Bridging the Horizon: A Collaborative and Cooperative Approach for Cross-cultural Learning on the Artistic and Architectural Heritages of Central and Northern Thailand.

การเชื่อมโยงองค์ความรู้: ความร่วมมือในการเรียนรู้ข้ามวัฒนธรรม จากมรดกทางศิลปะและสถาปัตยกรรม ในภาคกลางและภาคเหนือของประเทศไทย

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Abstract

Following a successful 2013 cross-cultural educational experience, faculty members and students from King Mongkut's Institute of Technology, Ladkrabang (KMITL) and University of Colorado Denver (UCD) again organized a series of workshops and field trips to investigate artistic and architectural heritages in central and northern Thailand in January 2015. The program concluded with a joint exhibition of student research projects at KMITL. The research methodology for the 2015 KMITL-UCD workshops and excursions analyzes the program for its roles in: 1) expanding student knowledge of the artistic and architecture heritages in central and northern Thailand; and 2) bridging a horizon of understanding between two groups of students; one grounded in their own cultural roots in Thailand and the other not. Informed by Spencer Kagan's notion of Cooperative and Collaborative (C&C) learning, this paper explores the value and significance of cross-cultural study and exchange and demonstrates the value of collaborative and cooperative learning in architectural education.

บทคัดย่อ

สืบเนื่องจากความสำเร็จของโครงการเดินทางศึกษาดูงานภาคสนามในปี พ.ศ. 2556 ที่ผ่านมา อันมีวัตถุประสงค์เพื่อสนับสนุนและส่งเสริมประสบการณ์การเรียนรู้แลกเปลี่ยนข้ามวัฒนธรรม กลุ่มคณาจารย์และนักศึกษาจากสถาบันเทคโนโลยีพระจอมเกล้าเจ้าคุณทหารลาดกระบัง ร่วมกับมหาวิทยาลัยแห่งรัฐโคโรลาโด ประเทศสหรัฐอเมริกา ได้จัดทำโครงการนี้ขึ้นมาอีกครั้งหนึ่ง ในเดือนมกราคม พ.ศ. 2558 ภายใต้หัวข้อ "มรดกทางศิลปะและสถาปัตยกรรม ในภาคกลางและภาคเหนือของประเทศไทย" ซึ่งใช้ระยะเวลาทั้งสิ้นสองสัปดาห์ และปิดฉากลงด้วยการจัดนิทรรศการแสดงผลงานของนักศึกษาจากทั้งสองสถาบันร่วมกัน จากเหตุข้างต้น งานวิจัยชิ้นนี้จึงได้ทำการศึกษาถึงกระบวนการ ตลอดจนกรรมวิธีที่

ถูกนำมาใช้ในการศึกษาดูงานเชิงปฏิบัติการภาคสนามดังกล่าว โดยเน้นการวิเคราะห์บทบาทของกิจกรรมในประเด็นดังต่อไปนี้ คือ 1) การเติมเต็มความรู้ให้นักศึกษา และ 2) การเชื่อมโยงแลกเปลี่ยนความรู้ระหว่างผู้เข้าร่วมโครงการจากทั้งสองวัฒนธรรม นอกจากนี้ โดยอาศัยแนวคิดและหลักการเรียนรู้แบบร่วมมือและการทำงานร่วมกันของ สเปนเซอร์ คาแกน การอภิปรายผลจากการวิจัยได้แสดงให้เป็นที่ประจักษ์ถึงความสำคัญของการเรียนรู้ข้ามวัฒนธรรม ผ่านกิจกรรมการเรียนรู้แบบร่วมมือและการทำงานร่วมกันในการศึกษาสถาปัตยกรรมอีกด้วย

Keywords (คำสำคัญ)

Architectural Education (การศึกษาสถาปัตยกรรม)
Cross-cultural Study (การเรียนรู้ข้ามวัฒนธรรม)
Mixed-methods Approach (ระเบียบวิธีวิจัยแบบผสมผสาน)
Collaborative and Cooperative Learning (การเรียนรู้แบบร่วมมือและการทำงานร่วมกัน)
Arts and Architecture of Thailand (ศิลปะและสถาปัตยกรรมไทย)

1. Introduction

Contemporary architectural discourse is shifting to a greater interest in cross-cultural study emphasizing relationships between the built environments and cultural contexts beyond the confines of Eurocentric precepts. This shift is confirmed by the significant growth of academic and popular publications on the architecture of non-Western cultures since the 1990s (Bozdogan, 1999, pp. 211 & 214). In tandem with this development is the broadening scope of teaching architectural history in non-Western contexts incorporated into many English language textbooks and survey courses. There is also the growth of study abroad programs in Asia offered by leading universities in North America, Europe and Australia (Pieris, 2014, pp. 2-6).

In January 2015, cross-cultural study in architectural education was explored. Four faculty members and twenty students from the Department of Architectural Education and Design, Faculty of Industrial Education, King Mongkut's Institute of Technology, Ladkrabang (KMITL) teamed up with a professor and eleven students from the Departments of Architecture, Landscape Architecture, and Planning, College of Architecture and Planning, University of Colorado Denver (UCD). Based on their very successful collaboration in 2013, they again organized a series of workshops and field trips to investigate artistic and architectural heritages in central and northern Thailand. The two weeks of research activities culminated at KMITL with a joint exhibition of work produced by the participating students.

Informed by Spencer Kagan's approach in Cooperative and Collaborative (C&C) learning, the entire program was devised to facilitate a cross-cultural learning experience (Kagan, 1994a; Kagan, 2009c). Operating in small teams, both the Thai and foreign students conducted a number of research projects--ranging from architectural symbolism and iconography to materiality and building typologies--utilizing various techniques and media under the shared theme of sacred Buddhist cosmology in religious structures.

The research methodology for the 2015 KMITL-UCD workshops and excursions analyzes the program for its roles in: 1) expanding student knowledge of the artistic and architecture heritages in central and northern Thailand; and 2) bridging a horizon of understanding between two groups of students; one grounded in their own cultural roots in Thailand and the other not.

Our investigation confirmed the educational value and significance of cross-cultural study and also demonstrated the advantages of collaborative and cooperative learning in architectural education. It is important to note that both KMITL and UCD groups experienced a reciprocal privileged educational experience but perhaps it was more so for the UCD students. The smaller number of UCD students were, in fact, imbedded in the five student teams with Thai students. Instead of the usual superficial tourist experience offered by study abroad programs, the UCD students were research partners with their Thai counterparts. This environment provided the UCD students with cultural experiences and insights only available from the inside of culture provided by their Thai student hosts. In a more globalized world, such educational experiences provide advantages for students entering professional careers.

2. Theoretical Foundation and Methodological Approach

2.1 Cross-cultural Study

The paradigmatic shift toward cross-cultural educational models has challenged the dominance of Eurocentric narratives in conventional art and architecture education. Human beings are ever more connected in a globalizing educational environment. Scholars of cross-cultural studies have argued that one culture constructing meanings of the world could influence how people see themselves and other cultures (Jarzombek, 1999, pp. 197-198).

In examining the mechanisms and networks by which knowledge, ideas, skills, instruments, and practices are disseminated across cultures, scholarly literature has produced innovative concepts concerning the order of things. According to Ben-Zaken (Ben-Zaken, 2010, pp. 163-167), cross-cultural exchanges happened at a cultural hazy locus, where the margins of one culture overlap the other, creating a "mutually embraced zone" where human interactions occur. From such a nexus of contacts, ideas, styles, instruments, and practices cultural notions evolve.

In arts and architecture, cross-cultural study advances awareness of built form via their relationships with methods of communication, modes of representation, and identity formations. Not only does cross-cultural study develop an appreciation for cultural traditions other than one's own but also an understanding of the interdependent nature of world society as well as the meaning of living in a multi-faceted society both locally and globally(Ibid).

Cross-cultural study provides a conceptual framework to bridge a horizon of understanding between KMITL and UCD students (and faculty members). Since the concept of cross-cultural studies is currently evolving, assumptions of what it stands for must be questioned on an ongoing basis. No single definition accounts for every theoretical position now branding itself "cross-cultural study." In fact, some theoretical positions are irreconcilable with others: 1)scholars who recognize cross-cultural study as designating an amorphous collection of discursive practices--e.g., the post-colonial and post-modern theories--as opposed to; 2)scholars who identify cross-cultural studies as a historical set of cultural strategies, including hermeneutics, phenomenology, structuralism, and semiotics (For example, see: Bloom, 1975; Parry, 1987; Kent, 1993; Mugerauer, 1995; Burke, 1997; Jarzombek, 1999; Ben-Zaken, 2010).

Even though acknowledging problems of incompatibility, we do not seek to reconcile them but instead employ cross-cultural study as guiding principles to explore a pedagogical model for architectural education. The result would center around the dialectical associations between two oppositional discourses of: 1) Orientalism, the Eurocentric perception and depiction of non-Western societies and cultures or "the East" confirming the hegemony of the West; and 2) Occidentalism, the stereotypical views and images of "the West" by non-Western people manifested through attempts to forge their own cultural identities as a response to the Orientalist discourse (Said, 1978; Carrier, 1995).

Both KMITL and UCD students were encouraged to scrutinize their research topics as they were perceived, conceived, and experienced as social space in which meanings were created through spatial practices, perceptions, and interpretations. As suggested by Lefebvre (1991, pp. 34-36, p. 143), a social space is constructed and lived before it is read and conceptualized. The links among works of architecture and art are crucial for comprehending the built environment beyond socioeconomic and political frameworks or merely as a representation of ideas and social relations. Rather, built forms were conditioned by them, as much as conditioned them (Perera, 1998, p. 2).

2.2 Collaborative and Cooperative Learning

Since the 1990s, a renowned American educational psychologist, Spencer Kagan, has devised roughly two hundred-classroom learning "structures" to realize Cooperative and Collaborative (C&C). These structures place emphasis on positive interpersonal peer relationships, equality, self-esteem, and achievement. By following Kagan's "structures", students work together in groups, using material or content selected by the students themselves and/or assigned by their teachers (Kagan, 1994a; Kagan & Kagan, 1998b; Kagan, 2009c).

Kagan's approach serves various goals ranging from: 1) building team spirit and positive relationships among students; 2) sharing information; 3) nurturing critical thinking; 4) developing communication skills; 5) achieving mastery (learning/remembering) of specified

material. Utilizing the concept of Multiple Intelligences (MIs) developed by Gardner (1993), many of the structures can be mixed and matched, making them very flexible. Aside from their adaptability to suit a particular student body, they can fulfill several learning objectives simultaneously (Kagan & Kagan, 1998b, pp. 76-86).

Kagan and Kagan (1998, pp. 86-97) advocated Collaborative Learning (CL) activities that promoted various MIs via peer collaborative tasks, involving skills such as drawing, classifying, computing, moving the body, requiring students to collaborate in teams (interpersonal), or be introspective (intrapersonal). As shown by a number of studies, the use of interpersonal intelligence CL structures enabled instructors to target interpersonal effectiveness for student development, which in turn cultivates a harmonious social environment in classrooms (For instance, see: Meyers, 1994; Goleman, 1995; Kagan & Kagan, 1998b; Ciaramicoli & Ketcham, 2000; Goodman, 2002).

Taken as a whole, Kagan's structural approach in conjunction with Gardner's notion of MIs supplied an operational basis to justify the use of Cooperative and Collaborative (C&C) learning method during the 2015 KMITL-UCD workshops and field trips. In brief, C&C refers to a learning model in which diverse students team up to explore a significant question or carry out a meaningful research project as was illustrated by the teams of KMITL and UCD students working on research assignments in Thailand.

The workshops and excursions were methodically organized to foster cooperative learning opportunities, which are according to Kagan and Kagan (1998b, pp. 86-98), constitute a specific form of collaborative learning. The students worked together in small teams on sets of structured research activities and were held accountable for their projects both individually and collectively requiring each member to closely collaborate his/her colleagues. Face-to-face communication and joint effort were quintessential and indispensible for success. Apart from developing interpersonal skills, KMITL and UCD students: 1) shared their strengths; 2) mitigated weaker skills of the teammates; and 3) learned to deal with personal as much as cultural conflicts. Operating under a guidance of clear research objectives from the instructors, the cooperative groups engaged in numerous activities that improved their overall understanding on the topics and objects of investigation.

As depicted by Diagram 1, crucial to the C&C learning method is a small-sized working party which performs as a place where: 1) learners actively participate; 2) teachers become learners and learners become teachers; 3) everyone is respected and supported; 4) projects and questions interest and challenge students; 5) diversity is celebrated and all contributions are valued; 6) students learn skills for resolving conflicts when they arise; 7) members draw upon their past experience and knowledge; 8) goals are clearly defined and used as a guide; 9) research tools like the Internet are made accessible; 10) students invest in their own learning; and 11) cooperative groups work and learn to function as a single and cohesive unit.

However, the terms "cooperative" and "collaborative" when applied to learning are not the one and the same. Rockwood (1995a, 1995b) differentiated the two from each other. While the former denoted a methodology of choice for foundational knowledge (i.e., traditional knowledge), the latter was associated with the social constructionist's view that knowledge is a social construct. He also distinguished these terms by the roles of instructors. In cooperative learning, the instructor became the center of authority in the class, issuing more closed-ended group assignments with specific answers to the students. On the contrary, in collaborative learning, the instructor abdicated his/her authority and empowered small groups of learners via more open-ended and complex tasks (Ibid, Ibid).

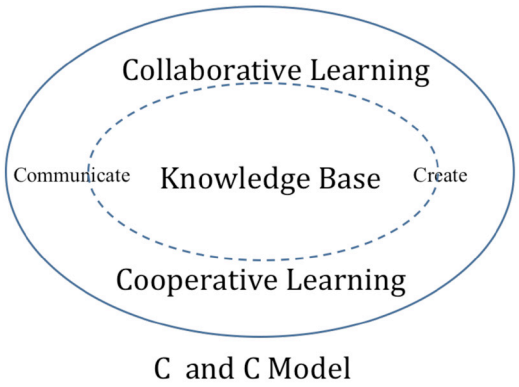
For the KMITL and UCD collaboration both approaches were employed to suit dissimilar levels of academic maturity of the students: 1) a more structured cooperative learning style for foundational

knowledge; and 2) a laissez-faire approach for collaborative learning on a higher level of knowledge that dwelled less on factual content but more on analytical, interpretative, and critical aspects. In tandem with collaborative and cooperative learning, other terms and/or strategies were used as well, for example: 1) team learning, 2) Problem-Based Learning (PBL)--such as case studies and simulations--and 3) peer-assisted instruction, like workshops and discussion groups (for their detailed definitions, see: MacGregor, 1990; Smith & MacGregor, 1992; Cooper & Robinson, 1998).

3. Discussion Themes and Mode of Problematization

Before proceeding, it is appropriate to elaborate on the thematic organization of the article. Under the conceptual framework and theoretical guidelines of cross-cultural study, the discussion first evolves around the ways in which a horizon of understanding between KMITL and UCD students was facilitated by joint research projects. Second, informed by the methodological applications of Kagan's C&C method, the focus then shifts to a statistical investigation relying on evaluative worksheets/questionnaires as tools for data collection and interpretation to determine the pedagogical applications and efficacy of cross-cultural learning from the "authentic assessments" of the audiences at the public exhibition of students research works (Cooper & Robinson, 1998). In order to ensure that a conflict of interests would not arise, the audiences contain two groups of students and educational specialists who did not take part in the workshops and study trips.

On that basis it may be construed that, on the one hand, the joint KMITL-UCD workshops and fieldtrips act as the independent variable for the upcoming evaluative investigations. On the other hand, architectural knowledge and skills acquired through the research projects employing the C&C approach



C and C Model

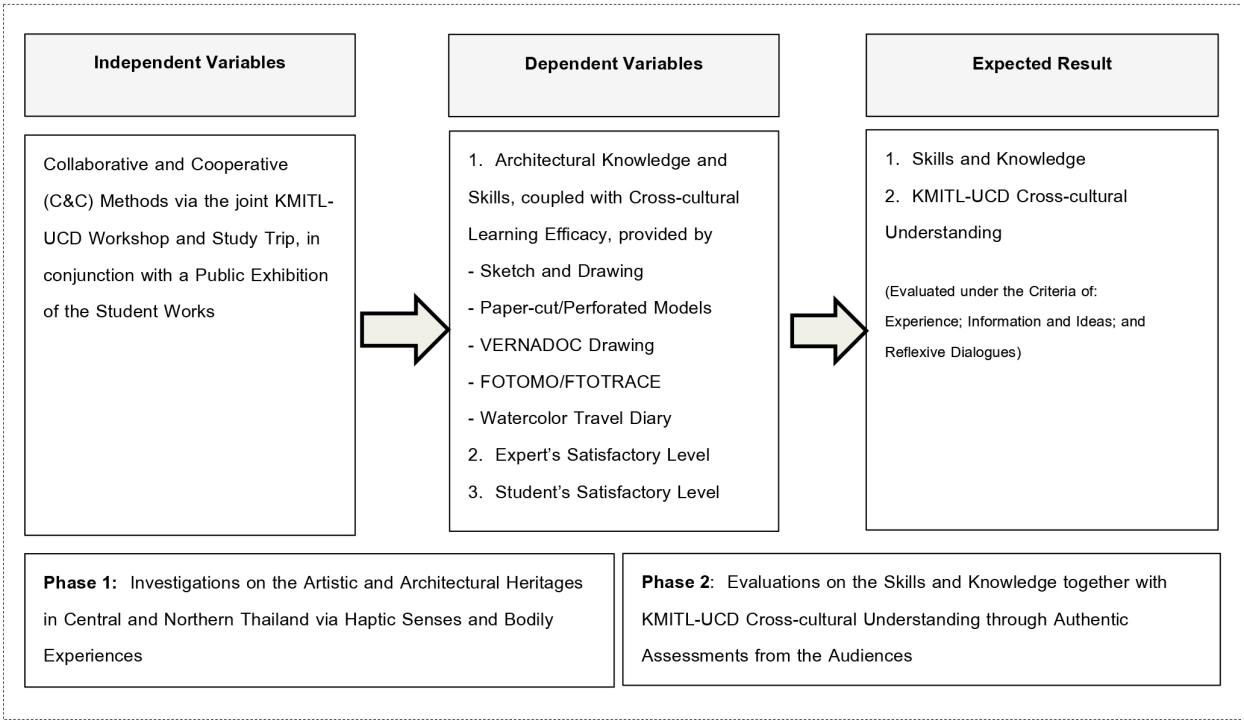
(Source: The Authors)

Diagram 1. The C&C Methods from Kagan's Structural Approach.

(Source: The Authors)

Map 1. Study Trip Itinerary.

along with the experts and students in bridging a KMITL-UCD gap of knowledge and cross-cultural understanding were based on the triad criteria of authentic assessments: 1) experience; 2) information and ideas; and 3) reflexive dialogues--assume the role of the dependent variables (Diagram 2).



(Source: The Authors)

Diagram 2. Research Methodology and Procedure.

4. The 2015 KMITL-UCD Cross-cultural Learning Programs, Itineraries, and Participants

Via the C&C model appropriated from Kagan, faculty members from both institutions collectively agreed upon the itineraries, programs, and schedules of the excursions which: 1) covered a distance of approximately 1,500 kilometers or almost 1,000 miles to travel; 2) encompassed several significant historic sites in Bangkok, Ayutthaya, Sukhothai, Lampang, Chiang Mai, and Saraburi provinces; 3) took place between January 4 and 12, 2015; and 4) operated under the overriding theme of inquiries on the sacred Buddhist cosmology in religious structures in central and northern Thailand (Map 1).

Owing to the multi-dimensional success in cultivating cross-cultural educational exchange in 2013, the KMITL-UCD workshops and study trips in 2015 continued to employ the means of project based Learning (PBL) as its modus operandi (Noobanjong & Ubonsri, 2013). Prior to the start of the program, participants were asked to: 1) identify their subjects and objects of investigations by examining academic literature on Thailand as well as its arts and architecture (For instance, see: Assen, 1998; Wyatt, 2003; Sathapitanonda & Mertens, 2012; Noobanjong, 2013); 2) develop research methodologies; and 3) select appropriate media for exploring and documenting their projects. Based on the initiatives and interests of the participants--ranging from architectural symbolism and iconography to materiality and building typologies --the scholarly activities embraced a set of problem-solving exercises such as topic proposals, analyses and syntheses of case studies, and presentations. It all culminated in a public exhibition of the final research work at KMITL.

Considering the demography of the population group, the participants consisted of seventeen undergraduate and three doctoral students from KMITL (five males and twelve females), plus seven graduate students from UCD (four males and seven females). By the methods of focus group and self-selection, the participants were divided into five teams--containing at least five students with at least

two non-Thai students. Communicating online though the Internet and social media sites such as Facebook, each study group began to prepare their project two months before the commencement of the program.

During the excursions, each individual was also assigned to keep a journal to record his/her learning experiences including notes and sketches, utilizing a variety of media and representational techniques, e.g., ink and pen drawings, pencil drawings, sketching, watercolors, models, photography, video, sound recordings, etc. The journals were subsequently evaluated for their scholarly merits--involving quality of presentation, documentation, coupled with analyses and syntheses on the cross-cultural learning experiences --prior to the public exhibition of the student works at KMITL on January 16, 2015.

5. Student Research Projects

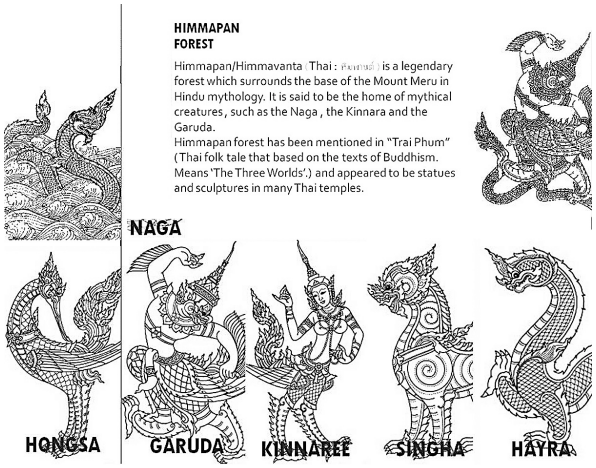
Five research projects were performed by five combined KMITL-UCD teams, using the following techniques and methods of representations.

5.1 Sketching and Drawing the Hinmapan Creatures in the Buddhist Cosmology at Lanna Temples

The first group employed the most conventional way in studying works of arts and architecture by sketches and hand drawings. Their inquiries concentrated on the images of Hinmapan celestial creatures--notably singha (lion), naga (serpent), erawan (elephant), hongsa (swan), garuda (man-bird), and kinnaree (woman-swan) (Figure 1)--exquisitely adorning the roofs, pediments, columns, doors, windows, and stairways of the ubosots (ordination halls) along with other structures in Buddhist temples in northern Thailand (Figure 2).

5.2 Paper-cut and/or Perforated Models of Wall Decorative Patterns of Buddhist Temples

Intrigued by the wall surface adornments of ubosots and other Buddhist buildings in Thailand (Figure 3), the second team of KMITL-UCD students



(Source: Siratat Wongkasem)

Figure 1. Line Drawings of Hinmapan Creatures.

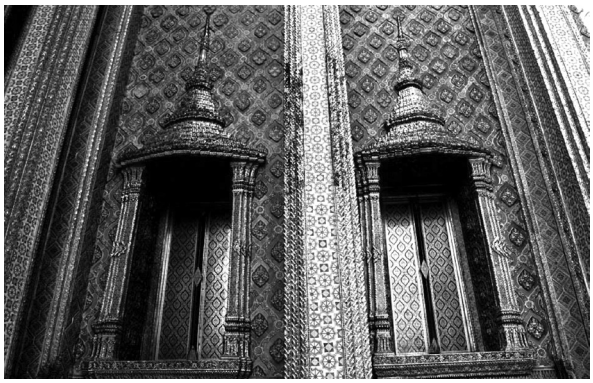
(Source: Frank Gerrard)

Figure 2. A Rendition of a Pediment by the Students.

set out to scrutinize the geometrical arrangements of wall embellishing motifs of Buddhist temples. During the field trips, the group members noticed that the concept of layering served as the underlying principles in composing the patterns. Hence, layers, layering, and 2D-3D interface became the keywords for their investigations.

In producing such architectural sketches and drawings, the corporeal senses of the students bled into each other, resulting in an instant bodily experi-

ence: the touch of the eyes between the reality and representation. Through the hand-and-eye coordination, the acts of sketching and drawing allowed them to examine the figures with their mental ability, while moving the actual, physical, bodily fingers--hands and pencils--in accord with the touch by the minds (Karmel, 2012).



(Source: Victoria-Daniel Whonsetler)

Figure 3. The Decorative Patterns at the Emeral Buddha, Bangkok.

(Source: Samantha Strang)

Figure 4. A Paper-cut/Perforated Models of Temple of Wall Decorative Pattern.

Whereas a large collection of the decorative patterns was documented by photographs, each individual later analyzed and deconstructed the ornamental designs of the walls, untangling their overlaying visual constituents from one another via schematic sketches. Next, the students transformed these two-dimensional works to three-dimensional representations by reconstructing the original decorative patterns in terms of simplified paper-cut models, utilizing shade, shadow, light, in combination with the positive and negative space to characterize the overlapping layers of the motifs (Figure 4).

5.3 Vernacular Architecture Documentation (VERNADOC) on the Sacred Cosmography of Lanna Buddhist Temples

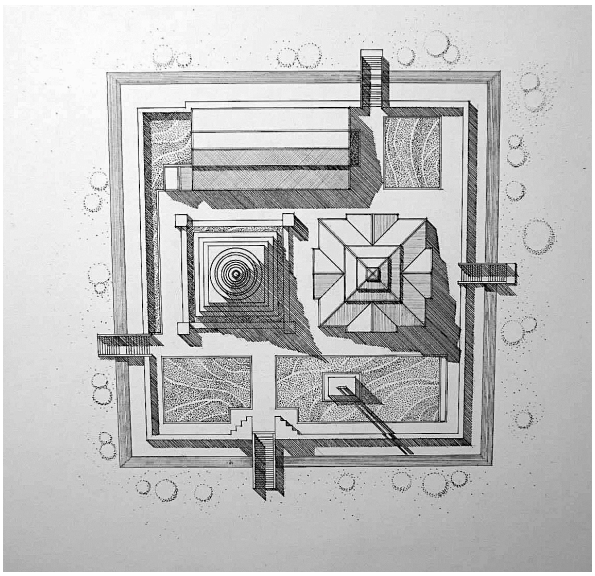
With a great interest in the spatial organization of Buddhist temples in Lanna that are governed by the sacred Hindu-Buddhist Traiphumi cosmology that denotes the three realms of existence: the heaven, earth, and underworld (Aasen, 1998, p. 19)--the third group of KMITL-UCD participants pursued their scholarly quest by means of vernacular architectural documentation (VERNADOC) (Figure 5).

(Source: The Authors)

Figure 5. Wat Pong Sanook, Lampang

In examining the Traiphumi cosmology signified by the spatial configurations of those temples, the students employed an ethnographic approach (Metheny, 1975, p. 96), relying on their "hands-on experience" of place as much as hand-and-eye coordination skills. Not only did each of them: 1) use his/her hands to measure the dimensions and to record the physicality of the spatial layouts of the temples via sketches and drawings; but also 2) collectively utilize the method of spatial mapping to introduce a holistic system of phenomenological understanding, especially for the sense of spatiality created by the whole sensory envelope. Aided by

digital photographs and measuring tapes, these so-called "time-space routine" maps (Maltzahn, 1994, p. 79) were subsequently combined and compared with one another, before being analyzed and interpreted to formulate the overall spatial arrangement of the temples through high-quality architectural scale drawings (Figure 6).



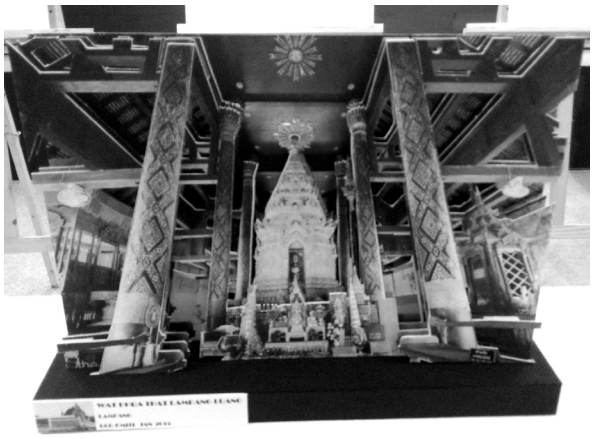
(Source: Khonteeneung Saenghiruna)

Figure 6. A VERNADOC Layout of Wat Pong Sanook.

5.4 Photographic Modeling and Tracing (FOTOMO & FOTOTRACE) of Lanna Religious Structures and Their Settings

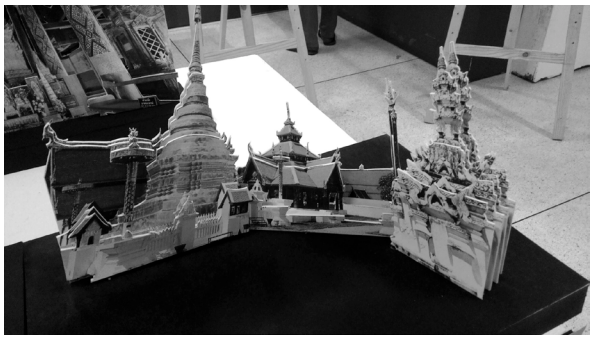
The fourth team located their studies on the corporal experience of Buddhist Lanna temples and the surroundings. Employing a mixture of sensibilities advocated by Gibson (1966, p. 7), the inquiries centered on: 1) the links between the students' body positions and the physical environment via photographic models (FOTOMO); and 2) the connections between their visual perceptions and mentalities in constructing the memories of place by means of photo tracing (FOTOTRACE).

Invented by a Japanese photographer Kimio Itozaki, FOTOMO is a method of creating a three-dimensional object from photo prints of real-world scenes by cutting and piecing together layers of photos into collages, which could be viewed from multiple points like a diorama. For that reason, FOTOMO became a medium par excellent for the group members to explore their bodily movements through the sacred topography of Lanna Buddhist temples, as epitomized by two FOTOMO works illustrating the interior and exterior space of Wat Pong Sanook in Lampang (Figure 7 and 8).



(Source: Chananchida Yuktirat)

Figure 7. A FOTOMO Regeneration of the Vihara at Wat Pong Sanook, Lampang.



(Source: Chananchida Yuktirat.)

Figure 8. A FOTOMO Reconstruction Wat Pong Sanook, Lampang.

Drawing upon the lessons learned from Hiss (1990, p. 3), it may be construed that while the models captured the atmosphere at Wat Pong Sanook and immortalized the bodily moments of the participants, they marked the locations of the surroundings in terms of the "space-time relations" to the positions of the psyches and physiques of the group members, whose perception of space referred to a complex geographical experience, notably their positional awareness, balance, movements, and depth of field.

In preserving tangible memories of place, the same group of partakers also relied on the method of FOTOTRACE, utilizing a pen or pencil to delineate the shapes and forms of objects appearing in a printed photo¬graphic image on a sheet of Mylar or vellum paper, laid on top of the photo itself (Poomsawai, 2010). Aside from collecting the firsthand information on Lanna Buddhist temples and the surroundings to preserve the corporeal recollections of the places, FOTOTRACE helped the students analyze how the virtual three-dimensional space in the perspective was created. For example, by tracing the photographs taken at Wat Pong Sanook, the participants deconstructed and then reconstructed the actual three-dimensional reality of the temple by their hand-and-eye in¬terface. At the same time, they learned how the eyes and the mind unselfconsciously functioned in concert through their memories of previous moments (Figure 9 and 10).

5.5 Watercolor Journals of the Field Trip

The last team utilized a well-know technique, watercolor painting, to record their encounters with the phenomenon of place from visiting Buddhist religious structures during the entire study trips in terms of travel diaries or journals. Accompanying by digital photographs and sketches, the watercolor journals narrated the collective bodily experiences and memories of the places, which with the group members had intimate contacts during the two-week long excursions (Figure 11 and 12).

Through the students' hand-and-eye coordination--similar to those of the first group working by sketching and drawing--the journals/diaries presented a series of the ontological events that generated a shared knowledge on the built environment in Thailand among the teammates via their bodily senses of sight, movements, balance, force of gravity (kinesthetic), depth of field, time perception (temporal), and recollections of previous moments. Philosophically, the concept and practice of making travel diaries are associated with the Causal Theory of

(Source: Khonteeneung Saenghiruna)

Figure 9. A Set of FOTOTRACE Renditions of Wat Pong Sanook, Lampang.

(Source: The Authors)

Figure 10. A Detailed FOTOTRACE Rendition of Wat Pong Sanook, Lampang.

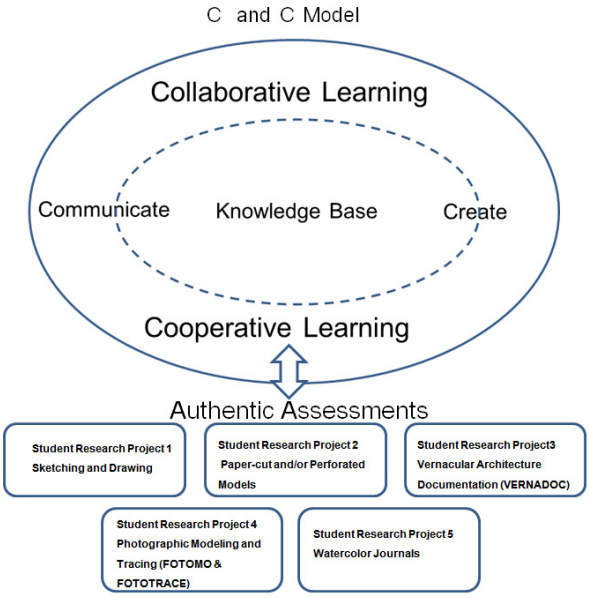
(Source: Felipe Navarrete)

Figure 11. A Page from the KMITL-UCD Watercolor Journals/ Travel Diaries.

(Source: Qiaochen Liu)

Figure 12. A Series of Watercolor Paintings Illustrated in the KMITL-UCD Journals/Travel Diaries.

Memory developed by Martin and Deutscher (1966), promulgating that common sense concepts of memory stemmed from a reliance on the existence of some kinds of memory trace, as a continuous bridge across the temporal gap that causally connected the past and present.



(Source: The Authors)

Diagram 3. The Relationships between the C&C Method and Cross-cultural Learning Activities during the 2015 KMITL-UCD Workshops and Study Trips.

6. Applications of the C&C Learning Method in Cross-cultural Study

6.1 The C&C Method and Cross-cultural Learning Activities during the Workshops and Field Trips

As portrayed by Diagram 3, by applying the C&C learning method--developed from Kagan's structural approach--to the workshops and study trips (Kagan & Kagan, 1998b), all the five research projects indicated that: 1) the KMITL-UCD endeavors involved the constructions of new ideas, informed by personal coupled with collective experiences and insights from the past; 2) the participants appropriated some aspects or principles of constructivism to their learning activities; 3) the students looked into important real-world problems/issues through challenging explorative questions; and 4) the outcomes of these investigations constituted an inquiry-based approach to further cross-cultural exchanges and institute mutual understanding between the partakers from both institutions.

The aforementioned remarks are in accordance with a number of pedagogical recognitions widely held by a growing numbers of scholars from various disciplines (For instance, see: Cooper & Robinson, 1998, p. 383). First, as exemplified by the KMITL and UCD members, students learned more effectively when they applied classroom-gathered knowledge to real-world problems, as much as when they took part in projects that required a sustained engagement and collaboration.

Second, the journals and exhibition served as media par excellent for the purposes of evaluating and developing related skills. Hence, the journals and exhibition were employed in combination with other types of "authentic assessments," during the recent workshops and excursions because they moved away from judging student academic performance via test scores, but instead focusing on meaningful evaluations of key abilities, as well as on insightful reflections and appraisals on the scholarly merits of their works.

Third, the practice of "authentic assessments" called for a holistic procedure in active learning to be implemented on a pedagogical approach utilizing the C&C method, including by means of project-based learning (PBL) as evident from the five research projects of the 2015 KMITL-UCD workshops and study trips. This comprehensive procedure contains three major constituents: 1) the corporeal or actual experiences of the students; 2) the information and ideas about both the objects and subjects of inquiries obtained and/or generated by the partakers; and 3) the reflexive dialogue among the learners and with their instructors. Operating in unison, the three holistic components created more profound impacts on student academic performance than other variables, such as their backgrounds and prior achievements.

Fourth, although the five research projects lent support to a long-held belief in that students are most successful when they are taught how to learn as well as what to learn, the entire workshops and excursions did not feature a top-down pedagogy, but collaborative efforts between the faculty members and students in reaching a horizon of understanding in studying the artistic and architecture heritages of central and northern Thailand. Whereas the program benefited cross-cultural exchanges and learning activities, its C&C method served many different objectives, ranging from mastery of basic skills to higher-order thinking.

Fifth, due to the fact that those research projects were very specific in nature, they gave the instructors an opportunity to work together as a combined team. Each individual contributed his/her specialized knowledge, skills, experience, and expertise to the workshops and excursions in order to: 1) accomplish certain pedagogical goals; 2) accommodate particular academic needs, interests, and conditions of the students; 3) provide high-quality scholarship to meet international standards in higher education; 4) create a flexible and proactive teaching strategy to solve learning difficulties; and 5) optimize the use of limited yet diverse human resources from both KMITL and UCD faculty members.

6.2 Mechanisms of Cross-cultural Learning in the Holistic C&C Model of the Thailand Program

Owing to the proposed holistic C&C methodological model--buttressed by the concept of authentic assessments embodying the triad criteria of: 1) experience; 2) information and ideas; and 3) reflexive dialogues--a series of corollary observations can be put forward that all the five student research projects facilitated KMITL-UCD cross-cultural learning experiences in the following manners.

First, as the participants attempted to establish a common ground in comprehending their objects of studies, they frequently made references to artifacts and/or built forms in their own cultural heritages. To cite an obvious example, some foreign students equated the Hinmapan figures to the gargoyles of Gothic cathedrals. In this regard, the sketches and drawings of the Hinmapan creatures evoked each person's past encounters and recollections, leading to cross-cultural exchanges with his/her colleagues via self-reflexive dialogues, comparative discussions, and visual articulations.

Second, by reducing the visually complicated wall decorative patterns into a series of fundamental shapes as demonstrated by the paper-cut/perforated models, the objects of inquiries were transformed to simplified ornamental motifs fashioning the entire composition. Such basic geometries could be universally recognized by both KMITL and UCD partakers, transcending their cultural differences in aesthetic values.

Third, in examining the spatial organizations of Lanna temples as a microcosm--a model of the universe according to the Traiphumi cosmology--the VERNADOC drawings supplied a quantitative means to analyze this sacred Hindu-Buddhist cosmography governing the spatial layouts of the temples. Based on the Cartesian grid system, these measured architectural drawings not only rationalized but also materialized the Traiphumi topography to the eyes of Thai and foreign students alike.

Fourth, both the FOTOMO and FOTOTRACE required the participants to exercise their haptic

senses, concentrating on the bodily efforts in moving across space, which in turn gave them internal corporeal knowledge about the settings of the environment with which they immediately encountered. Altogether, this pair of media cultivated a cross-cultural horizon of understanding between the KMITL and UCD members through comparative and self-reflexive discussions in conjunction with exchanges of ideas and memories from experiencing, documenting, and reconstructing the symbolism and iconography, along with spatial configurations of Lanna Buddhist temples and the surroundings.

Fifth, unlike the others, watercolor painting--in its capacity as an artistic technique--provided a dialectical dialogue for cross-cultural exchanges. Due to a dichotomy of the Oriental versus Occidental discourses in the academic backgrounds of KMITL and UCD partakers (Said, 1978; Carrier, 1995), a generalizing statement may be put forward that the training of the former seemed to be heavily influenced by traditional Thai mural painting--especially the use of refined and highly stylized lines--rendering shapes of figures idealistic, while that of the latter remained faithful to the English school of topographical painters, focusing on the realism and naturalism of "picturesque" buildings and landscapes (Collins, 2013).

Nevertheless, the exhibition of student works disclosed that the final watercolor journals/travel diaries produced by the KMITL-UCD participants featured an amalgamation between the two stylistic traditions, characterized by: 1) delineations of figures and objects; 2) applications of shade, shadow, and light; and 3) compositional foci on depth of field (perspective) and anatomical accuracy. On that basis, a quintessential argument could be issued that watercolor painting, in fact, provided a very flexible and sensible means for applying the C&C learning method to promote cross-cultural exchange and learning through comparative discussions and visual articulations.

In a nutshell, the foci of each study group on the mechanisms of cross-cultural learning used in their research project in relation to the three evaluative criteria for authentic assessments can be summarized by the below table.

Table 1. The Mechanisms of Cross-cultural Learning and the Criteria of Authentic Assessments.

Criterion of Authentic Assessments	Sketch& Drawing	Paper-cut Model	VERNADOC	FOTOMO & FOTOTRACE	Watercolor Diary
Experience	VA	VA	VA, OH	VA, OH	VA
Information and Ideas	LR	LR	BE	BE	LR, BE
Reflexive Dialogues	SD, CD	CD	CD	SD, CD	CD

(Source: The Authors)

Remarks VA is visual articulation. OH is other types of haptic senses.
BE is bodily experience. LR is literature review.
SD is self-reflexive discussion. CD is comparative discussion.

- The evaluative elements on Experience encompass: personal, social and physical contexts.
- The evaluative elements on Information and Idea elements include: identification of objectives, formulation of research questions, use of information, implementation of concepts, utilization of inferences, as well as constructions of assumptions and implications, articulation of points of view.
- The evaluative elements on Reflective Dialogue contain: problem solving, as well as appraisals of arguments and interpretations.

6.3 The Efficacy of the Holistic C&C Learning Model and Its implications for Cross-cultural Study

As stated earlier, at the exhibition of the KMITL-UCD research projects on January 16, 2015, a group of twenty-five audience members consisting of 1) five KMTL faculty members whose scholarly expertise dwelled in the area of architectural and design education; coupled with 2) twenty KMITL students who were not a part of the program--to perform their authentic assessments on the efficacy of the holistic C&C learning model used in the workshops and study trips to sponsor cross-cultural learning and exchanges.

Through an academic framework of peer reviews, the a fore mentioned evaluations were carried out by means of worksheets/questionnaires to rate the degree of the audience members' satisfaction with the KMITL-UCD research projects in bridging the gaps of knowledge and cross-cultural understanding via the criteria of: 1) experience; 2) information and ideas; and 3) reflexive dialogues (Table 2 and 3).

Table 2. The Average Satisfactory Levels of the Experts from the Authentic Assessments on KMITL-UCD Workshops, Field Trips, and Exhibition in Bridging Gaps on Cross-cultural Learning and Knowledge.

Items	Experience (N=5)		Information& Idea (N=5)		Reflexive Dialogue (N=5)	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
1. Sketch & Drawing	4.60	0.54	4.60	0.54	4.40	0.54
2. Paper-cut Model	4.80	0.44	4.40	0.54	4.20	0.44
3. VERNADOC	4.80	0.44	4.40	0.54	4.20	0.44
4. FOTOMO & TRACE	4.80	0.44	4.80	0.44	4.80	0.44
5. Watercolor Diary	4.60	0.54	4.60	0.54	4.60	0.54
Total Average	4.72	0.48	4.56	0.52	4.44	0.48

(Source: The Authors)

Table 3. The Average Satisfactory Levels of the Students from the Authentic Assessments on KMITL-UCD Workshops, Field Trips, and Exhibition in Bridging Gaps on Cross-cultural Learning and Knowledge.

(Source: The Authors.)

Items	Experience (N-20)		Information & Idea (N-20)		Reflexive Dialogue (N-20)	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
1. Sketch & Drawing	4.20	0. 61	4.20	0.61	4.10	0.71
2. Paper-cut Model	4.90	0.71	4.30	0.65	4.30	0.65
3. VERNADOC	4.10	0.71	4.50	0.51	4.50	0.51
4. FOTOMO & TRACE	4.60	0.59	4.70	0.47	4.70	0.47
5. Watercolor Diary	4.45	0.68	4.45	0.68	4.40	0.68
Total Average	4.45	0.67	4.43	0.58	4.40	0.60

(Source: The Authors)

As shown by Table 2 and 3, in order to determine the levels of satisfaction of the audiences, a series of mean calculations and deviations were also conducted, utilizing a five-point rating scale question in which the weights assigned to each answer choices were presented in parentheses, as listed below:

- Average 4.51 - 5.00 signifies highest practice/satisfaction (Strongly Agree).
- Average 3.51 - 4.00 signifies high practice/satisfaction (Agree).
- Average 2.51 - 3.00 signifies medium practice/satisfaction (Neither Agree nor Disagree).
- Average 1.51 - 2.00 signifies low practice/satisfaction (Disagree).
- Average 1.00 - 1.50 signifies very low practice/satisfaction (Strongly Disagree).

Overall, the average satisfactory levels of the audiences--resulting from their authentic assessments on the students works at the exhibition--testified that the holistic C&C method utilized during the 2015 workshops, field trips, and exhibition was very effective in advancing cross-cultural exchanges and understanding between the KMITL and UCD participants. These positive outcomes further indicated that because the C&C method was comprehensively integrated with the learning activities--as exemplified by all the five research projects--it was very easy for the audiences to recognize and appreciate their pedagogical values in architectural education.

Taken together, the results from Table 1 couple with the statistical analyses in Table 2 and 3 lent a collective ground to corroborate the relationships between the C&C method and cross-cultural learning as the followings. First, the "Communicate" process was very important to construct new experiences. Second, knowledge base was vital to generate and sustain reflexive dialogues. Third, the "Create" process very crucial to assemble information and conceive idea. Obviously, the said findings signified the triad criteria employed in the authentic assessments. These connections, in return, substantiated the methodological validity in conjunction with the conceptual/theoretical congruence between the proposed holistic C&C method and cross-cultural learning.

6.4 Further Implications

Apparently, Table 1 and Diagram 3 corroboratory pointed out that the successes in cross-cultural learning (Table 2 and 3) significantly resulted from close collaboration and mutual cooperation between the KMITL and UCD student, both within and among each research team. As evident from the relationships between all the mechanism of cross-cultural learning and the process of authentic assessments (Table 1), such accomplishments, however, could not be achieved without an ability of the participants to communicate effectively with their foreign colleagues who neither spoke the same language nor shared similar socio-cultural heritages. Therefore, in order to cultivate cross-cultural activities efficiently, foreign language proficiency--particularly English--became mandatory as a prerequisite skill.

In this regard, the KMITL and UCD partakers alike were far from being well prepared in linguistic terms despite their best efforts to do so. Nonetheless, during their two-week workshops and study trips together in Thailand, the students developed a specific solution to overcome the language barrier by exercising their graphic skills--especially by sketching and drawing--which in many times were utilized in place of the verbal means. These endeavors were encouraged by the fact that all the five research projects required an extensive use of visual articulation in executing them (Table 1).

In any case, visual articulation and graphic skills alone appeared inadequate to meet the increasing challenges for cross-cultural study and exchanges in the internationally connected world of higher education today. Consequently--as demonstrated by the criteria of reflexive dialogue in combination with information and ideas in the authentic assessments--the issue of foreign language proficiency, namely English, for non-native English speakers must be addressed because they would have to communicate with their foreign peers by this universal language, as exemplified by the acts of researching (literature review) as well as analyzing and synthesizing (self-reflexive and comparative discussions) (Table 1 and Diagram 3).

Notwithstanding the negative connotations, the above critical appraisals singled out a key problem in bridging a horizon of cross-cultural understanding through a collaborative and cooperative learning method--the English-language proficiency--that must be resolved, if the joint workshops, field trips, and exhibition of works between KMITL students and international partners were to be offered again.

In addition, with respect to the issue of self-reflexive dialogues, while undertaking their research projects, a number of UCD students began to ponder on the questions, such as: 1) how could experiencing

the arts and architecture of other culture advance their appreciation of the built environment as a constituent element in the shaping of cultural identity and vice versa; and 2) how could the Thailand program help them reflect upon their own identity?

Although parts of the answers dwell on the mechanisms of cross-cultural learning implemented by the C&C method during the workshops, field trips, and exhibition (Table 1), the inquiries on these questions are still very far from over; the majority of which resides outside the scope of investigations in this research indeed. Nevertheless, the experiences gained from cross-cultural exchanges--noticeably by means of comparative and self-reflexive discussions--arguably served as a catalyst in prompting both the UCD and KMITL students to embark on their critical self-reexaminations.

For example, many KMITL members began to contemplate on a necessity for a study abroad program to be included in the curriculum, penetrating the academic confinement of the Thai-logo centric worldview. By the same token, some UCD participants started to ask themselves even more fundamental questions on the scholarly validity of the Eurocentric epistemology imposed on their education in architectural history at the home institution. Such an act of skepticism seemed to be resonant intellectually well with the current paradigmatic shift in architectural scholarship away from the foci on the Western canons (For instance, see: Bozdogan, 1999; Jarzombek, 1999; Ben-Zaken, 2010; Pieris, 2014).

7. Conclusions

The analytical and critical discussions throughout this article elucidated that the collaborative and cooperative (C&C) method used during the 2015 KMITL-UCD workshops and excursions to study the artistic and cultural heritages of central and northern Thailand was very valuable in: 1) facilitating and fostering cross-cultural leaning among the participants; 2) giving the students valuable chances to appreciate the built environment--i.e., works of arts, buildings, urban space, and natural landscape--as a constituent element in the shaping of cultural identity and vice versa; 3) providing a framework that allowed for continued investigations in this field; and 4) helping each partaker in acquiring knowledge and the critical skills to reflect on his/her own identity.

In essence, the overall programs, itineraries, and activities supplied exciting opportunities for both the instructors and students to expand their architectural and cultural horizons, as positively reaffirmed by the average satisfactory levels of the audiences --comprising both the educational specialists and students--in their authentic assessments on the KMITL-UCD workshops, field trips, and exhibition in bridging gaps on cross-cultural learning and knowledge (Table 2 and 3).

Moreover, the inquiries on the authentic assessments reiterated that the C&C method could effectively serve the purposes of cross-cultural learning via an implementation of a holistic approach--including the means of project-based learning (PBL)--as exemplified by all the five student research projects. The relationships between the C&C method and cross-cultural learning were also examined and evaluated through: 1) the corporeal or actual experiences of the learners; 2) the information and ideas about both the objects and subjects of investigations obtained by and/or generated by the learners; and 3) the reflexive dialogue among themselves and with their instructors. As epitomized by Diagram 3, these three holistic components created very profound impacts on cross-cultural exchanges and learning.

To conclude, the investigation of the joint KMITL-UCD workshops and field trips suggested that a solution to address the deficiencies in merging a horizon of understanding between the KMITL and UCD students involved: 1) overcoming a language barrier; 2) taking part in research projects that required a sustained engagement and cross-cultural collaboration; 3) realizing the scholarly limitation along with academic presumptions--caused by the Euro-centric

ontological view--resulting in a dichotomy between the Oriental and Occidental discourses in the academic backgrounds; and 4) perceiving the built environment beyond a material entity within certain economic and political regimes, or merely as a representation of ideas and social relations, but as a cultural and social construct.

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