to place</td>
<td>Prospect and refuge</td>
</tr>
<tr>
<td>Light and shadow</td>
<td>Ecological connection to place</td>
<td>Order and complexity</td>
</tr>
<tr>
<td>Reflected light</td>
<td>Cultural connection to place</td>
<td>Curiosity and engagement</td>
</tr>
<tr>
<td>Light pools</td>
<td>Indigenous materials</td>
<td>Change and metamorphosis</td>
</tr>
<tr>
<td>Warm light</td>
<td>Landscape orientation</td>
<td>Security and protection</td>
</tr>
<tr>
<td>Light as shape and form</td>
<td>Landscape features that define building form</td>
<td>Mastery and control</td>
</tr>
<tr>
<td>Spacial variability</td>
<td>Landscape ecology</td>
<td>Affection and attachment</td>
</tr>
<tr>
<td>Space as shape and form</td>
<td>Integration of culture and ecology</td>
<td>Attraction and beauty</td>
</tr>
<tr>
<td>Spatial harmony</td>
<td>Spirit of place</td>
<td>Exploration and discovery</td>
</tr>
<tr>
<td>Inside-outside spaces</td>
<td>Avoiding placelessness</td>
<td>Information and cognition</td>
</tr>
</tbody>
</table>

Figure 5 Elements and Attributes of Biophilic Design (Kellert, 2008).
Some of the attributes identified as linked to the credits in the assessment methods (light and space, environmental features, views and vistas, sunlight and place-based relationships) were selected for the comparison of LEED-Canada and CASBEE (Figure 6).

![Table of Biophilic Design Attributes](image)

<table>
<thead>
<tr>
<th>Environmental features</th>
<th>Light and space</th>
<th>Place-based relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunlight</td>
<td>Natural + Filtered + Diffused + Reflected light Shadow</td>
<td>Natural shapes and forms</td>
</tr>
<tr>
<td>Views and vistas</td>
<td>Light as shape and form</td>
<td>Botanical motifs, Tree and columnar supports, Animal motifs, Shells and spirals, Egg, oval and tubular forms, Arches, vaults, domes, Shapes resisting straight lines and right angles, Simulation of natural features, Biomorphy, Geomorphology, Biomimicry</td>
</tr>
<tr>
<td>Habitats and ecosystems</td>
<td>Spaciousness</td>
<td>Natural patterns and processes</td>
</tr>
<tr>
<td></td>
<td>Spatial variability</td>
<td>Sensory variability, Information richness, Age, change, and the patina of time, Growth and efflorescence, Central focal point, Patterned wholes, Bounded spaces, Linked series and chains, Integration of parts to wholes, Complementary contrasts, Dynamic balance and tension, Fractals, Hierarchically organized ratios and scales</td>
</tr>
<tr>
<td></td>
<td>Space as shape and form</td>
<td>Evolved human-nature relationships</td>
</tr>
<tr>
<td></td>
<td>Spatial harmony</td>
<td>Prospect and refuge, Order and complexity, Curiosity and enticement, Change and metamorphosis, Security and protection, Mastery and attachment, Attraction and beauty, Exploration and discovery, Information and cognition, Fear and awe, Reverence and spirituality</td>
</tr>
<tr>
<td></td>
<td>Inside-outside spaces</td>
<td>Landscape ecology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Integration of culture and ecology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spirit of place</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Avoiding placelessness</td>
</tr>
</tbody>
</table>

**Figure 6 Selected Biophilic Design Attributes (emphasized).**

The following analysis illustrates how the broad cultural differences in Canada and Japan influence the priorities and emphases in the two assessment methods. These differences are not clear and cannot be made evident through side-by-side comparisons. Thus, the aspirations in the biophilic design guidelines serve as lenses that facilitate the comparison. As a result, the LEED-Canada and CASBEE credits that correspond to the aspirations in the biophilic design
guidelines were selected and summarized into five categories (Figure 7). Cultural differences were exposed by comparing the details of similar intentions in LEED-Canada and CASBEE against each other and against the aspirations set by the biophilic design guidelines. Tables 2 and 3 present the results of these comparisons. The following sections provide the analyses as well as the cultural underpinnings category by category (row by row in Tables 2 and 3).

<table>
<thead>
<tr>
<th>Site and its habitat, natural resources</th>
<th>Surrounding environment and its management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open space</td>
<td>Spaciousness and views</td>
</tr>
<tr>
<td>Regional importance</td>
<td>Harmonization with the context</td>
</tr>
<tr>
<td>Daylight and views</td>
<td>Daylight</td>
</tr>
<tr>
<td></td>
<td>Local topography and culture</td>
</tr>
</tbody>
</table>

*Figure 7 LEED-Canada (left) and CASBEE (right) Comparison: The Five Categories.*
### 3.1.1 Biophilia References in LEED-Canada

Table 2 correlates some of key LEED-Canada credits (CaGBC, 2009) in relation to Kellert’s (2008) biophilic design guidelines. The key observations are:

<table>
<thead>
<tr>
<th>LEED-Canada: Intentions*</th>
<th>Requirements</th>
<th>Biophilic design: Intentions**</th>
<th>Aspirations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Protect greenfields, preserve habitat and natural resources, reduce environmental impact, restore damaged areas (maximize open space): promote biodiversity</td>
<td>Choose a previously developed/graded site, create density, limit and avoid new disturbances to land and habitats</td>
<td>Emphasize landscape ecology, connect with local habitats and ecosystems</td>
<td>Improve ecology over the long-term, complement the landscape, aim for positive transformation</td>
</tr>
<tr>
<td>2 Emphasize regional importance</td>
<td>Reduce the development footprint or provide vegetated open space</td>
<td>Promote spaciousness, spatial variability/shape and form/harmony, inside-outside spaces</td>
<td>Stimulate emotionally/intellectually/aesthetically, create harmony/security, integrate nature with culture</td>
</tr>
<tr>
<td>3</td>
<td>Address geographically-specific environmental priorities</td>
<td>Facilitate geographic and historic connection</td>
<td>Create familiarity/predictability and therefore security, facilitate participation, enhance collective memory</td>
</tr>
<tr>
<td>4 (Daylight and views): provide a connection between indoors and outdoors</td>
<td>Achieve determined daylight levels/direct line of sight to the outdoors</td>
<td>Introduce natural, filtered, diffused, reflected light, shadow, light as shape and form, create access to views and vistas, sunlight</td>
<td>Promote movement/health/well-being/productivity, enhance imagination/curiosity/exploration/discovery, mediate connection between spaces, improve morale and comfort</td>
</tr>
</tbody>
</table>

* Corresponding credits: Development density and community connectivity, site selection, site development: protect and restore habitat, maximize open space, regional priority, daylight and views.

** Corresponding biophilic design guidelines: place-based relationships, environmental features, light and space.

*Table 2 LEED-Canada Credits and the Biophilic Design Guidelines.*
### 3.1.2 Biophilic References in CASBEE

Table 3 correlates some of the key CABEE credits (JSBC, 2010) in relation to Kellert’s (2008) biophilic design guidelines. The key observations are:

<table>
<thead>
<tr>
<th>CASBEE: Intentions*</th>
<th>Biophilic design: Intentions**</th>
<th>Aspirations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Conserve &amp; create habitat, enhance the quality of the environment, set appropriate management guidelines</td>
<td>Emphasize landscape ecology, connect with local habitats and ecosystems</td>
<td>Improve ecology over the long-term, complement the landscape, aim for positive transformation</td>
</tr>
<tr>
<td>2 Create spaciousness &amp; access to view, promote ease of movement and comfort</td>
<td>Promote spaciousness, spatial variability/ shape &amp; form/ harmony, inside-outside spaces</td>
<td>Stimulate emotionally/ intellectually/ aesthetically, create harmony/ security, integrate nature with culture</td>
</tr>
<tr>
<td>3 Harmonize with the urban context, create continuation of historic scenery</td>
<td>Facilitate geographic &amp; historic connection</td>
<td>Create familiarity/ predictability and therefore security</td>
</tr>
<tr>
<td>4 Promote use of daylight/ glare countermeasures/ balance of brightness/ lighting control</td>
<td>Introduce natural, filtered, diffused, reflected light, shadow, light as shape &amp; form, create access to views &amp; vistas, sunlight</td>
<td>Promote movement/ health/ well-being/ productivity, enhance imagination/ curiosity/ exploration/ discovery, mediate connection between spaces, improve morale &amp; comfort</td>
</tr>
<tr>
<td>5 Carry on local topography &amp; culture, keep appropriate relations with community</td>
<td>Integrate culture and ecology, connect to place, create spirit of place, avoid placelessness</td>
<td>Create identity, foster commitment/ loyalty/ responsibility/ stewardship, facilitate participation, enhance collective memory</td>
</tr>
</tbody>
</table>

* Corresponding credits: daylighting (Q1.3.1), perceived spaciousness and access to view (Q2.1.2.1), space for refreshment (Q2.1.2.2), preservation and creation of biotope (Q3.1), townscape and landscape (Q3.2), local characteristics and outdoor amenity (Q3.3).

** Corresponding biophilic design guidelines: place-based relationships, environmental features, light and space.

*Table 3 CASBEE Credits and the Biophilic Design Guidelines.*
3.2 Key Differences Between the Way the LEED-Canada and CASBEE Embody Biophilic Needs

There are obvious gaps between both LEED-Canada and CASBEE credits and the aspirations embedded in the biophilic guidelines, as well as in the ways and extent of how these gaps differ from each other. Comparing Tables 2 and 3, row-by-row:

3.2.1 Row 1

a. The language used in the formulation of the credits is different. LEED-Canada (CaGBC, 2009) shifts between directives such as “avoid inappropriate/disruption, limit, reduce, eliminate, etc.” and “restore, preserve,” which implies that the development will necessarily have negative consequences on the surrounding environment. CASBEE (JSBC, 2010), by contrast, is formulated using only positive directives like “conserve, create, preserve, enhance, etc.”

b. LEED-Canada (CaGBC, 2009) is primarily concerned with design and construction. CASBEE (JSBC, 2010), on contrast, requires developers to set “appropriate maintenance management guidelines” that therefore extend beyond the completion of a project.
3.2.1.1 Language / Intentions to Follow-up

CASBEE is generally couched in more positive terms than LEED-Canada and could be considered as more encouraging. It evaluates the development and how far it aims “to enhance the quality of the environment” (JSBC, 2010), which implies humans action as having potentially positive effects on the environment in the long term. Further, although LEED-Canada includes credits for commissioning and monitoring, CASBEE sets the guidelines for building management, which shows the importance of directly following up and engaging with a project’s performance. Intentions and aspirations of the biophilic design (i.e., connection, improvement, and positive transformation) can be achieved and evaluated only in the long term. Since the methods are currently framed to evaluate buildings upon their completion, the time frame becomes a crucial difference between the LEED-Canada, CASBEE and the biophilic design guidelines.

3.2.1.2 Emphasis on Continuous Improvement in Japan

Attempts to encourage improvement are not only evident in CASBEE, but could be attributed as one of the key Japanese cultural aspects. Irregularity has been pertinent to Japanese aesthetics and represented a symbol for something interesting and having potential for improvement
(Kenko: “having space for growth”, 2.2.5.2, Ch. 2). Combined with the highly developed sensitivities to the merest changes in context, a type of thinking that emerges somewhere on the continuum and is oriented towards a process aiming for better results (2.2.5.5, Ch. 2) defines and shapes the organization of Japanese society and its structures, methods, and tools.

3.2.2 Row 2

When the intention is to increase the amount of space, LEED-Canada and CASBEE focus on fundamentally different aspects. In LEED-Canada (CaGBC, 2009), open space is considered an extension of the site-related credits (both intentions for the credits “site development: protect and restore habitat” and “maximize open space” include the idea of “promoting biodiversity”).

3.2.2.1 Understanding of Space

In CASBEE, the concept of open space is directly connected to human engagement (credit 1.2.1 Perceived Spaciousness and Access to View and 1.2.2 Space for Refreshment), and some of the potential benefits – “psychological comfort, ability to generate new vitality” (JSBC, 2010) – are acknowledged. Further, CASBEE suggests that the open space itself might not be necessary if the perceived effect of spaciousness and openness is created by implementing
different architectural strategies, i.e., “flat ceiling height, taking beam shape into account . . .

[as it can] be effecting in imparting various benefits, such as a sense of space” (JSBC, 2010).

In LEED-Canada, in contrast, the only reference to open space is included in the credit “5.2 Site Development: Maximize Open Space”. The intent aims at “promot[ing] biodiversity by providing a high ratio of open space to development footprint,” and the requirements as well as potential technologies and strategies emphasize the importance “reduc[ing] the development footprint and/or provid[ing] vegetated open space” (CaGBC, 2009).

While LEED-Canada requirements refer to a space understood as a building exterior rich in greenery, CASBEE emphasizes the interior space. This tendency to focus on one or other aspect of space contrasts with the biophilic design guidelines, which recognize the importance of both. These aspects include environmental features directly related to the exterior space and interior features (i.e., natural shapes, forms, patterns and processes) that could stimulate emotionally, intellectually and aesthetically (Kellert, 2008, p. 14). Therefore, even though the intentions of LEED-Canada and CASBEE communicate their fundamentally different starting points (LEED-Canada refers to exterior space and CASBEE, interior), the comparison with the aspirations in the biophilic design guidelines reveals their complementary nature.
3.2.2.2 Subtleties Communicated Through Chinese Characters

It is intriguing that the understanding of space in LEED-Canada and CASBEE is based on such fundamentally different aspects. As Westerners have accumulated certain stereotypes and opinions about what constitutes Japanese culture, Japanese have developed their own ideas about Westerners' world and their attitudes.

One of the ideas prevailing in Japan as common knowledge when describing the differences between Westerners and Japanese refers to how the environment is comprehended and is expressed by subtle nuances in different Chinese character combinations. In order to communicate the consequences of what the author calls “subtle nuances,” it is important to note that every Chinese character carries explicit and implicit meanings within it, and a word is usually composed of two characters. Therefore, even if the meaning appears to be similar when translated, the Japanese language enables richer understanding of the situation by choosing the most appropriate combination of the characters.

The Japanese tend to agree that Westerners refer to their environment as kanjou (感情), a word composed of two Chinese characters with the first meaning “emotion, feeling, sensation” and the second “passion, sympathy, circumstances”. In contrast, the Japanese are more
concerned with taikan (体感), another word composed of two characters with the first meaning “body” and the second “emotion, feeling, sensation”. The first character in the first combination is the same as the second character in the second combination – kan. As such, the repeating character ascribes the main meaning that refers to emotion and feeling, and the differing characters communicate the subtle differences.

Reading from the combinations above, the different emphases assigned to Westerners and Japanese can be appreciated. Westerners are referred to as people who are more romantic, care how the things appear aesthetically and what kinds of emotions are triggered. In contrast, the Japanese tend to prioritize the “bodily feeling or experience” based on qualities such as humidity, cleanliness, purity and whiteness.

This idea proves interesting when looking at the perceptions of nature as expressed in both cultural contexts. Two well-known parks – Great Bear Rainforest in Western Canada and Kumamoto Suizenji Park in Southern Japan – illustrate the difference.

The romantic grandeur of the Banff National Park in Canada is aesthetically beautiful and triggers powerful emotions, it represents how Canadians perceive nature. The Japanese find themselves more comfortable in the human-made park designed to mimic the ideal forms of
“nature” (2.2.3, 2.2.5, Ch. 2) and to be clean, clear and untouched. This could be one of the explanations why the same concept of open space in the two assessment methods is interpreted in a completely different way.

3.2.3 Row 3

a. LEED-Canada focuses on the “geographically-specific environmental priorities” (CaGBC, 2009), which are measurable aspects of a building’s site. In CASBEE, the regional credit is less specific and qualitative as it aims for a synthesis with the surrounding urban context.

b. CASBEE emphasizes the “continuation of unique local character, history and culture” (JSBC, 2010) as an important aspect in the region-related credit (3.1 Attention to Local Character and Improvement of Comfort). The rationale is presented in the commentary, which explains the goals of “discovering historical and cultural resources and reflecting them in various forms while building a modern environment [in order to] pass down [this] important environmental asset” (JSBC, 2010). These efforts are intended to affect inhabitants and their understanding of a particular place by “preservation, restoration and regeneration of historic spaces inside and outside existing building, and of building remains, and the use of materials with local character” (JSBC, 2010).
3.2.3.1 Comparison: Regional Importance / Place-focus

CASBEE includes credits that are closer to biophilic design guidelines because it does not require solely “reference to” certain local measurable characteristics, but also references a need to establish “continuation” with the past. This tendency communicates the importance of rooting the people in their living place and, over the long term, creating a sense of security and responsibility.

3.2.3.2 Cultural Underpinnings (3): Unified by Belonging to Place vs. the Group

It has long been acknowledged that Canadians have historically been unified by the wilderness qualities, implying the significance of geographic place qualities. In contrast, maintaining similar characteristics among the members of a society plays a more important role in unifying the Japanese. The individuality of the self is not as important as blending with the context (2.2.5.1, Ch. 2) or, if put in the words of Yamakishi, the interdependency is preserved in both good and bad ways by being “over-connected with others and over-concerned by the hearts” (心でっかちな日本人).

3.2.4 Row 4

a. Both CASBEE and LEED-Canada focus on technical and measurable aspects.
b. LEED-Canada includes the idea of “the view” and represents this by specifying a proportion of the interior spaces having view angles to the exterior. In CASBEE, this is included in a credit “perceived spaciousness and access to view” (Q2, 1.2.1, JSBC, 2010).

3.2.4.1 Comparison: Views and Daylight

This performance aspect is presented in specific technical terms and requirements in both LEED-Canada and CASBEE and is narrow in contrast to the view-related issues embedded in biophilic design guidelines:

a. The Importance of Views: Neither LEED-Canada nor CASBEE encourage access to views. However, the importance of views and their psychological and physiological effects have been researched and discussed by many authors.

b. Access to Views Facilitate Rest and Recovery: A study done by Ulrich in 1984 concluded that patients placed in a room with a view to nature recovered more quickly than those in a room overlooking human-made structures. The records included “patients who, after surgery, were placed in a room that had a window view of either trees or a brick wall. Those with the tree views used fewer potent painkillers than similar patients who had a view of a brick wall and had shorter post-operative stays and fewer negative evaluations from nurses” (Hartig,
Bringslimark & Patil, 2008, p.138). In 1993, Kaplan discussed the cumulative value of “micro-restorative experiences” in workplaces and recognized the importance of not only providing the view but also of what the view is overlooking: “A worker might more effectively restore cognitive resources needed for work by periodically looking out a window onto natural features such as trees and vegetation versus onto other view contents” (as cited in Hartig, Bringslimark & Patil, 2008, p.138).

c. Access to Views Encourage Neurological Nourishment: Variety of shapes and forms in nature contrasts with linear, uniform and relatively simple patterns created artificially. While the latter are increasingly dominant in urban environments, Salingaros and Masden II (2008b) acknowledged, “What makes us recognizably human is a set of complex, organized informational patterns that evolved along with our body” (p. 72). This statement suggests that humans subconsciously need escape into richer and more psychologically challenging environments.

Design governed by the biophilic principles “reorients architecture toward a world governed by coherent information . . . [and] leads people to think on many levels of complexity (which is the way nature works)” (Salingaros & Masden II, 2008b, p. 76). As “neurological nourishment depends upon an engagement with information and its organization” (Salingaros & Masden II,
2008b, p.64), one of the ways to stimulate human involvement on a more complex level is to integrate natural elements and to provide views overlooking them.

d. Access to Views Stimulate Connections: Loftness and Snyder (2008) argued, “Access to human diversity and activity [are] also a central tenet of the biophilia community” (p.119). In order to facilitate this type of interaction, views from indoors to outdoors and vice versa are regarded as important. Human interaction is based on mutual contact and may have positive effects in promoting psychological well-being. Transparent windows, stimulating human connections from both indoors and outdoors are as important as views overlooking natural features.

e. Access to Views Strengthens the Sense of Place: Extending from the previous arguments, aptly organized bidirectional views (indoors \(\rightarrow\) outdoors, outdoors \(\rightarrow\) indoors) combined with carefully thought out distribution of natural features allow buildings to connect the inhabitants “with a richness that is critical to human health and inspiration” [and can] define the spirit of place, central to a timeless built environment” (Loftness & Snyder, 2008, p.130). Each place has “its unique climate and seasons, textures, sounds, smells, and diversity of landscape and species” (Loftness & Snyder, 2008, p.130). The biophilic design aspirations thus present a
challenge as to how to enhance and integrate these features in a symbiotic to human life way rather than exclude them by allegedly aiming to “protect” (Loftness & Snyder, 2008, p. 130).

3.2.5 Row 5 (only in CASBEE)

CASBEE includes a credit that encourages “carrying on local topography and culture, keeping appropriate relations with community” (JSBC, 2010). Aspirations in the biophilic design guidelines show that the credit has the potential to aim for “integrating culture and ecology, connecting to place, creating spirit of place, and avoiding placelessness” (Kellert, 2008, p. 13).

In LEED-Canada, these aspects could be added to the site-development-related credits or regional-priority credit but this connection is not currently possible.

3.2.5.1 Cultural Underpinnings (5): Cultural Coherence

Unity and agreement among the members of society is sought similarly to argument 3 (3.2.3.2, Ch. 3). Cultural coherence as well as expected harmony is highly regarded as the defining Japanese features both domestically and abroad.

Emphasis on the appropriate relationships in the community in CASBEE can be correlated with two clearly evident cultural aspects. Firstly, similar to the tendency to define interactions among
humans and nature, the Japanese ceaselessly aim to redefine human interactions and improve the accompanying ways, methods, and techniques (2.2.5, Ch. 2). Secondly, the uchi/soto distinction is implied. Community is inferred as a unit (uchi) in which carefully maintained appropriate relationships are necessary in order to face the world beyond it. This “soto” world, as discussed earlier (2.2.5.3, Ch.2), can sometimes become dangerous and thus requires agreement, cooperation, and fixed order.

3.3 Summary

Chapter 3 compared LEED-Canada and CASBEE through the lens of biophilia. In particular, it referenced a series of biophilic design guidelines offered by Kellert (2008) in order to tease out the subtle cultural emphases embedded in the two assessment methods. The intentions of the LEED-Canada and CASBEE credits that relate to nature were summarized in five categories, which were compared against each other and against the aspirations in the biophilic guidelines. Cultural underpinnings facilitated the comparison and allowed the exposure of otherwise hardly discernible differences that shape the assessment methods.

It was observed that CASBEE has generally a more positive framing and is oriented over a longer period of time than LEED-Canada. Further, the understanding of open space was shown
to be complementary, yet completely different. Finally, a much stronger tendency to require synthesis with the surrounding context, involvement in community activities, and continuation of historic scenery in CASBEE contrasted with simplified and measurable aspects in LEED-Canada that focus on the geographically specific environmental priorities.

The differences were explained by attributing them to the cultural attitudes rooted in the two countries. In addition, to counterbalance the narrow and technical framing of the credits related to views in both LEED-Canada and CASBEE, the multi-dimensional possibilities of access to views were discussed.

These observations are significant in several ways. Firstly, using the biophilic design guidelines proved instrumental in identifying how the current framing of the assessment methods could be expanded to include a more integrated approach. It enabled recognition of the differences between LEED-Canada and CASBEE. Secondly, the fact that these differences could be associated with the core cultural values in Canada and Japan affirms that the assessment methods are shaped by their cultural contexts. As such, it suggests that it is necessary to consider how the culturally characteristic aspects evidenced in the credits related to nature (the five categories discussed) can be accommodated when the assessment methods travel outside of their country of origin.
Chapter 4: Expected Interactions Between the Building and its Inhabitants

Attitudes towards technology are culturally bound. They are derived from the cultural context and evolve with it. Moreover, attitudes toward technologies supporting environmental controls and the performance of buildings are equally shaped by the attitudes towards and responses to “nature” in their specific locales.

4.1 The Relationship Between Nature, Culture and Technology

This chapter examines how Canadian and Japanese cultural attitudes towards building environmental controls and the methods of engaging them – from full automation to manual operation – are embedded in their respective environmental assessment methods. It strongly references the earlier analysis of how the attitudes towards nature shape a qualitatively different understanding of the human role and it results in tendencies to ascribe vertical and horizontal relationships (1) among the humans and (2) between the humans and nature in both countries (2.2.6.2, Ch. 2). Then, drawing on Verbeek’s (2006) speculations that technologies can be described not simply in terms of their obvious functionality but also as mediating the subjective and objective relation between human beings and their world, the literature review is presented to illustrate (1) the variety of interpretations of the role of technology and
expectations towards it, and (2) the impossibility of defining technology as the “other” opposite pole of nature in the dichotomous understanding. Diverse perspectives are organized and summarized by positioning them along the continuum and, by doing so, exposing not only the complexity, but inherent relatedness to the attitudes towards nature (2.2.6.1, Ch. 2).

Finally, in order to analyze how cultural values influence the assessment methods without losing the intrinsic complexity evidenced in the understanding of technology, technology is referred to by its indirect and direct consequences:

- **Indirect Consequences**: Based on the notion that the assessment methods can be understood as “techniques” for the designer similar to the way technical devices are considered in buildings. The focus here, therefore, is on the formulation and structure of the assessment methods.

- **Direct Consequences**: Technical approaches that support the interaction between inhabitants and the building.

Cultural comparisons of attitudes towards the nature and technology continuum serve as conceptual underpinnings that help to distill the emphases prevalent in the building
environmental assessment methods. As a result, the analysis expose the key differences that bear the particularities of their cultural contexts.

4.2 Technology in Canada and Japan: An Understanding Derived from the Attitudes Towards Nature

4.2.1 Deriving Technology Continuum

It can be argued that technology per se is universal and widely adopted in almost every country. However, a variety of interpretations have been proposed regarding the role of technology and expectations towards it by presenting a number of qualities that define the interaction between technology and humans. Further, Ihde (2008) emphasized two prevailing conceptions of technology – the utopian view that technology is capable of solving humanity’s problems of any kind and the dystopian view that technology has potentially negative long-term consequences. Both of these “tend to be rooted in misunderstandings of the complexities” (Riis, 2008) such as technology’s “concrete specificity, variability, context dependency, tendency to defy prediction, historical and cultural ‘embeddedness’” (Rosenberger, 2010), etc. It is therefore evident that technology cannot be defined separately because it can take on
both roles and thereby influence the cultural context to which it is applied and consequently change according to the expectations prevalent in that cultural context.

To illustrate the variety of interpretations of the role of technology and expectations towards it and the impossibility of defining technology as the “other” opposite pole of nature in the dichotomous understanding, qualities assigned to technology are organized by positioning them along the continuum. Table 4 summarizes several key qualitative aspects of technology organised into six categories. These categories are then positioned along the technology continuum similarly to the nature continuum presented earlier (Figure 8). The left side, “automated,” corresponds to the “cooked, bound/ wrapped, tamed/ domesticated” nature while the right side, “manual,” corresponds to the “raw/ uncooked, unbound/ unwrapped, wild” nature (2.2.6.1, Ch. 2).

![Figure 8 The Technology Continuum.](image-url)
<table>
<thead>
<tr>
<th>Selected Attributes</th>
<th>References</th>
<th>Keyword(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural, Unifying, Embedded within historical and cultural context</td>
<td>Vesely, 2004;</td>
<td>Cultural</td>
</tr>
<tr>
<td></td>
<td>Merleau-Ponty, 1962;</td>
<td></td>
</tr>
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<td>Smith, 2008;</td>
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<td>Ellul, 1964;</td>
<td></td>
</tr>
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<td>Latour, 2002;</td>
<td>Modifying</td>
</tr>
<tr>
<td></td>
<td>Riis 2008;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thackara, 2001;</td>
<td>Anonymous</td>
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<tr>
<td></td>
<td>Bakker, 1965 in</td>
<td>connectivity</td>
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<tr>
<td></td>
<td>Viljoen 2009;</td>
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<td></td>
<td>Ihde 1983, 1986, 1979,</td>
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<td></td>
<td>2008; Takeo, 1972;</td>
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<td>Heidegger, 1977;</td>
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<td>Gibson, 1986;</td>
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<tr>
<td>Intrusive, Invading, Autonomous, Modifying, Translating,</td>
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<tr>
<td></td>
<td>Inflecting, Influential,</td>
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<td></td>
<td>Mediating, Altering, Alienating,</td>
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<td>Destructive, Compelled to dislodge, Engendering</td>
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<tr>
<td>Connecting, [causing] global autism, Tiding in a sort of anonymous existence, Universal, Trans-cultural, Applicable to different cultures and contexts</td>
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<tr>
<td>Opaque, Forgetting, Habitual, Familiar, Layered labyrinth, Tending to defy prediction, A comfortable cocoon, Encompassing all dimensions of our relations, One-sidedness/ narrowness, inability to think and see the essence of things and happenings</td>
<td></td>
<td>Opaque</td>
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<td></td>
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<tr>
<td>Correct, Trustworthy, [Assuring] the continuity of our actions, Uniform, Ordered, Shaped, Enframing, Rational, Money-generating</td>
<td></td>
<td>Stable/ safe</td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovative, Opening new possibilities, Empowering, Intelligent, Service-oriented, Adaptable to the new environment, Flowing, Speedy, Mobile, Playful, Intuitive, Moving, Surprising, Fun</td>
<td></td>
<td>Innovation &amp; Empowerment</td>
</tr>
</tbody>
</table>

**Table 4 Qualitative Aspects of Technology.**

On the far right of the continuum are the most “local” or place-specific qualities (listed in 1st row, Table 4). They communicate the direct needs of the particular place, are relatively simple and therefore can be controlled manually by the individual. Then follows the understanding of technologies capable of “intruding” and altering the precious cultural environment of the place (2nd row, Table 4). Here, technologies are perceived as being beyond human capacity to easily take control of them and therefore as dangerous. Besides the number of fears, however, the inescapability and degree of universality of technologies are acknowledged (3rd row, Table 4). The views are simultaneously positive (technological advance could encourage the
development of new opportunities), and negative (the increasing dissemination of technology poses risks of alienation, referred to as “global autism” or “anonymity”).

When technologies become so pervasive that their origins are no longer visible, interaction with technologies is “habitual” and “forgetful” (4th row, Table 4). As a result, humans are not capable of “seeing through it” or controlling it. Massive adoption of and reliance on technological devices, though, creates a sense of stability and safety (5th row, Table 4). The continuous shaping, ordering and framing are thus typically favoured to assure accuracy and predictability.

Lastly, when a stable and safe condition is established, creativity can be unleashed to foster innovation and empowerment (6th row, Table 4). Especially in the Japanese culture, Inoue affirms, the right balance between the form and the new things that change (he calls it evanescence) is essential for any development: “Creativity affirms change. It tests and challenges form . . . [searching] for the balance . . . Without embracing a vision of change, formality can be antithetical to life. On the other hand, without form, change is impossible and even meaningless. If form without change imprisons us, then change without form leads to chaos and despair” (Inoue, 2008, p. 4) (2.2.5.5, Ch. 2).
4.2.2 Implications to the Understanding of Technology in Canada and Japan

When nature becomes the “other” (as emphasized in the Canadian attitudes, 2.2.2, 2.2.4.5, Ch. 2), the human world and everything related to it (including the technologies) are similarly distinct. It is therefore possible to adopt a managerial approach that is not related, but rather isolated from the “other”. In contrast, if the natural and the human world are not clearly separated but continually changing, humans aim for the most “ideal” combination between the two. This combination then is context- and time- dependent and therefore process-oriented.

Technology thus, Ashkenazi (2004) has argued, is understood as “in effect, a part of the ‘natural’ landscape for most Japanese who, being an urban rather than a rural population, exist ‘naturally’ in an urban environment.” Therefore, Ashkenazi (2004) continued, “Machines, in their nature, are neither artificial nor natural. It is in what they do that they are defined, if necessary, as either”. In other words, since there is nothing exclusively natural or artificial, only the relationship between humans and technology in a particular context can define what it is (2.2.5.1, Ch. 2).

Acknowledging that the understanding of technology expands to include not only its functional aspects but also its role and the expectations towards it, the following analysis of the LEED-
Canada and CASBEE highlights some aspects that reveal cultural differences in the assessment methods. This analysis is addressed on two levels:

1. The assessment methods themselves are understood as “techniques” used to correspond to the expectations prevalent in society. As such, the technology is analysed indirectly, and the focus is on the formulation and structure of the assessment methods.

2. Technical approaches in LEED-Canada and CASBEE that support the interaction between inhabitants and the building are examined. Here, the specific requirements towards technology in the assessment methods are discussed, and therefore the analysis is thought to be direct. In other words, the focus is on the expectations that are communicated through the assessment methods.

4.3 Indirect Aspects of Technology in LEED-Canada and CASBEE

4.3.1 Formulation of the LEED-Canada and CASBEE

The formulation of LEED-Canada and CASBEE are qualitatively different. Although the number of points attained reflects the success of the environmental performance of buildings in both the assessment methods, their evaluation descriptions reveal divergent attitudes.
4.3.1.1 Definite vs. a Range of Possibilities in Assigning Points

Credits in LEED-Canada are composed of “intents” expressing the overall goals of the credits; “requirements” with the descriptions of the specific actions/performance to be achieved and “potential technologies and strategies” that could be deployed (CaGBC, 2009). Individual credits carry an implied weighting through the number of points allocated to them in the overall available points. As an example, Table 5 lists several aspects required by LEED-Canada (CaGBC 2009).

In CASBEE, the specific performance requirements are not pronounced as clearly as in LEED-Canada (Table 5, JSBC, 2010). Rather, it communicates the importance of evaluating the range of efforts invested in achieving these goals differently. The credits are assessed on a five-point scale, where “1 is earned for satisfying the minimum conditions required by laws, regulations and other standards of Japan . . . and a building at what is judged to be the general, ordinary level earns 3” (JSBC, 2010). Levels 4 and 5 then, obviously, are assigned to cases that exceed typical practice.

LEED-Canada assigns points for achieving specific requirements whereas CASBEE distributes points in a way that corresponds to the level of performance achieved. Further, LEED-Canada
does not aim to evaluate “the level of consideration given to”, “efforts to conserve”, “how far [it] enhances”, “[the] appropriate[ness in] maintenance management”, “how well [it is] considered” or “the level of efficiency” (JSBC, 2010).

<table>
<thead>
<tr>
<th>LEED-Canada requirements</th>
<th>CASBEE requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>The minimum percentage debris to be recycled or salvaged for each point threshold is as follows: 1pt.=50%, 2pts.=75%. (MR, 2 (NC)).</td>
<td>Evaluate the level of consideration given to selection of materials (Q1, 4).</td>
</tr>
<tr>
<td>Do not develop buildings, hardscape, roads or parking areas on portions of sites that meet any of the following criteria: [i.e.] land within 30.5 meters of any wetlands…, previously undeveloped or graded land that is within 15.2 meters of a water body…, etc. (SS, 1 (NC)).</td>
<td>Evaluate efforts to conserve and create habitat for wild organisms… how far plans are supposed to enhance the quality of the environment… and whether appropriate maintenance management guidelines have been set (Q3, 1).</td>
</tr>
<tr>
<td>Demonstrate a percentage cost improvement (1pt.=25%, 19pts.=56%) in the proposed building performance rating compared with the reference building performance rating (EA, 1 (NC)).</td>
<td>Evaluate the level of efficiency improvement of various equipment types (i.e. A/C, ventilation, lighting, hot water supply and elevators) (LR1, 3).</td>
</tr>
<tr>
<td>*Similar credit does not exist in LEED-Canada.</td>
<td>Evaluate how well urban context and scenery have been considered… examine the level of consideration to [guidelines] (Q3, 2).</td>
</tr>
</tbody>
</table>

Table 5 Summary of the Requirements in LEED-Canada (CaGBC, 2009) and CASBEE (2010).

4.3.1.2 The Fixed North American Reality vs. Changing Circumstances in Japan

The tendencies in LEED-Canada to evaluate the specific requirements and the range of those results in CASBEE can be explained as culturally embedded. Since the prevailing attitudes in the North American context assume that certainty can be defined, the resulting LEED-Canada echoes the dichotomous, fixed and result-oriented Western worldview (2.2.2, 2.2.6, Ch. 2). On the other hand, Japanese understanding emphasizes that the final result can be influenced by
a variety of contextual factors, especially – the process that is shaped and guided by continuous human effort. This understanding is evident in CASBEE’s framework because it positions the evaluations along the continuum with the range of permutations.

4.3.2 Structure of the LEED-Canada and CASBEE

LEED-Canada and CASBEE are structured to emphasize different aspects in the process of scoring, weighting and the presentation of the evaluation results. Further, while LEED-Canada’s framing is based on adding the points associated with the selected and attained performance credits, CASBEE implies that there are different roles associated with different types of credits.

4.3.2.1 Inherent Simplicity vs. Complexity in Scoring, Weighting and Presenting the Results

LEED-Canada allocates the number of points for each credit by weighting their importance based on the US Environmental Protection Agency’s TRACI environmental impact categories and weightings developed by the National Institute of Standards and Technology (NIST), with “all LEED credits receiv[ing] a single, static weight” (CaGBC, 2009). Certification is awarded according to the overall number of points attained (80 points and above for Platinum, 60-79
points for Gold, 50-59 points for Silver, 40-49 points for Certified) (CaGBC, 2009). This final designation is the most significant measure used in communicating success.

In CASBEE, the process of allocating points, weighting and presenting the results is more complex (JSBC, 2010):

1. Points obtained from each credits five level-scale (1-5) are summated;

2. Scores are weighted using coefficients that “should not just be determined from scientific knowledge . . . [but] take into account the value and perceptions of various interested parties”;

3. Overall scores for Building Environmental Quality (Q) and Building Environmental Loads (LR) categories are derived (6 scores corresponding to Q1~3 and LR1~3);

4. The 6 obtained scores are presented numerically and graphically to show the distribution in each of the categories in Q and LR, and the overall scores for Q and LR are then calculated;

5. The Building Environmental Efficiency (BEE) score is derived as the ratio of Q and LR and plotted on the coordinate plane with Q as Y and LR as X. The position of BEE falls in one of the five levels from S down to C;
6. Stars are assigned according to the obtained S~C level;

7. A separate evaluation process is used for Lifecycle CO2 (LCCO2) in order to assess the “LCCO2 performance . . . more precisely . . . based on the nature of CO2 reduction initiatives”.

CASBEE is therefore based on a more diverse approach to assigning points and presenting the results. This complex way of analysing performance information is expressed as an aspiration of “giving a multi-faceted and comprehensive grasp of the environmental characteristics of the evaluated building” (JSBC, 2010). Further, using several types of graphical representations is also a particular aspect of CASBEE, in comparison to LEED’s singular representation.

4.3.2.2 Vertical-Horizontal Framing and the Distribution of Credits

When LEED-Canada and CASBEE are examined from the vertical-horizontal perspective (2.2.6.2, Ch. 2), one difference becomes evident: CASBEE uniquely uses the hypothetical boundary as “the basis of [its] framework” (JSBC, 2010) to explicitly divide the human space on site (Q=Building Environmental Quality), which evaluates “improvement in living amenity for the building users within the hypothetical enclosed space” (JSBC, 2010), and the “other”
which evaluates “negative aspects of environmental impact which go beyond the hypothetical enclosed space to outside” (JSBC, 2010).

A closer analysis reveals that point allocations and the descriptions of the credits are qualitatively different. In LEED-Canada, there is no specific order to how the requirements are fulfilled, and the importance of the credit relies on the weightings. Cole (2012) has observed that in “LEED . . . particularly for the Certified, Silver and Gold levels, it is possible to select (or ‘cherry pick’) from a basket of potential credits in order to attain the necessary overall performance level.” In CASBEE, however, the distribution of the credits grows from smaller to larger therefore implying a hierarchical relationship between them (i.e., Q1 evaluates separate categories of the indoor environment, Q2 – how well the separate categories are integrated and Q3 relates the building to its surroundings).

While the LEED-Canada credits tend to be more or less horizontally distributed (no specific order of what comes first), the relationships between the credits in CASBEE are more vertical. Simultaneously, CASBEE uses the hypothetical boundary to explicitly mark the border between the “inside” (Q) and the “outside” (L) (Figure 9).
It should be noted, however, that this division does not contradict the existence of the continuum. Rather, it shows that the combined effort between Q & L is necessary to harmonize the interaction between the opposite poles.

4.3.2.3 Canada and Japan: Simplified Diversity vs. Elaborated Homogeneity

Inherent simplicity in LEED-Canada can be attributed to the cultural tendency of separating either/or to reduce the complexity and allow deductive analysis in Canada. In contrast, the apparent complexity in CASBEE corresponds to the cultural habit of recognizing the abundance of possibilities derived from the context-depend/situational way of thinking in Japan.

Figure 9 Interpretation of the LEED-Canada and CASBEE Structures.
LEED-Canada’s way of defining vertical-horizontal relationships is opposite from that of CASBEE. This may not be not accidental but symptomatic of Western dominance over nature, contrasting with the clearly defined relationships and the uchi/soto distinction inherent in Japanese cultural understanding (2.2.5.3, Ch. 2).

4.4 Direct Aspects of Technology in LEED-Canada & CASBEE

4.4.1 Technical Approaches that Support the Interaction Between Inhabitants and the Building

There is a common belief that the main distinctions are evidence of Japan’s emphasis on automation and technological prowess and Canada’s emphasis on user control in the environmental building design. As such, the requirements in LEED-Canada and CASBEE are analysed here, and explanations are sought for the underlying cultural attitudes.

4.4.1.1 Comparison (4): Personal Controls vs. Service

Similar goals of providing comfort while minimizing negative environmental effects are evidenced in both LEED-Canada and CASBEE. However, even though both LEED-Canada and CASBEE refer to individual controls for lighting and thermal comfort, for example, their approaches are different. LEED-Canada distinguishes individual and shared spaces in the
“Controllability of Systems” for the Lighting (NC, 6.1) and Thermal Comfort (NC, 6.2), and requires “system control by individual occupants or groups in multi-occupant spaces (e.g., classrooms or conference areas) to promote their productivity, comfort and well-being” (CaGBC, 2009). These can be summarized as follows:

• In individual spaces, personal controls for “90% (minimum) of the building occupants” are required for the lighting and “50% (minimum) of the building occupants” for thermal comfort.

• In shared spaces, the possibility “to adjust according to the group needs and preferences” are required for both the lighting and the thermal comfort credits. ASHRAE Standards are referenced.

Individual Controls in CASBEE can be substituted by automatic controls in the case of lighting and are required only for Hospitals, Hotels and Apartments in case of thermal comfort. The details are below (JSBC, 2010):

• Level 5 in Q1, 3.4, Preliminary Design, requires “detailed lighting control [to be] available for each task/sales area OR automatic lighting control [to be available]. In Execution Design and Construction Completion, availability of “lighting control per task unit . . . AND
[possibility to] adjust via computer terminal/remote control or automatic control” are required.

• Level 5 in Q2, 2.1.6, requires “occupant [ability to] directly adjust temperature settings and airflow volumes with local controls” in Hospitals and Hotels, and the ability to set “the temperature for the whole dwelling [and] for each individual room” in Apartments. As for the other building types, sophisticated monitoring systems are required for Retail and Restaurants (2.1.8) and, humidification/ dehumidification equipment (2.2) as well as automatic air conditioning controls are required for all the buildings, including offices (2.3).

It is evident that whereas LEED-Canada emphasizes personal controls, CASBEE offers maximum points for automatic control. In addition, CASBEE uniquely distinguishes the Quality of Service (Q2), understood as the indispensable collective effort in order to enhance “the indoor environment, which has a major impact on the health, comfort and intellectual productivity of occupants . . . [and is regarded as] basic performance of the building” (JSBC, 2010).

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3 In level 5, “…detailed multiple zoning for usage-specific thermal preferences on the same floor and a comprehensive monitoring system that includes a detailed multi-zone control sensor and several monitoring/measuring sensors installed” are required.
Thus, different approaches towards the same goals (productivity, comfort and well-being in LEED-Canada and health, comfort and intellectual productivity in CASBEE) can be observed. In contrast to LEED-Canada’s emphasis on personal controls and CASBEE’s orientation towards building automation, CASBEE distinctively emphasizes the importance of service.

4.4.1.2 Canadian Individualism vs. the Shared Experience in Japan

It was shown earlier (2.2.2, Ch. 2) that in Canada, the human world (the technology being part of it) is distinct from nature. Humans perceive themselves as separate from their immediate surrounding environment. The understanding is manifest in the predominant tendencies to define the borders and neglect inter-dependencies. On a larger scale (human/ nature relationships), therefore, it is desirable to “isolate” nature from the human world. These attitudes are echoed on a smaller scale (human/ space relationships) as well: in the building design, for example, it is assumed that comfort correlates to the ability to control one’s environment. Therefore, the highest comfort levels are to be provided by creating the possibility for every building inhabitant to personally control his/ her environment. Markus and Kitayama (1994) observed that this understanding corresponds to attitudes often observed in individual cultures and has consequences for the social interactions (human/ human
relationships), during which, “an explicit social goal . . . is to separate one’s self from others and not to allow undue influence by others or connection to them” (p. 96).

In Japan there is no clear definition of “natural”, so the understanding of nature is situational and continually changing. The ambition of the Japanese is to come as close as possible to harmonious balance by harvesting the collective human effort. These attitudes are attributable to the fact that Japanese tend to be a group-oriented culture, in which Lebra (as cited in Markus & Kitayama, 1994) pointed out, “It is connection with, rather than separation from others and the surrounding context that is highlighted” (p. 98). In other words, instead of defining the relationship between inhabitants and the building, the highest level of maintenance management corresponding to the contextual changes in the long term is expected to assure their comfort. These attitudes are clearly expressed in CASBEE through the emphasis on Service and evaluation of its quality as a separate category. In contrast to LEED-Canada, the productivity of the building inhabitants is not promoted by providing them with the means to control their environment. Rather, due to “the relatedness of environmental performance assessment items (Q1 Indoor Environment and Q2 Quality of Service) and intellectual productivity” (JSBC, 2008), continual improvement is achieved by integrating a number of different strategies through the Service.
4.5 Summary

This chapter has compared LEED-Canada and CASBEE through the lens of technology in its widest sense. While the preliminary intent was to focus on the technical aspects of the two assessment methods, a careful exploration of how the culturally defined human-nature relationship shapes the understanding of technology has shown that the technical aspects are only part of the story. The chapter focused on the indirect aspects of technology corresponding to its role as a potential mediator in all forms of human relationships. In addition, it looked at how and why the functionality of technology (or the direct aspects of it) is understood differently in Canada and Japan. As a result, the indirectly expressed differences in LEED-Canada and CASBEE were made evident by analysing the role of technology and the direct differences were exposed by contrasting technical approaches that support the interactions between the inhabitants and the building.

Points in LEED-Canada are assigned whenever the requirements are met, and in CASBEE there is a range (level 1~5) along which the points can be obtained. Further, weighting, scoring and result format was evidenced to be much simpler and more random in LEED-Canada than in CASBEE. However, CASBEE has a more strictly defined framework that seems to accommodate its complexity in an organized manner. As such, the assessment methods differ in
their structures. Finally, individual interaction between the inhabitants and the building is deemed preferable in LEED-Canada, which contrasts with CASBEE’s emphasis on automatic controls and the collective effort of service guaranteeing stability in the long term. In sum, the assessment methods prioritize different expectations between the inhabitants and the building.

These observations are significant in several ways. Firstly, analysing the assessment methods while recognizing the complex understanding of technology assisted in identifying not only the direct differences expressed in the LEED-Canada and CASBEE credit requirements, but also the indirect, more overarching differences, evident in the formulations and structures of the two assessment methods. It therefore provides an additional perspective by which the assessment methods can be compared. Secondly, the fact that these differences could be associated with the core cultural values in Canada and Japan affirms that the assessment methods are shaped by their cultural context. The analysis suggests that it is necessary to consider how the following culturally characteristic aspects can be accommodated when the assessment methods travel outside their country of origin:

(a) The *indirect* aspects evidenced in the role of the assessment methods (their formulations and structure), and;

110
(b) The *direct* expectations towards the interactions between the inhabitants and the buildings as communicated in the assessment methods (personal controls vs. service).
Chapter 5: Information Provision in LEED-Canada and CASBEE

Although not conceived as such, building environmental assessment methods are regarded as design tools to guide and facilitate the building process in a more environmentally conscious direction. Since assessment methods “provide a method of discovering what is important and what is not important . . . [are shaped by] a host of theoretical, practical and cost-related issues . . . [and] communicate to building owners and design teams what are understood as being the most significant environmental considerations” (Cole, 2003), by default, they reflect communication patterns pertinent to Canada and Japan. These communication patterns differ in their origins, the way they have been accommodated, and their anticipated future development.

5.1 Information Flow

Information exchange and its comprehension by those engaged in the exchange goes beyond the translation of language. Kleinman, et al., (as cited in Markus & Kitayama, 1994) have acknowledged that “the cultural ideals and moral imperatives of a given cultural group are given life by a diverse set of customs, norms, scripts, practices, and institutions that carry out the transformation and transmission of the collective reality” (p. 345). The existing ways of information exchange are already the outcomes representing this collective reality. Even
though dynamic in nature, they are “largely taken for granted . . . transparent or “go without saying” (Holland & Quinn as cited in Markus & Kitayama, 1994, p. 344).

Sor (2004) argued,

Organizations achieve their objectives by performing sets of tasks that, to varying extents, are interdependent. The structure within which these tasks are performed matches the complexity of the relationships between tasks, facilitating the creation and utilization of information as needed.

Drawing on these conclusions, it can be observed that both LEED-Canada and CASBEE assessment systems are based on structures within which different stakeholders perform different tasks in order to reach their objectives. In other words, LEED-Canada and CASBEE structures are inscribed on the stakeholders who wish to obtain the certification and, therefore, significantly affect the building environmental assessment process.

Sor’s conclusion is based on the works of information theorists Chandler (1962) and Galbraith (1980). In Chandler’s Strategy and Structure, “strategy” is claimed to precede “structure” and to be subsequently linked to process, systems and people (as cited in Sor, 2004). Further,
Galbraith linked information and structure, “recognizing that information is both used by [input] and generated by [output] organizational processes, [and] stating that there was a relationship between the type, quantity and interrelatedness of the above types of information and the organizational structure needed to process it” (as cited in Sor, 2004). The information theories of Chandler and Galbraith relate to each other as presented in Figure 10.

![Figure 10 Chandler (1962) and Galbraith (1980) Theories.](image)

In this thesis, the information used to obtain the LEED or CASBEE certification is referred to as input, and the information that is generated is referred to as output. “Strategy” in Chandler’s theory becomes part of the input information within the LEED and CASBEE structures. Then, since there is a relationship between the type, quantity, and interrelatedness of the input and output information (Galbraith’s theory), it could be observed that different processes, systems, and interaction of people (shaped by the Canadian and Japanese cultural underpinnings)
within the “strategy” affect this relationship. For the purpose of this thesis, the input and output information of LEED-Canada and CASBEE are analysed in order to understand how the different processes, systems and people within the “strategy” affect the type, quantity and interrelatedness between the input information and the output information within the “structures” of LEED-Canada and CASBEE. Finally, a comparison is made of how these relationships differ. As a result, this Chapter is directed at establishing how the cultural values are embedded in LEED-Canada and CASBEE by analyzing the information flow within the structures of the two assessment methods.

Information flow is understood as information activity affected by the organizational structure within which the information activity is performed as well as “gathering, analyzing, interpreting, and …disseminating information” (Albaum 1964). LEED-Canada and CASBEE are the outcomes from the two different organizational structures, within which the information flow can be observed and analyzed. These differences are shaped by the collectively held traditional cultural values. Examples include:

- The way in which information is provided and results of the assessment are communicated;
• The choice to include certain aspects over others (setting priorities); and

• Judgments of what the clarity is (i.e., simplicity and ease in LEED-Canada vs. detailed descriptions in CASBEE).

Figure 11 Information Flow.

Based on and relating to the Chandler (1962) and Galbraith (1980) theories, Figure 11 illustrates the different aspects within the information flow (from the origins to the way the information has been accommodated and its anticipated future development) that are analyzed in this chapter in the following sequence: Firstly, several examples from Japanese and Canadian art are juxtaposed to illustrate the way in which the information is communicated and understood is culturally bound. Then, the origins of the two assessment methods are acknowledged so as to expose differences in their initial conceptions. This provides a basis for
discussing the consequences in the development of LEED-Canada and CASBEE systems for domestic application in Canada and Japan respectively.

Secondly, since the two assessment methods are manifestations of how the information is accommodated, they are analyzed from the two standpoints of the input information and the output information, defined as follows:

1. \textit{Input} information provided in manuals and other relevant materials to designers and building owners to guide the design; and

2. \textit{Output} information to communicate the evaluation results to building owners, users or the general public.

Finally, it is recognized that the information has to be disseminated. The information associated with the assessment methods is understood as a dynamic flow rather than a fixed measure. Here, the focus is on what aspects of input and output information are emphasized in LEED-Canada in comparison to those in CASBEE.
5.2 Different Origins

5.2.1 Cultural Origins

The following two examples are chosen only for the purpose of illustrating the differences communicating some sort of information. These examples are drawn from art, based on the premises that the expressions of art are (1) closely associated with the cultural understanding, and (2) capable of triggering emotion and thus the collective interpretation of reality.

5.2.1.1 Nature Paintings

Many artists around the world have painted nature and especially the seasons. However, different emphases are evident. Painters in the West usually devote the entire canvas to a single season, therefore portraying one point in time. In contrast, in Japanese paintings, the focus is on the passage of time as evident in paintings portraying the change of seasons. These differences are especially evident in the following Japanese and Canadian paintings from a similar time period are juxtaposed: Kano Osanobu’s (1796-1846) “Scenes of Farming in the Four Seasons”, and “Habitant Farm” by Cornelius Krieghoff (1856). Canadian painting at that time was strongly influenced by the European style, but paintings by the Group of

4 The images can be easily found online.
Seven were also focused on a single season or month, as in Lawren Harris’ “Clouds, Lake Superior”\(^5\) (1923).

In both Canadian and Japanese cases, paintings serve as a medium through which the understanding of the human-nature relationship is expressed. While Canadian paintings are guided by an intention to express the qualities assigned to nature by humans (2.2.4, Ch. 2), Japanese paintings tend to represent the cyclicity of time through the changing seasons, with the primary focus on the processes observed in nature. Human activity, then, is perceived as harmoniously blending into these processes with humans understanding and accepting the fundamental notion of change. Japanese painting expresses the cultural aspects of evanescence and contextuality, and depicts the interaction between humans and nature (2.2.5, Ch. 2). In contrast, it was observed that the qualities assigned to nature in Canada emphasize two main ideas: nature as the North and nature as a unifier (2.2.4, Ch. 2). These emphases are evident in Krieghoff’s attempt to portray the reality of “Canadian life”, which brings forward the issue of “created identity”, and the Harris’ “Clouds, Lake Superior”, which depicts nature as the powerful, great wild North.

\(^5\) The image can be easily found online.
5.2.1.2 Comics

McCloud (1993) analysed some of the world’s famous comics and compared different ways of using symbols to trigger closure. He observed that comics are composed of different sets of images (panels) that can be connected in various ways (panel-to-panel transitions), and he summarized these connections in six categories:

1. Moment-to-moment (requires very little closure);

2. Action-to-action (a single subject in progression);

3. Subject-to-subject (staying within a scene or idea/more reader involvement);

4. Scene-to-scene (deductive reasoning is needed to transform us across significant distances of time and space);

5. Aspect-to-aspect (bypasses time for the most part and sets a wandering eye on different aspects of a place, idea or mood); and


Closure is one of the fundamental Gestalt theory principles, “...in which the mind supplies missing pieces to complete the image” (Jirousek, 1995). It is referred to as “the effect of suggesting a visual connection of continuity between sets of elements which do not actually touch each other in a composition, [as] ...we tend to see complete figures even when part of the information is missing. Closure occurs when elements in a composition are aligned in such a way that the viewer perceives that the information could be connected” (Gestalt Principles, 2012).
Based on these concepts, McCloud looked at how these categories are distributed in European, American and Japanese comics. He concluded, “A random sampling of various American comics shows . . . emphasis on action-to-action story telling . . . [where] things [are] happening in concise, efficient ways. [In Japan, however, panels in the comics are connected by] the fifth type of transition [aspect-to-aspect], a type rarely seen in the West” (McCloud, 1993, pp. 75-78). In the latter case, McCloud (1993) observed, establishing the mood or the sense of place is prioritized, and the reader must “assemble a single moment using scattered fragments” (p. 80).

Even though these examples are just excerpts of a few styles employed by the North American and Japanese comic artists, they serve as manifestations of completely different approaches used to engage the reader. As such, they represent a culturally embedded understanding that is evident in the different expressions of art and suggest that the understanding of what is “appealing, interesting, exciting, etc.” differs in these two cultural contexts. Furthermore, the emphases of these examples correspond to the cultural aspects previously introduced in Chapter 2 (2.2.4, 2.2.5). The Canadian understanding is based on clearly demarcated human/nature worlds, in which the human takes initiative (action) to change the course of things. This contrasts with the Japanese willingness to rely on the situation which, in all cases, strongly influences human activity.
If comics were to be regarded as one of the many ways to exchange information – despite the fact that the emphasis is on the emotional rather than factual data – it could be claimed that the effect of the communicated information on the reader is proportional to its cultural validity. In other words, not only the contents, but the way how it is communicated matters.

5.2.2 Origins of LEED-Canada and CASBEE

Whereas LEED-Canada emerged from industry and professional support, CASBEE resulted from the collaboration between academia, government, and industry. Further, the primary LEED objectives to transform the market contrast with CASBEE being tailored towards assessment of the new and existing building stock in order to give an adequate indicator for the regional governments (Endo, personal communication, October 19, 2011). This has resulted in significant differences in their approach, structure and organisation of the respective methods. Collectively, these aspects influence the way in which the LEED-Canada and
CASBEE systems are applied domestically and especially how the information is prepared, communicated, and interpreted in the two countries.

LEED-Canada operates on a consensus approach whereby versions are piloted and voted upon by the full membership (Cole, 2003). The developers of CASBEE, in contrast, distinguish the responsibilities and role of academia, government and industry: with academia providing the intellectual leadership and development of the core structure; government providing the development funds and facilitating implementation; and the industry advising how to choose assessment items so as to be consistent with the existing practice (Iwamura, personal communication, February 15, 2011).

While CASBEE was developed in Japan and for Japan, LEED was adopted for Canada from the US Green Building Council (USGBC). One of the main reasons for the Canadian Green Building Council (CaGBC) to choose LEED among the four candidate systems was “its potential as a North American system . . . [as] it is felt that those [systems] that have their roots
in North America or which are amenable to a basic level of customization would be the most appropriate starting point” (Cole, 2001). The most substantive changes from USGBC’s LEED-NC 2.1 included substituting Canadian reference standards where they applied, and making some of the thresholds more stringent (Cole, 2001).

5.3 Information Flow / Input

Information necessary for obtaining LEED-Canada and CASBEE certifications is referred to as input. Here, two major differences are observed. Firstly, general tendencies in LEED-Canada to allow a relatively flexible (referred to as dispersed) way of information exchange contrast with the more central supervision of information flow in CASBEE. Secondly, inherent simplicity can be opposed to exhaustive descriptions when comparing the main information sources of the two assessment methods (5.3.1.1 LEED-Canada’s Green Building Rating System and

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7 The changes addressed: (a) references to relevant Canadian legislation, standards and government program requirements, where appropriate, (b) updated and improved Prerequisite and Credit requirements and calculation methods, for clarity and, (c) increased minimum performance levels for a few Prerequisite and Credit requirements, to reflect the goal of affecting market transformation with LEED, (d) listings of current, local information resources, (e) use of SI rather than foot-pound units; and, (e) addition of a new credit, MR8, “Durable Building” (executive summary of document “LEED Canada-NC 1.0, Rationale for Changes from USGBC-NC 2.1”) (Cole, 2001).
CASBEE’s full and brief versions of Technical Manual). The latter suggests that if “easier and simpler” is associated with clarity in the North American context, the opposite is true in Japan.

5.3.1 Centralized vs. Dispersed Structures

This section analyzes how the differences evident in LEED-Canada and CASBEE’s structures influence their applications in Canada and Japan. Firstly, the main sources of information, LEED-Canada’s Green Building Rating system and CASBEE’s Technical Manual, are compared. Secondly, the section discusses how the two systems encourage the participation of different stakeholders. Finally, several observations regarding the structural organizations within the main information sources are presented.
5.3.1.1 Information Sources: LEED-Canada's Green Building Rating System and CASBEE’s Technical Manual

LEED-Canada information sources are composed of the Green Building Rating System, the Reference Guide and Credit Interpretation Requests (CIRs). Further, there are many workshops are organized by CaGBC or the third party organizations to help with the certification process (i.e., “Speed Up” workshop), which, in turn, encourages and facilitates involvement of people with diverse backgrounds and experiences.

The Green Building Rating System includes simplified descriptions of the credits and is available free of charge. The Reference Guide contains more detailed information, intended to “give clear guidance, . . . protect integrity, . . . reduce challenges that occur during the LEED certification process, . . . expand further on exemplary performance pathways, [and] . . . provide guidance on the rigour expected” (CaGBC, 2009). In addition, CIRs can be purchased if interpretation questions arise that cannot be answered by existing documentation.
As for CASBEE, the Technical Manual (full and brief versions) is the main source of information developed and edited by the JSBC. It contains the overview of the credits, calculation details, relevant resources, case studies, credit interpretation examples, and other relatively detailed information. Unlike the Rating System and the Reference Guide in LEED, the full version differs from the brief one in the number of credits, not the level of detail in each of them (Endo, personal communication, October 19, 2011).

While the CaGBC is the main organization supervising the information flow related to LEED-Canada, there are also third parties involved in the process of distribution and dissemination of non-LEED information for the purpose of “providing members and industry with affordable and easily accessible tools (i.e., GREEN UP, Smart Growth, Living Building Challenge)\(^8\) to expand

\(^8\)GREEN UP is Canada’s building performance program for building owners and operators to measure, compare, and improve their real estate portfolios. Smart growth is a collection of land use and development principles that aim to enhance our quality of life, preserve the natural environment, and save money over time. Smart growth principles ensure that growth is fiscally, environmentally and socially responsible and recognizes the connections between development and quality of life. In May 2010, CaGBC announced that Smart Growth BC, its programs and brand have been acquired to ensure the ongoing legacy of a very successful provincial program. The announcement was the beginning of a national approach to supporting a Smart Growth Canada Program that combines the provincial success of Smart Growth BC with the national network of CaGBC. The purpose of the Living Building Challenge is straightforward – it defines the most advanced measure of sustainability in the built environment possible today and acts to diminish the gap between current limits and ideal solutions. CaGBC organizes Professional Development workshops in order to create an opportunity to share the tenets of the program with advanced practitioners.
the capacity for green building in Canada" (CaGBC, 2012b). The level of detail and the type of
information differs depending on the chosen material. In CASBEE, however, all the information
comes from the JSBC and is concentrated in the Technical Manual.

5.3.1.2 Participation

A number of educational programs are organized to help new and existing LEED Professionals
to gain an understanding of LEED-Canada and maintain the latest knowledge of the green
building practice. The LEED Professional Credentials include three tiers: basic, advanced and
extraordinary\(^9\). The relatively loose initial requirements\(^{10}\) for the Accredited Professional (AP)
enable wider involvement. Watson (2011), the founder of LEED in 1993, noted, "One of the big
ideas behind LEED was to get people thinking outside their silos [and] one of the principal

\(^9\) Tier I: LEED Green Associate, Tier II: LEED AP with specialty and Tier III: LEED AP Fellow (Canada

\(^{10}\) (1) experience in a LEED-registered project, (2) employment in a sustainable field of work or (3)
engagement in an education program that addresses green building principles. (Canada Green Building
Council, 2012d). In addition, a nine-month certification course (the Sustainable Building Advisor
Program) is available for everybody, as it requires no existing green building education or experience
and promises that "upon completion of the SBA program and CSBA Exam, students earn the
designation of Certified Sustainable Building Advisor (CSBA), while at the same time achieving all
credential maintenance requirements for LEED-accredited professionals" (Canada Green Building
Council, 2012c, Education).
Lessons we have learned from our study of green building performance is that integration pays. It is evident that in case of LEED, the interaction of people with different backgrounds and from different disciplines is considered to be important and should be encouraged.

In contrast, even though some of the requirements for those aiming to become CASBEE Accredited Professionals are similar to LEED-Canada because candidates have to pass the examination and complete the registration, the prerequisites are far more restricting. Only those holding a first-class architect license can be a candidate. CASBEE emphasizes the importance for an Accredited Professional to have a specialized architectural as well as a comprehensive environmental knowledge in order to assess both quantitative and qualitative aspects.

It is evident that the person facilitating the process of achieving LEED or CASBEE certifications is selected based on different criteria. The diversity is valued in the North.

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11 The first class architect license is obtained after passing a national exam (theory 8 hours and design 6.5 hours) and having 2 to 4 years of work experience in architectural design (The Japan Architectural Education and Information Center, 2012).
American context, and thus the members with various backgrounds are eligible to become LEED APs. In Japan, however, the relatively strict requirements limit the scope of candidates who can be involved in the CASBEE’s projects.

5.3.1.3 Random vs. Hierarchical Organization

As discussed in Chapter 4 (4.2.2), CASBEE’s approach of arranging the categories and credits in a specific hierarchical order is different from the inherently simple and random organization of LEED-Canada credits presented as a list of options. Q3 (referred to as “the major category”) encloses “the medium level categories” (1, 2, 3), the third of which is further detailed by 3.1 and 3.2. In addition, the assessment result sheet in CASBEE is organized in a similarly hierarchical manner. This structure shapes separate credits into a sequence and therefore could be regarded as helpful for the design team when approaching certain strategies collectively. Further, unlike LEED, in which the credits can be selected or “cherry picked” (4.3.2.2, Ch. 4) from the entire list, CASBEE seems to place great importance on not only addressing the issue, but also on how the processes for solving those issues evolve. This
observation was strengthened by Endo’s explanation that every strategy employed can have both positive and negative overall consequences, and therefore the Q/L framework of CASBEE tries to represent how the positive and negative effects distribute and relate to each other (Endo, personal communication, October 19, 2012).

Table 6 summarizes the aspects that could be attributed to the relatively dispersed nature of LEED-Canada and the relatively centralized approach of CASBEE. While the CaGBC is only one among the many organizations able to educate the users, JSBC appears to be the single organization supervising the information flow. Further, the strict requirements for the new CASBEE members differ from LEED’s strategy to strengthen involvement in environmental practice by welcoming a broad range of interested stakeholders. Finally, the hierarchical ordering in the performance areas (credit requirements and the assessment results sheet) can be observed only in CASBEE’s Technical Manual.
Table 6 Dispersed and Centralized Tendencies in LEED-Canada and CASBEE.

<table>
<thead>
<tr>
<th></th>
<th>LEED-Canada</th>
<th>CASBEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source of Information</td>
<td>• CaGBC and/or other third parties;</td>
<td>• JSBC;</td>
</tr>
<tr>
<td>Training</td>
<td>• CaGBC and/or other third parties;</td>
<td>• JSBC;</td>
</tr>
<tr>
<td>Participation</td>
<td>• Many levels, loose requirements;</td>
<td>• Strict requirements;</td>
</tr>
<tr>
<td></td>
<td>• Random organization of the credits;</td>
<td>• Limited to Japanese*;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ordering is observed in credits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and the Results Sheet;</td>
</tr>
</tbody>
</table>

* The above is true if the foreigners were not raised and educated in Japan (the exam can be obtained only in Japanese).

5.3.2 Comprehensibility and Clarity

This section acknowledges that misinterpretations and misunderstandings are likely to occur when the information generated in one country is used in another country. However, as the following analysis reveals, different benchmarks of what is comprehensible and clear exist in different cultural contexts. In the comparison of Canadian and Japanese contexts, the differences are especially evident through the level of detail offered in the explanations of the performance criteria used by the two systems.
5.3.2.1 Level of Detail

Every credit in the LEED-Canada Rating System is explained concisely by providing its intent, the requirements, and potential technologies and strategies. Numerical criteria are indicated (minimum distance (m), angles (°), relativity (%), etc.), but not elaborated on the potential interpretations; these are only described in the Reference Guide. CASBEE, however, includes explanations of their logic behind every methodology chosen, and every credit's scoring criteria are discussed in 5 levels based on the assessment stage (Preliminary Design, Execution Design or Construction Completion) with examples and commentaries on credit interpretations.

Table 7 lists several examples and commentaries that are included in CASBEE.
Table 7 Reasoning in CASBEE.

LEED-Canada does not exclude explanations entirely. Credit weighting, for example, is
detailed as follows: “A combination of approaches, including energy modeling, life-cycle
assessment, and transportation analysis, is used to quantify each type of impact. The resulting
allocation of points among credits is called credit weighting” (CaGBC, 2009). However, the
meaning of the credits, the choices to prioritize one type of evaluation methodology over
others, and other questionable aspects are not detailed. This, in turn, implies the prevailing assumption that the reader understands the provided information according to the intentions of the standard creators or, in other words, that the reader has the same benchmark of what is comprehensible and clear.

5.3.3 Straightforward & Direct North Americans vs. Detailed Ambiguity in Japan

Two aspects discussed in Chapter 2 are significant here: (1) the cultural poesis in Canada (2.2.4.2) as opposed to the homogenous Japanese society (2.1.2) and (2) the different distribution of vertical-horizontal relationships in the two countries (2.2.6.2). It was observed that cultural diversity is emphasized in LEED, and the centrally organized vertical structure is evident in CASBEE.

LEED, as a North American system, is developed for the multicultural, heterogeneous society confronted with the daily challenges of accommodating people from a variety of backgrounds. Diversity is understood as an opportunity, and it is not surprising that the assessment system
is based on encouraging this understanding by merging diverse information inputs in the system's dispersed organization. Todd has noted that it is important for LEED to be attractive, that is, comprehensible and easy to understand, in order to be used on a large scale. For example, it avoids terms like “eutrophication”, which might not be known by the general public in the US (Todd, personal communication, May 25, 2012). As a result, the way that information is provided in LEED is relatively simple and direct in order to accommodate the existing diversity and minimise misunderstandings. CASBEE’s approach, on the other hand, corresponds to a highly valued uniformity and order in Japanese society. Vertical organization is expressed by gradually integrating the smaller elements; for example, medium level categories compose the major level category, which, collectively, result in one of the three main evaluation categories under Q or L (5.3.1.3).

Further, implicit manifestations of the uchi/soto boundary (2.2.5.3, Ch. 2) can be observed in CASBEE’s Technical Manual which includes not only detailed explanations of the credits, but also justifications why a certain assessment methodology was chosen. Bachnik (1994)
observed, “For Japanese, beliefs and attitudes can be indexed along a ‘certainty scale’, the ‘certain’ pole of which is ‘inside’, uchi knowledge . . . [which] contrasts with knowledge of a more removed, or soto ‘outside’ kind: second hand, detached, communicated from others, and more generic” (p. 241). In other words, “soto” is the type of “information from which the speaker feels psychological distance” (Suzuki, 2000, p. 44). Coupled with the previously introduced (2.2.5.3, Ch. 2) argument by Suzuki that “unknown” information is often perceived negatively, it explains that excluding information is not a simplicity measure for Japanese, but rather an indication of “irrelevance” and “distance”.

Therefore, it can be argued that the simplification has different connotations in the North American and Japanese contexts. While in the former context it is associated with the system’s level of attraction and implies higher demand and easier dissemination, in the latter case it would indicate that the users of the Technical Manual are not involved enough with the project (there is a psychological distance). This, in turn, could pose risks to the project’s success.
Finally, the Japanese manner of providing detailed explanations in any type of documentation to offer guidance is often referred to as “teinei” (lit., polite). Unlike those in Western cultures, the guidelines are more personalized and represent the level of respect shown to the reader.

The Japanese spend hours simulating possible discussions in order to “imagine” the questions that could arise (column 2, Table 2). The detailed explanations result from such effort.

This innate characteristic often leaves Japanese people confused when they approach information sources provided by Westerners. Those with more experience often know what to expect from, say, “the American” companies, and feel a little bit anxious as they find “unanswered” questions in almost every paragraph, which forces them to follow-up with personal/direct communication.

5.4 Information Flow / Output

LEED-Canada and CASBEE assessment results are indicators of the environmental performance of a building. Information associated with determining and communicating the
evaluation results is referred to as output. The two systems not only embody different scales of measurement, benchmarking and target setting, they also communicate divergent perceptions of different stakeholders involved in the building assessment. Further, easily recognized LEED labels (Platinum, Gold, etc.) contrast with the variety of descriptions, graphs and charts used to present the evaluation results in CASBEE.

5.4.1 Structure

5.4.1.1 Scales of Measurement, Benchmarks

LEED organizes the performance issues in five categories, the points attained for the credits within each are then added to provide an overall performance score. Building success is simply measured by the overall number of points attained, which has been the dominant feature of virtually all previous methods. CASBEE, in contrast, while employing an additive/weighting approach, breaks away from the simple addition of points achieved in all performance areas to derive an overall building score. It distinguishes between the
Environmental Loading, L (resource use and ecological impacts) and Environmental Quality and Performance, Q (indoor environmental quality and amenities), scoring them separately to determine the Building Environmental Efficiency, which is the ratio of Q and LR (for the calculations, load reduction (LR), not load (L) is used).

In LEED, “although not explicitly stated, the baseline for assessment is a ‘typical’ or ‘average’ performance and, as such, recognition is given for better than industry norm performance” (Cole, 2003). This means that worse than “typical” or “average” buildings are not evaluated. In CASBEE, “as a general rule, level 1 is earned for satisfying the minimum conditions required by laws, regulations and other standards of Japan, such as the Building Standards Law, and a building at what is judged to be a general, ordinary level earns 3. The ordinary level (level 3) is a level corresponding to ordinary technical and social practices at the time of assessment” (JSBC, 2010). CASBEE’s approach suggests that the building satisfying minimum requirements can be worse than the average.
5.4.1.2 Targets\textsuperscript{12}: “The best” vs. “better”

LEED-Canada proclaims its “leadership” (LEED = Leadership in Energy and Environmental Design) and represents a universal definition of “green”, communicated to the public through one of the most recognized world brand names (A. Zimmerman, personal communication, March 30, 2012). It “evaluates environmental performance from a whole building perspective over a building’s life cycle, providing a definitive standard for what constitutes a green building in design, construction, and operation” (CaGBC, 2009).

In contrast, CASBEE, referred to by Japanese as a system of “comprehensive assessment” (CASBEE = Comprehensive Assessment System for Building Environmental Efficiency), recognizes the limitations of its scope: “It is not intended to evaluate all aspects of building performance and quality. In particular, specialized assessment systems already exist for fields such as aesthetic and economic performance, so they are excluded from consideration by CASBEE” (JSBC, 2010).

\textsuperscript{12} A more detailed description of how LEED-Canada and CASBEE allocate points is presented in 3.2.2, Chapter 4.
LEED-Canada necessarily means “an achievement”, celebrating “the best” performance in green building practice. CASBEE, however, appears to be comfortable in acknowledging the “unsustainable”, “better” as well as “the best”, with the main focus being on facilitating the majority of the buildings in becoming “better” (see section 5.4 different orientations).

5.4.2 Presentation of Results

5.4.2.1 Singular vs. Diverse

The singular way of presenting the results of the performance assessment in LEED-Canada can be juxtaposed with a more diverse one in CASBEE. LEED uses one of the four widely-recognized labels to present results, and CASBEE’s result sheet includes building outline and image, three different charts (Building Environmental Efficiency or BEE Chart, Life Cycle CO2 or LCCO2 Chart, and a Radar Chart), six bar graphs of the three Q and three L categories, and design consideration descriptions. Each communication method in CASBEE (numbers, descriptions or graphs) has its specific purpose as indicated in Table 8. Further, has noted that
the results sheet is intended to appeal to all stakeholders involved in the certification process.

For example, the design team might be more interested in the radar and bar charts because they provide more details on the evaluation results, but the building owner or government official would like to see the higher final outcome presented in the BEE and CO2 charts (Endo, personal communication, October 19, 2011).

Conceptually, therefore, building assessment in CASBEE is presented not as a representation of the environmental characteristics of the building as a "product", but more explicitly as a measure of the environmental implications associated with providing a set of 'services'. More importantly, since the BEE is a quotient, a range of permutations of Q and LR can attain the highest "sustainable" level.
Table 8 Organized Diversity in CASBEE.

5.4.3 Deterministic Western Attitudes vs. Incremental Improvement in Japan

Two cultural distinctions are observed between the two systems:

1. LEED’s tendency to exclude “the best” practice corresponds to the North American attitude of seeking surprise and excitement in a simplified representation of perfection. Keene (1995) explained,
A more common Western conception is that of the climax, [often observed in such examples like] the terrible moment when Laocoon and his sons are caught in the serpent’s embrace, or the ecstatic moment when the soprano hits high C, which contrasts with the Japanese tendency to admire something that is imperfect or, in Kenko’s words, as “having space for growth” (2.2.5.2, Ch. 2). This understanding is evident in CASBEE because it assesses both less and more sustainable buildings, therefore implying “irregularity” and “imperfection” and suggesting that while the results at the time of the assessment are important, equally is the endeavour to improve.

2. LEED’s way of communicating the final results is expressed by singular criteria based on numerical expressions and, as such, echoes the deterministic Western attitudes. In Japan, the meaning changes according to the context (2.2.5.1, Ch. 2). It is logical, therefore, that the ratio is chosen over an incremental addition of points when determining the score and graphs. The ratio expresses not only the obtained score but also its situational position.
This way of representation is prioritized over numeric representation in CASBEE’s assessment results sheet.

5.5 Anticipated Future Development

5.5.1 Assessment Method Used for GOVERNMENT Purposes: CASBEE

CASBEE is incorporated into governmental programs based on the willingness of the administrative regions to adopt the system. Cities are encouraged to increasingly adopt environmentally responsible building programs that mandate CASBEE assessment and result in submission for buildings with a total floor space exceeding 2000 sq. m.

Japan, a country with a wide range of regional and geographical differences (2.1.1, Ch. 2), faces challenges when aiming to adequately adopt a singular framework. Each regional authority sets its own priorities within CASBEE, which allow for acknowledging regional
priorities within CASBEE’s framework. These adaptations are determined locally in order to
effectively ensure that the balance between the regional and national levels is achieved.

5.5.2 Assessment Method used in PRIVATE SECTOR and as an EDUCATIONAL TOOL:

**LEED-Canada**

LEED primarily emphasizes market transformation and is oriented at increasing its influence in
the building industry. Its inherent simplicity and brand recognition make LEED a powerful
marketing tool that “CEOs, developers, tenants, school boards, and marketing departments
could understand and ask for” (Carpenter, 2011).

Further, educational programs are actively promoted and identified as one of the main
objectives of LEED. These include a “Sustainable Building Advisor” program for professionals
introduced in March 2012 and, since it does not require existing green building education, is
available to everyone. “Speed Up” workshops teach how to get LEED evaluation “right the first
time”, etc. This contrasts with CASBEE, which has been occasionally used only at universities,
but has not yet been applied for post-professional development. “We hope that construction-related professional bodies and academic bodies will use CASBEE in continual professional development (CPD)” (JSBC, 2010). *LEED project submissions?

5.5.3 Dissemination: Domestic vs./and International

At the end of 2011, “approximately 40% of all square footage pursuing LEED certification existed outside the U.S.” (USGBC, 2012a). Kwan (2012), USGBC’s Vice President of International Operations stated that LEED is intended to be “the common language of green building . . . provid[ing] a sense of unity, community and a common way to talk about the same thing”

While Canada chose to adopt and adapt LEED after recognizing its potential as a North American system (5.2.2) countries with significantly different cultures like Italy or India also have their versions of LEED. The LEED International program was established in 2011 with the aim of reaching global consistency by providing alternative paths for the projects outside
the US. The regional approach is mainly based on replacing the “absolute values [that]
focused on performance metrics [with] …reference standards whenever possible… [and
providing] local outreach and support [by] training, advocacy, membership or/and professional
credential [opportunities]” (USGBC, 2012c). Todd observed that such approach would keep
consistency of the structure and rigor while making it responsive to the place. She further
acknowledged that LEED was exported from the US largely due to the large demand from the
multinational corporations (e.g., Starbucks) that were just not willing to learn and use different
certification systems in different countries. (Todd, personal communication, May 25, 2012).

While the increasing support of multinational corporations is evident, it is still not clear how and
whether the international LEED approach will respect and enhance the diversity of the
domestic building sectors outside the US. The focus on international dissemination and
referencing local standards is important and necessary, but it is questionable whether this
rather promotional approach can be really effective in leading the importing country’s market
towards a more sustainable direction.
Despite its wide recognition worldwide, LEED has been simultaneously criticized for the lack of regional consideration in the U.S. CASBEE, in contrast, has been focusing on disseminating the assessment system domestically prior to exporting it abroad. Besides the increase in nation-wide dissemination, recent CASBEE efforts include linking it to Property Appraisal and creating an Autodesk Revit extension. These initiatives are intended to facilitate market transformation: the former becoming “an economic indicator… [and the latter] allowing earlier decision-making and simpler assessment process” (Iwamura, 2011).

5.6 Summary

Chapter 5 has compared LEED-Canada and CASBEE through the lens of information. It was recognized that the origins of the two assessment methods are deeply rooted in their corresponding North American and Japanese cultural contexts. CaGBC and JSBC – the two organizations providing information and consulting (input), communicating the results (output) and facilitating dissemination both domestically and internationally – maintain the set of
collective practices that support the core cultural ideas of the two countries and, by doing this, assure the success of LEED-Canada and CASBEE.

It was shown that information, referred to as “input”, is relatively dispersed in LEED and differs from CASBEE’s tendency to control information flow centrally. However, the opposite is the case for the information referred to as “output”: singular, numeric representations in LEED were contrasted with diverse ways of communicating the assessment results in CASBEE. As such, the assessment methods correspond to the societal values, priorities and institutions within which they operate:

1. People collectively shape society and thus become an “input” of its processes. While the functioning of North American society is built on daily interaction between people from different cultures who enrich and challenge the existing norms, the collective, unanimous approach in Japan echoes its homogenous composition. However, a relatively narrow domestic focus in Japan allows for diversifying the communication results in CASBEE. In
North America, the unity is observed not at the outset but at the end, as manifested by LEED processing a number of opinions into a single score.

2. Assuming that both LEED’s Rating System and CASBEE’s Technical Manual are intended to be clear to its users, LEED’s inherent simplicity was contrasted with CASBEE’s tendency to provide detailed explanations. It was speculated that CASBEE’s approach emerges from the Japanese tendency to associate the lack of information negatively (“soto” in the uchi/soto perception) and to personalize any type of guidelines in a “teinei” manner.

3. The primary foci in LEED and CASBEE differ. While the former rates the excellence of performance in order to recognize the leaders as “the best”, the latter emphasizes the assessment in order to make all buildings, whether less or more sustainable, to perform better. By doing this, CASBEE improves the overall level average. LEED is an effective marketing tool used both domestically and internationally, while CASBEE is oriented mainly
towards the Japanese building industry through local government initiatives. In addition, it was observed that education has more emphasis in LEED.

These observations are significant in several ways. Firstly, analyzing how the information is communicated in LEED and CASBEE reveals not only the different priorities of their developers, but also how they are distributed over the different stages of the building design (information associated with “input” or “output”). In addition to the differences identified in Chapter 3 and more general differences in Chapter 4, Chapter 5 adds time as another dimension for comparison. Secondly, the fact that these differences could be associated with the cultural values in Canada and Japan affirms that the assessment methods are shaped by their cultural contexts. Different cultural origins and predominant social practices influence the accommodation of the assessment methods. It is therefore necessary to consider how the following aspects can be accommodated when the assessment methods travel outside their countries of origin:
a) Organization (central vs. dispersed): The way information flows within and results from the LEED and CASBEE systems corresponds to the way North American and Japanese societies are organized.

b) Structure: LEED and CASBEE use different scales of measurement and benchmarks, and have different targets. Further, the information generated when using the two systems has divergent purposes. LEED aims for leadership in the market, while CASBEE is primarily government oriented.

c) Interpretation of information (what is clear and what is not): The way of presenting information varies according to the level of detail provided.

d) General assumptions: The simplicity evident in LEED is considered to be one of its attractions; in CASBEE, detailed explanations are provided (5.3.2.1). Simplicity is undesirable in the Japanese culture because it is associated with lack of information or lack of involvement, interest or concern, which has negative connotations.
e) Communication of results: The diverse cultural composition in Canada as opposed to the homogenous Japanese society is inversely proportional to a singular way of communicating results in LEED as opposed to a variety in CASBEE. This inverse relationship could be attributed to the inverse relationship existing between the source of information (referred to as input) and the output information within the two systems. In Canada, the diverse sources of information (evident in the dispersed system’s organization and tendency to encourage the participation of professionals with diverse backgrounds) are assembled into the single final outcome as expressed through one of four LEED labels. In contrast, a more uniform source of information (resulting from the relatively centralized flow of information within CASBEE and strict membership requirements) in Japan is diversified in its final outcome to adequately respond to the different stakeholder needs.
Collectively, these conclusions suggest that acknowledging or neglecting the inherent compatibility between the assessment systems and the five discussed aspects in their corresponding society could facilitate or impede their successful applications locally.
Chapter 6: Discussions and Conclusions

6.1 Consequences Domestically and Internationally

This thesis has presented a different perspective for the side-by-side comparison of the building environmental assessment methods. Three thematic ideas were used for the analyses to tease out the cultural differences embedded in the Canadian and Japanese assessment methods. The analysis has shown that both LEED-Canada and CASBEE are culturally laden tools and have emerged from their contexts and respond to the defining natural, cultural, social and economic systems.

The primary focus of this study was to examine the cultural values embedded in building environmental assessment tools in Japan and Canada, with particular emphasis on those that relate to collective attitudes toward nature. Deepening the understanding of how current assessment systems embody cultural attitudes has the following consequences:

1. Expanding the discussion of buildings being considered in isolation compared to them being an integral part of natural, cultural, social and economic systems.
2. Adding weight to the argument that it is critically important to question the ways and extent that such methods developed in one country can be meaningfully adopted by other countries.

The first issue is significant domestically: Buildings are framed largely in isolation from other systems and processes. The assessment methods are recognized as “reductive, discrete and managerial series of isolated design gestures” (Cole, 2012). Fulfilling the requirements of the assessment methods during the design stage and obtaining the certification is anticipated to result in improved environmental performance. However, in both LEED-Canada and CASBEE the buildings are evaluated against the “average” performance (see 5.3.1, Ch. 5 for details), which means that these scales are relative to the domestic building standard. When buildings are considered from a whole-systems perspective and complex inter-relationships between natural, cultural, social and economic systems are acknowledged, it is questioned whether “the formulation of some optimal, sustainable end state is appropriate” (Cole, 2012).

The second issue is significant internationally: Building environmental assessment methods increasingly travel outside their country of origin. The increasing importation and exportation of assessment methods is not only trans-boundary, but invariably also trans-cultural as in the case of LEED being adopted in India or Italy, etc. While the existing effort to assist and encourage
green building practice can be praised for increasing the overall footage of “green buildings”, it is still not clear how imported assessment systems reflect the complexity of the local characteristics so that the design is guided towards a more integrated and place-responsive approach.

These two issues are, to some extent, interdependent and therefore cannot be considered separately. On the one hand, simplified, discrete, and insular framing of the assessment methods domestically requires them to be more generic and thus enables easier exportation and importation. On the other hand, efforts spent in increasing recognition and adoption of the assessment methods internationally also require universal, consistent, and easily recognizable framing. Especially in the latter case, it is unclear whether the imported systems are appropriately adapted to the local environments and therefore pose risks that local characteristics are overlooked.

The neglect of the difficult, if not impossible, task of integrating regionally specific values and priorities in a systematic manner may result in negative long-term consequences, the most significant of which is the increasing number of unsustainable buildings, communities and cities both domestically and internationally. It is important to understand that buildings that do not enhance but rather diminish the capacity to participate in the creation of one’s place cannot
become part of a mature community in whose members exercise responsibility and stewardship.

If these aspects are overlooked and the short-term reductionist approaches are promoted, the unsustainable physical objects would define a robotic and anonymous society. People would have less chance to identify with their place and with one another, fewer opportunities to restore and rejuvenate, and face slowly increasing mental and physical health problems.

It should be noted, though, that to respond thoroughly to the question of which problems or opportunities could potentially arise would require a separate study examining the consequences of actual design cases over the long term and in depth. This study provides a more informed basis for understanding the transferability of the assessment methods by illustrating their complexity and cultural embeddedness. As a result, it shows the necessity of adopting the transferred systems in a broader and more systematic manner.

This thesis has examined several aspects that result from cultural attitudes in the two countries. It proposes that rather than making the assessment methods more universal, a place-responsive approach to integrate the building design process into local systems and processes is necessary when aiming for sustainability. The findings suggest that the imported systems could be substantially adopted by fully recognizing these cultural characteristics. Building design, thus, would facilitate an integrated co-evolution with the local systems both domestically and abroad.
The following discussions summarize several observations and raise questions resulting from the key issues explored in the thesis.

6.2 Buildings that are Integrated into the Larger Systems and Processes

The ways and extent that cultural values are embedded in LEED-Canada and CASBEE were exposed by comparing the two assessment systems through the lenses of biophilia (Chapter 3), technology (Chapter 4) and information (Chapter 5) rather than comparing them side-by-side. The core cultural differences between Canada and Japan were exposed in Chapter 2, each of which proved important in the subsequent comparisons of LEED-Canada and CASBEE. Further, the comparisons proved instrumental in providing an additional perspective when analysing the assessment methods:

1. It was shown that North American and Japanese cultural values are embedded in LEED-Canada and CASBEE. It was suggested how the differences between two assessment methods carry the cultural underpinnings of the two countries. The comparison enables questioning about how the existing models of the assessment methods could be further shaped to better reflect local needs and facilitate the integration of buildings in the local systems and processes.
2. The comparison triggers questioning whether foreign systems can be effectively imported without making significant adaptations in their structures, requirements and formulations.

6.2.1 Full Recognition of Culturally Embedded Attitudes: Consequences Domestically

The analysis in this thesis showed that both LEED-Canada and CASBEE tend to emphasize certain environmental performance aspects over others. Further, it explored how some of these emphases (revealed using the three thematic ideas) are culturally embedded. The following discussions propose how full recognition rather than neglect or simplification of these culturally embedded emphases could be systemized, organized, and expanded to facilitate integration of the human and natural worlds.

6.2.1.1 The Importance of Locality/Place

- The dispersed and relatively flexible organization of LEED (5.3.1, Ch. 5) enables involvement and participation of people with diverse backgrounds. If fully recognized, LEED has the potential to encourage the bottom-up creative initiatives that strengthen the sense of community and nurture responsibility and stewardship. This result would be much more difficult to achieve in a centralized organization such as CASBEE. The level of dissemination on a community scale depends on whether or not the regional authority decides to adopt CASBEE.
• In CASBEE (3.2.1, Ch. 3), long-term positive transformation was emphasized more than in LEED-Canada. Further, credits requiring synthesis with the surrounding environment, continuation of historic scenery and local topography, culture, and keeping the appropriate relations with community could collectively bind its members and facilitate engagement in the place in which they live (3.2.3; 3.2.5, Ch. 3).

• The tendency to avoid the soto “outside” information (Japanese approach, CASBEE, 5.3.3, Ch. 5) could encourage place-specific design. The uchi/soto boundary (2.2.5.3, Ch. 2) refers not only to “self-in-relation-to-other” (“self” here being the design team and “other” the building, inhabitants and context), but also to the importance of first-hand experience. In other words, the more connected the design team (uchi) is to the context of the building (soto), the more the design approach is based on direct and detailed information and is thus evaluated more positively. The direct experience of and involvement with the place is implied.

6.2.1.2 Encouraging Involvement

• Allowing for personal building controls (LEED-Canada, 4.4, Ch. 4) encourages inhabitants’ interaction with the building systems, which might shift their attitudes from building as an isolated physical asset towards it being part of their daily lives. In the long term, the
inhabitants might want to know how the building is operated, take part in improving their local environment, and develop a sense of responsibility and care.

• Both LEED-Canada and CASBEE attempt to establish common ground with the diverse range of stakeholders involved with the production of buildings by engaging them in complementary ways. While LEED-Canada is oriented to market transformation and education, CASBEE is primarily integrated into governmental programs (5.5, Ch. 5).

• CASBEE focuses on making the majority of buildings perform “better” (5.4.1.7, Ch. 5) and is compulsory for all the buildings in some regional authorities.

6.2.1.3 Building as Part of the Larger Systems and Processes

It was discussed (2.2.6.2, Ch. 2) that in Japan the relationships between people tend to be vertical in order to maintain the harmonious and horizontal relationship between the human world and nature. This understanding is manifested in CASBEE’s centralized structure and hierarchical credit organization (5.3.1.1, 5.3.1.3, Ch. 5). Even though not recognized or emphasized, it is based on the belief that the human world is situated within the larger natural world. As such, can be strengthened and tied to a comprehensive framework to encourage a cooperative attitude between humans and nature.
6.2.2 Questioning the Importation and Exportation of the Assessment Methods:

Consequences Internationally

One of the speculations in this thesis involved the risks and opportunities when assessment methods travel outside their country of origin without substantial adaptation. The following discussions summarize several issues.

6.2.2.1 Individual vs. Collective

The individualist approach was directly or indirectly evident in LEED through the emphasis on the simplified and measurable “geographically specific priorities” in which the regional considerations are predetermined based on the postal code (3.2.3, Ch. 3), personal controls (4.4, Ch. 4), tendency to celebrate “the best” in the green building market (5.4.1.7, Ch. 5), and flexible organization allowing the participation of individuals with diverse backgrounds (5.3.1, Ch. 5). All these aspects appear to be understood as a group effort in the Japanese CASBEE: synthesis with the surrounding context and proper communal relationships (3.2.3; 3.2.5, Ch. 3), emphasis on service (4.4, Ch.4), acknowledging the less and more sustainable buildings with an aim to improve through local government initiatives (5.4.1.7; 5.5, Ch. 5), and the strict organization limiting participation (5.3.1, Ch.5).
Accepting that the LEED system with its individual approach is exported to the group-oriented society and vice versa, several questions arise: How could the inherently individualist North American approach be adapted to a collectively oriented society? Is it possible to export the group-conscious Japanese framework to a more individualistic society? These questions might appear similar because the issue of an “individual approach” being adopted in a collectively oriented society is opposite to the issue of “group conscious framework” to be adopted in an individualistic society. However, the previous analyses of the society’s composition, structure and understanding suggest that these two issues cannot be treated equally. It should be noted that the collective understanding is culturally rooted and therefore specific to that country (i.e., Japanese groupism is not comparable to that one of Indians or Chinese, 2.2.5.3, Ch. 2). While it might be relatively easy to import the more flexible approach into a homogeneous society (even though the long-term consequences of such an act should be questioned), it is almost impossible to imagine a diverse group of individuals with a variety of backgrounds being guided by a singular approach. Further, it is doubtful whether a group-oriented society could use the imported system for successfully integrating the building design into the local natural, cultural, social and economic systems in the long term.
6.2.2.2 Simplicity vs. Complexity

A relatively simple LEED approach in the credit descriptions (5.3.2, Ch. 5), allocation of weights and scoring (4.3.1, Ch. 4; 5.4.1, Ch. 5) as well as singular presentation of results was contrasted with the detailed descriptions (5.3.2, Ch. 5) and organized complexity in scoring and results sheet (4.3.2.1, Ch. 4; 5.4.2, Ch. 5) in CASBEE. Further, it was discussed that these differences are indirect (Ch. 4), relate to how certain information is understood and interpreted (Ch. 5), and result from culturally rooted values. Acknowledging that the two assessment systems are structured, organized and communicated in a manner easily comprehended in the cultural context, the following questions arise:

Should simplicity, as one of the characteristic features of LEED, be imported into a country with different societal expectations? LEED’s simple and flexible approach is one of its defining features, making LEED attractive and easily comprehensible when being considered by some countries (i.e., India, 5.5.3, Ch. 5). Initially, “LEED began with the goal of getting attention for energy-efficient building”, and became successful by thoughtfully encouraging businesses to become active members of the green building movement (Kamenetz, 2007) Yudelson (2011) noted, “LEED works because it’s become a brand,” but critics question whether the focus on its brand recognition does not outweigh its role as a leader in energy and environmental design.
White (as cited in Kamenetz, 2007) has been cited when acknowledging potential risks resulting from the market-oriented simplified approach: “People have the idea that sustainability is just a collection of exciting ideas that you can peel and stick onto your building”. However, the main role of the assessment methods is to effect possible change towards more sustainable design solutions. As such, they are means to an end, not an end in themselves, and it is crucially important to understand their role when facilitating change in the complex construction industry (Cole, personal communication, May 25, 2012).

Culturally rooted Japanese understanding proves a good example illustrating one of the possible problems. It was shown that simplicity in Japan more often than not has negative connotations (5.3.3, Ch. 5). In this case, it is likely that the structure of the assessment method would be questioned at the outset or even become the reason for deciding not to adopt the system as it is, i.e., difficult to understand (5.3.2, Ch. 5). If simplicity is regarded as an attractive feature, however, it is less likely to be questioned and analysed when the system is imported, despite the unknown consequences over time. The main concern here is the fact that these subtle features embedded in assessment methods that are increasingly used outside their country of origin are not exposed and/or acknowledged. This leaves the country importing them without any indication of the long-term consequences of using such systems. On the other hand, the
complex approach evident in CASBEE triggers questioning of its applicability abroad. While
CASBEE’s structure corresponds to the complex and particular domestic industry in Japan, it is
less likely that such an approach could be successfully integrated in a market-oriented context
such as North American. In the presentation of assessment results – what would be the
compromises in CASBEE’s way of communicating the results through a multi-faceted and
comprehensive manner if it was imported into a society with the propensity to reduce complex
information into a singular expression?

This question is posed to address not only the relative simplicity in LEED and complexity in
CASBEE, but also the fact that these features influence their future development and
dissemination (LEED as a tool for market transformation and CASBEE being integrated into the
government initiatives, 5.5.1, Ch. 5). Obviously, LEED’s brand name could not be sustained if
the evaluation targets fewer and more sustainable buildings and the results were communicated
in many different ways, including numeric, graphic representations and subjective descriptions
such as “design considerations”.

6.2.2.3 Fixed vs. Dynamic

Long-term positive thinking (3.2.3, 3.2.5, Ch. 3), point allocation based on the level of achievement (4.3.2.1, Ch. 4), and a tendency to use graphics in the results sheet (5.4.2, Ch. 5) in CASBEE are expressions of the deeply rooted cultural understanding that everything is always changing, and the meaning is contextual (2.2.5.1, Ch. 2). In LEED, however, straightforward and fixed emphases are evident as points are obtained whenever the requirements are met (i.e., the development avoids sensitive sites with the strictly defined criteria (3.2.1, Ch. 3), the specific actions or performance are measured by the percentage or distance (4.3.1.1, Ch. 4), and the results are communicated through one of the four widely recognized labels (5.4.2, Ch. 5).

These attitudes are based on fundamentally different understandings. The Japanese inherently perceive the way things happen as a situational outcome of related factors. As a result, it is never as important as ensuring the balance and smooth interchange between these dynamic factors in the long term. In the North American context, the outcome is rather isolated from its cause, and can therefore be celebrated as a fixed measure of success.

The Japanese tend to emphasize things as continuously evolving and changing (2.2.5, Ch. 2).
The persistent effort to search for the way, method, or technique that is the best for the particular situation, as well as aspects that could be improved, creates a long focus. In building design, this understanding results in an outcome that is rather process-oriented and, as such, poses opportunities of creating a positive effect over time. It is especially important when the buildings are considered as “places” in which the inhabitants interact and care for each other, and the community is sustainable.

This contrasts with the culturally ascribed limitations in the North American context, in which the benefits of a certain design strategy could be reconsidered due to the apparent lack of accomplishment. Yudelson presents an example in an analysis of difficulties when adopting the Passive House standard: “In the U.S. to call anything ‘passive’ sounds kind of wimpy – we’re a high-performance, four-on-the-floor, NASCAR, “go” kind of culture” (O’Brien, 2012). Further, Todd (personal communication, May 25, 2012) emphasized that a positive outcome is very important in the North American context. She claimed that different stakeholders involved in the process of using LEED “had to have something they would be proud of. They didn’t need a regulatory stick, but rather a carrot”. These comments acknowledge that there are reasons beyond the technical, measurable, or logical ones, which may be even greater barriers to
overcome. As such, they confirm the importance of understanding how culturally rooted values affect decision making.

6.3 Limitations

The past decade has witnessed a proliferation in the development of building environmental assessment methods by countries worldwide for application in their respective domestic markets. This development carries the implicit expectation for systems to encourage green building practices appropriate to their specific climatic and cultural contexts. However, this has been compromised by the increasing demand for “brand recognition” in a global market and the desire for international standards. The subsequent increased exportation and importation of the major building environmental assessment methods does not currently acknowledge that this is also an exportation and importation of their cultural underpinnings and, despite any regional adaptation, has potentially adverse long-term consequences for promoting regionally-specific practices.

The thesis showed how the assessment methods are shaped by their cultural context. LEED-Canada NC version 2009 and CASBEE 2010 were compared to each other and against the three thematic ideas as a means to tease out the differences in their organization, structure and
requirements. The analysis of cultural values proved instrumental in explaining why these differences exist.

The scope of the work is defined by the current versions of the two assessment methods (LEED-Canada, NC 2009; CASBEE, NC 2010), and the three thematic ideas used as lenses when comparing the two assessment methods. Rather than attempting to list-up all the apparent differences as a result of the side-by-side comparisons, the results of this thesis show several of the implicit, subtle differences. Therefore, the analysis of LEED-Canada and CASBEE was treated with equal importance as was the exploration of their cultural underpinnings.

Further, this thesis held that it is more important to examine how the cultural values play out in the assessment methods rather than define them. Even though the analyses presented in Chapters 3, 4, and 5 are based on a thorough literature review and consultations with experts involved in the development and application of LEED-Canada and CASBEE, the author acknowledges that these attempts are influenced by the interpreter’s point of view, background and experience. Therefore, while the emphasis in these analyses could be adjusted to accommodate different points of views, the study concludes that Canadian and Japanese cultural values are manifest in LEED-Canada and CASBEE’s formulation, structure, and requirements. It is important to note that this conclusion could not be made without detailed
analyses and interpretations, which can be regarded as part of the outcome – a collection of examples illustrating how cultural values influence particular aspects of the formulation, structure, and requirements of the two assessment methods.

The work presented in this thesis is directed at the cultural values embedded in building environmental assessment methods with particular emphasis on those that relate to collective attitudes toward nature. The comparison of broad cultural differences between Japan and Canada showed how the implicit factors shaping society’s composition, industries, structure, and understanding influence the priorities and emphasis of building environmental assessment methods.

Even though the degree of embeddedness was not addressed, it was concluded that LEED-Canada and CASBEE, more or less, correspond to their cultural contexts. It was observed that by recognizing and enhancing these cultural characteristics, both assessment methods have great potential to shift the understanding of buildings as isolated entities to them being closely integrated with natural systems and processes (6.2.1). As discussed in 6.2.2, the thesis strengthens the argument that it is critically important to question the transferability of these methods from one cultural context to another and the risks and opportunities that could potentially arise.
6.4 Future Possibilities of this Study

In future studies, it is recommended to expand the scope and the focus of this thesis. The ultimate goal of this study is developing a comprehensive framework to indicate how the assessment methods could be adopted by other countries while maintaining and enhancing the interaction of natural, cultural, social and economic systems both domestically and abroad. There are several dimensions through which this issue could be addressed.

1. Expanding the scope:

- This thesis focused on the New Construction (NC) Rating System of LEED-Canada and the New Construction Technical Manual of CASBEE. For the purpose of testing the validity and reliability of the conclusions presented, other tools such as BREEAM could as well be analysed.

- USGBC is developing a new version of LEED (version 4 or v4) to be released at the end of 2013, which will have new credits (and credit categories), some changes in the technical content and revised point distribution. More importantly, LEED v4 is expected to facilitate an integrative design process by including a credit category (Integrative Process, IP) that will require design teams to recognize the importance of
grasping the linkages between different building life-cycle phases at the outset of any project (USGBC, 2012b). In addition to acknowledging and clarifying the changes in the LEED v4 compared to the 2009 version, the scope of the undertakings in this thesis could be expanded by analysing how North American cultural values are embedded in LEED v4.

- Other thematic ideas could be added in order to tease out culturally shaped differences. This would complement the conclusions presented herein, resulting in a more comprehensive set of examples and analyses to support the argument that the cultural values are embedded in the building environmental assessment methods.

- Assessment methods from other countries and their cultural contexts could be contrasted. While the three thematic ideas of this thesis would prove useful in facilitating any future comparisons and would act as an example of potential methodology, new and different approaches could be deployed.

- Imported and domestic systems in a country could be compared using the three thematic ideas presented in this thesis. A survey analysis was conducted by Larsson (2010) aimed at deepening the understanding of the issues associated with using
imported building environmental assessment methods. He found that “in every instance the reason was because the system was well known through media or other public sources, LEED was the imported system in use” (Larsson, 2010). While the publicity and associated “brand” of LEED is currently the main and most important reason for importing and applying it in the domestic context, the comparison of LEED and domestic systems would expose the compromises and mismatches that could arise as a result of such action. This, in turn, would help to better understand how the changing landscape where many systems are operating in the same country could affect the changing culture of building design.

2. Expanding the focus:

Other dimensions of the issue could be addressed by integrating knowledge from different disciplines in order to expand the narrow framing of building as a physical, mechanical or engineering product. This would be particularly relevant when the environmental performance goals are oriented towards an evolutionary process driven by the people of the local culture and integrative to its natural, social, and economic systems.

• There is a lack of in-depth studies on how the importation and exportation of
building environmental assessment methods affect local building practices in the field of building design. However, other disciplines (e.g., social anthropology, cultural ecology, human behavioural ecology, intercultural communication, migration studies, education, business management, nursing care and medicine, information sciences, language studies, aesthetics, etc.) have been encouraging a diverse range of explorations directed at causes, processes, and effects initiated by cross-cultural interactions.

It is recognized that in so-called hybrid situations resulting from the symbiotic relationships between two or more cultures, “one is not only confronted with multiple identities . . . possibilities, strategies and in-betweens, but also with problems of estrangement and dislocation, with limits of representation and an ethics of the wound that challenges the translatability of the Other” (Van Den Braembussche, et al., 2009, p. 2). Further, it is acknowledged that knowledge exchange occurs by transmitting and receiving cultural traits due to “the movement of culture-bearing people or the diffusion of ideas and technology among non-kin . . . [and] adaptations to local ecological conditions . . . [inclusive of] the physical environment, other cultural knowledge, or biologically evolved or implicit features of human cognition” (Mesoudi et al., 2006).

These conclusions confirm that importation and exportation of building environmental
assessment methods, which combine the movements of people, ideas and technology, together transfer culturally embedded understanding and values. It must therefore bring along various challenges, not only in the form of possibilities but also controversies and misunderstandings. For example, the cross-cultural adaptation theory presented over two decades ago was “built on the premise that a person is an open system that coevolves with the sociocultural environment . . . [who has a] project of establishing and maintaining, over time, a relatively stable and reciprocal relationship with the host environment” (Young Yun, 2009). The key element for successful adaptation is identified to be cognitive competence largely consisting of knowing “the host culture and language, including the history, institutions, world-views, beliefs, mores, norms, and rules of interpersonal conduct, among others” (Young Yun, 2009).

Exhaustive examination and application of cross-cultural theory to the building environmental assessment methods could extend to form another thesis inquiry. This theory has been adapted and applied in other social science research areas, which suggests it is important to establish an integrative framework when two or more cultures are joined.

• The research on the ways and extent that cultural values are embedded in
building environmental assessment methods could be expanded to include an analysis of how the building design in a defined local context is influenced by its cultural underpinnings. In such a case, it would be crucial to recognize that buildings are part of the larger natural, cultural, social and economic systems and raise questions such as: When is the system open or closed? How and what building elements are interconnected over different scales? What is been the historical time frame over which such structure evolved?

In the analysis of urban complexity, Salat (2012) claimed that the historical urban systems that took time to mature “display the same degree of complexity and connectivity, regardless of the magnitude scale, [and these features] . . . enhance both their [cities] efficiency and their resilience”. Salat (2012) observed that any system’s physical structure is strongly affected by the cultural context within which the system is located. Even though the system’s cultural embeddedness might not be visible at the individual building scale, cultural underpinnings become much more evident at the larger community scale (Salat, personal communication, May 25, 2012).

Building environmental assessment methods present defined and relatively simplified frameworks that represent the complex interactions of buildings in a simplified manner.
Such frameworks play a crucial role in shifting the culture of building design and are regarded as necessary to push current design boundaries through a demonstration of excellence and innovation. It is therefore important to identify and understand the relationship between the simplified frameworks on a smaller scale and complex reality on a larger scale. It is especially important to understand how the criteria change when the scale is changed, and what consequences this has for positioning individual buildings as part of the interconnected systems rather than single, isolated entities.
References


