

Collaborative research: A paradigm shift in architectural education?

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ABSTRACT: The 2009 ARCC Spring Research Conference question, “. . . how can we foster a more integrated research culture between academia and the profession?” is an opportunity to examine the curriculum development at one School and stimulate discussion for expanded application. Since 1993 our School has endeavored to develop mutually valued connections with international professional leaders to meaningfully engage practicing professionals as teachers in a professional degree program. The concept of ‘leaders teaching leaders’ with practitioners as teachers and research as a major component of the learning collaboration is one unique program focus. The strategic location of the School coupled with technological advances in the built environment process offer opportunities for students to experience global cultural influences, a second distinct program focus. The innovative approaches undertaken for over a decade were in part necessitated by the School’s overarching goal to institute a new accredited doctoral first professional degree program which was accomplished in 2002. The effort to sustain credibility as a Doctor of Architecture (D. Arch.) program continues today. Innovations bring successes and risks. This paper examines the curriculum evolution to date and plans for future development from the viewpoint of the current Professional Practice Coordinator [Introduction, Professional Practice Curriculum, Program Evolution, Assessment, Conclusion] and the Doctorate Project Coordinator [Introduction, Program Evolution, Other D. Arch. Projects]. Reflections of the impact of our curriculum on one student’s professional advancement relative to opportunities and challenges encountered while engaging in research collaboration with practicing architects is discussed by a graduate of the program, who is now a practicing intern. In addition, the paper offers an overview of other elucidating D. Arch. projects exemplifying the diversity of research topics and foci of the program on collaborative research, global culture, mentoring, and technology.

Conference theme: Innovative approaches to architectural education

Keywords: curriculum development, D. Arch, global culture, interdisciplinary research, mentoring

INTRODUCTION

In 1993 Professor W.H. Raymond Yeh, FAIA was appointed Dean of the University of Hawai'i at Mānoa (UHM) School of Architecture (School). He recognized the School's strengths as worthy of developing into a first professional Doctor of Architecture degree program and led the faculty to accomplish this vision. Short and long term action goals from a 1993 Faculty Retreat relevant to this paper include:

- Actively engage professional architectural firms as teaching units with principals serving as adjunct faculty members to provide students with experience in a professional practice setting.
- Establish an overseas program network with schools and professional communities in the Asia Pacific region
- Establish the [School] as a leading US school, known for educational and research programs for the Asia Pacific region.

Based on the experiences in developing the first NAAB accredited Doctor of Architecture program, the intention of this paper is to offer background for the future development of analogous programs by reviewing some elucidating doctorate projects and lessons learned in the process of creating the program for Doctor of Architecture as the first professional degree; not a Ph.D., nor a M. Arch. During this process, the UHM School of Architecture has witnessed a wide range of applied research explorations into architecture varying from conventional precedent case studies and (post)positivist approaches, to naturalistic/hermeneutic studies on design methodology and theory, ending in polemic/emancipatory perspectives on the dynamics of power. These projects typically focus on issues critical for the Asia Pacific region; such as climate-specific sustainable design in (sub) tropics, indigenous Pacific cultures, and Hawaiian sense of place; and also often address education and practice of architecture more generally.

It is, of course, not possible to delve into all of the many

interesting projects here, and therefore we concentrate on those dealing with cross-cultural and/or interdisciplinary (whether multi-, cross-, or transdisciplinary) applied research, as it is our belief that those approaches offer most potential in developing new research typologies and paradigms in the pursuit of achieving fresh insights into the architectural education, design and practice, and/or of expanding the research resources within the discipline of architecture.

1. PROFESSIONAL PRACTICE CURRICULUM

Over a decade ago, the Professional Practice Director (current title 'Coordinator') was appointed to chair a committee of faculty and practicing architects with teaching experience. The committee's charge was to investigate and propose an exceptional professional practice program appropriate for a doctoral degree

1.1. Design studio with practice focus

The committee's first action was to identify and engage practicing professionals as teachers for a 300 level design studio to integrate research and practice issues into the design process. A workshop facilitated by James Franklin, FAIA, Resident Fellow of the American of Architects National office, provided the entire full time faculty, and the architects who participated as studio mentors the opportunity to evaluate the course. This course was not approved for further development. One concern was that practice issues inhibited beginning design skills.

1.2. Professional practice research

In Spring 1994, in response to the evaluation of the 300 level studio and to encourage International student admissions, an upper level lecture/seminar course was developed. Students enrolled in this course are placed in architecture firms for a minimum of sixteen ten hour weeks to conduct design research under the guidance

of a principal of the firm who acts as teacher / mentor while providing access to people, projects, literature, public hearings, etc. for the research development. Arch. 406 Design Research in Firms course (Fig. 2) successfully demonstrated that design research learning can be achieved in firms as classrooms. This is a crucial clarification for NAAB and NCARB rules.

Placement in the professional office in lieu of the typical classroom allows opportunities for students to observe practice as a reality rather than hypothetically, resolves the desire of international students to experience U.S. practice methods first hand, and results in applied research results that students take back to their country or base their final project and practice focus on. Weekly meetings with the School faculty and students placed in different firms serve to discuss applied research methods as well as provide opportunities for debriefing, comparative learning and progress checkpoints. Required course products are a research paper, a journal record of selected practice issues introduced by the mentor, and a graphic presentation to the firm at large which includes traditional as well as electronic analysis of the research effort. This course was the model for the Practicum Studio and final research courses and is now an upper level elective.

1.3. Introductory and intermediate research

One basic premise agreed upon by the Professional Practice committee was that practice issues should be introduced early and reinforced often with emphasis on collaboration with practitioners.

This led to creation of a 200 level professional practice course in which students visit local architecture offices and project sites. Principal architects of firms conduct the visits which focus on practice issues. The expected learning outcome is student exposure to firms to learn to conduct comparative research analyses of diverse architecture offices and design methodologies as well as to complete case studies of various project construction and design processes. (Fig. 1)

ETHICS PROFESSIONALISM	5 FIRMS: DIVERSE SIZE, PHILOSOPHY, PRACTICE FOCUS, PROJECT TYPES			SUMMARY SUBMITTAL
	OFFICE VISITS	PROJECT STUDIES	DISCUSSION, ANALYSIS, COMPARATIVES	
Lecture by Architect	Design/Practice	Pertinent Lesson	Verbal, Written, Critical Thinking Skills	Paper, Course Log
PRODUCTS	SKILLS, KNOWLEDGE ACQUISITION ACTIVITY			
Journal	Lecture notes, sketches, questions, thoughts and photos			
Assignments	Resume, professional goal statement			
Correspondence	Thank-you letters, memoranda, field reports, e-mail exchanges, research, visiting lecturer notes			
Readings	Text, handouts, firm and architect bios and brochures			
Research	Library, Internet research, firm and architect bios and brochures			
Final Submittal	Comparative analysis paper with bibliography, references			
	Course record binder with research data, Internet downloads, contact list, all assignment with drafts & digital files			



Figure 1

FIRM: 80 HOUR MINIMUM CONTACT HOURS					
SoA 1X WEEK RESEARCH METHOD	ORIENTATION	RESEARCH	ANALYSIS	SCENARIOS	FINDINGS
General Methodology	Firm/Student Goals	Data Collection	Synthesis	Alternatives	Summary of Findings
Conceptual Design	Employment Interview	Interviews	Consolidate	Selection(s)	Pertinent Data
Programming	Set Hypothesis	Library/Internet	Comparatives	Clarify	Alternatives
Analysis	Scope/Schedule	Precedents	Format		Future Possibilities
Demographics			Charts/Diagrams		Graphic Layout
Statistics					Verbal, Digital, Paper
Research Plan					Case Study Analysis
Case Study Research					



406 DESIGN RESEARCH IN FIRMS

ARCHITECT MENTOR
Leadership, research conferences

CONSULTANT, COMMUNITY
Presentations

JUNIOR ARCHITECT MENTOR
Daily guidance, design research reviews

Figure 2

In response to the National Architecture Accrediting Board (NAAB) requirement for a comprehensive studio, a 400 level project management course was developed to augment the studio. Case study research of firms/projects is a learning objective for this course which is now an elective course. The introductory and intermediate professional practice courses were initiated as pilot courses prior to institution as required or elective courses. This process allowed explorations in collaborative course content, research methodology, practicing architect teaching strengths and availability, and impact on student learning outcomes. The ultimate objective was to develop a Practicum Studio and post practicum research and seminar courses to prepare students to successfully complete and publish

meaningful written research or design D. Arch. project

1.4. The practicum studio (Fig. 3)

The primary goal of this 24-credit two-studio sequence is to provide students with first hand exposure and experience with professional responsibilities, opportunities, and comprehensive skills, and to support development of their professional leadership abilities". . . "An equally important goal . . . is to better equip students to practice architecture in a global community, especially in the Asia Pacific region... (Sakata 2000:1)

SOA PRE-PRACTICUM SUPPORT						
SOA: INTERNSHIPS TRAVEL WORKSHOPS - MATCHING, PLACEMENT, LOGISTICS, PLANNING						
FIRMS: INFORM, VERIFY, COORDINATE						
SOA: 1X WEEK	FIRM: 18 WEEKS FULL TIME					
DISTANCE SUPPORT	ORIENTATION	TRAINING	ACADEMICS	RESEARCH	SERVICE	SUMMATION
Monitor:	Employment Interview	Unit Competency	Assignments	Alternatives:	Alternatives	Firm Presentation:
Progress	Firm Orientation	Training	Advise	Design Research	Resource Access	Activities
Compliance	Present Self	Leadership	Review	Case Study	Advise, Review:	Findings
Performance	Resource Access	Professionalism	Evaluation	Resources Access	Scope	Knowledge
Evaluation	Agreements:	Evaluation		Advise, Review:	Schedule	Competency
Coordination	Schedule			Scope	Review	Personal Growth
Process:	G&A Plan			Schedule	Evaluation	Evaluation
Final Paper	Units: Training			Review		
	Units: Assignment			Evaluation		
	Research					
	Service					
	Readings					
	Extra-curricular					



500 PRACTICUM STUDIO IN FIRMS

GENSLER OFFICE LEED STUDY
San Francisco, California

NEW ENGLAND RESEARCH LAB
Chelmsforth, Massachusetts

BUILD HOUSING FOR DEVELOPING COUNTRY, Kendal, Cambodia

Figure 3

A major requirement of each Practicum Studio is to conduct and document comprehensive design research in collaboration with the Practicum Faculty on a topic of mutual interest to the Student and the Practicum Faculty/Firm. Qualifications for Practicum Faculty/Firm appointments include global practice experience especially in the Asia Pacific region, teaching experience, interest in student research development, ability to integrate theoretical knowledge and practical application, and demonstration of leadership skill within the firm and in the larger community. Simple research strategies, including the case study method, are utilized. Assessment of the student research is conducted by the Practicum Faculty and other firm mentors via a performance evaluation, as well as a critique by the firm at large per the requisite semester-end presentation of the research findings. In many instances, students have the opportunity to present to larger community and civic groups when the research topics are relevant to current issues. It should be noted that the Practicum Studio was developed by Carol Sakata, FAIA, a practitioner who is a graduate of the inaugural class of the Architecture Doctorate program. Her accomplishment and that of one of the co-authors of this paper are examples of the applied research products that are invaluable resources for the School and the future of the profession.

1.5. Post practicum seminars

Upon return to campus after the Practicum Studios, students enroll in two seminar courses intended to build on the Practicum experience: 1) Forms and Frames of Practice –compare student practicum experiences and relevant contemporary practice. 2) Doctoral Seminar –

discuss future of the profession issues. These courses were instituted to augment and reinforce student research interests developed in prior courses and as forums to share findings and knowledge to date as students concurrently commence their final doctoral research projects.

Both courses include guest speakers from related campus departments as well as Practicum Faculty CEO's from a diverse range of worldwide firms.

2. PROGRAM EVOLUTION

2.1. Changes

Since 1993, the curriculum has been modified in response to student needs, learning outcomes and practice demands. One valued change is the introduction in 2005 of a required Research Methods course to be completed prior to enrollment in the Practicum Studio. The course was intended to prepare students to conduct meaningful research explorations during their Practicum year as a basis for moving into the final doctoral research project courses.

Changes instituted by recently appointed Dean Clark Llewellyn, promise further exploration per the modified School's mission to offer

a global collaborative approach to improving the built and natural environment founded on intellectual inquiry, creative problem solving, and outreach with a commitment to prominence in innovative architectural education, design excellence, sustainability, and research with a focus on Hawaii, the Pacific and Asia. (Mission Statement 2008)

YR	SEM	ARCHITECTURE STUDIES					GENERAL STUDIES			CR	
		DESIGN	PRACTICE	TECHNOLOGY	HIST/THEORY	ELECTIVES	REQUIRED	REQUIRED	ELECTIVES		
PRE-PROFESSIONAL	1	F	ARCH 101[4] Basic Arch Studio A			ARCH 100[3] Intro to Built Environ		ENG 100[3] Writing	HIST 151[3] World Civilizations	ART 1xx[3] Freehand Dwg	16
		S	ARCH 102[4] Basic Arch Studio B		ARCH 235+L [2+1] Computer			MATH 140[3] Trigonometry	HIST 152[3] World Civilizations	ELECT 1xx 2xx [3] Hawaiian Focus	16
	2	F	ARCH 201[4] Inter Arch Studio A			ARCH 271[3] World Arch + Urbanism		PHYS 151 [3] College	LANG 101 [4] Foreign Lang		14
		S	ARCH 202[4] Inter Arch Studio B	ARCH 200 [3] Prof Pract of Arch		ARCH 272[3] World Arch + Urbanism		SCI LAB [1] Science Lab	LANG 102 [4] Foreign Lang		15
	3	F	ARCH 301 [4] Adv Arch Studio A		ARCH 320 [3] Intro to Arch Sys A	ARCH 474 [3] Theories of Arch + Urb			LANG 201 [3] Foreign Lang	ASAN 312 [3] Contemporary Asia	16
		S	ARCH 302 [4] Advanced Arch		ARCH 321 [3] Intro to Arch Sys B		ARCH 400 [3] Elect Office Research		LANG 202 [3] Foreign Lang	ELECT 3xx [3] Interdisciplinary	16
TRANS.	4	F	ARCH 401[4] Asia Pac Urban Studio	ARCH 431[2]+L [1] Adv. Computer	ARCH 316 [3] HVAC + Mech Sys				ELECT 3xx-4xx [3] Interdisciplinary	16	
		S	ARCH 402 [4] Focus Studio				BIO SCI [3] Elective	ORAL [3] Elective in Oral	ELECT 3xx-4xx [3] Interdisciplinary	125 16	
BA Degree Granted from Arts and Sciences in Interdisciplinary Studies [Requires plan and approval by Interdisciplinary Studies and School of Architecture]							ELECT 5xx-6xx [6]	Taken in any summer after BA Asia Pacific Study Abroad - Two courses at 3 credits each OR University Study Abroad - One Course for 6 credits		6	
PROFESSIONAL	5	F	ARCH 501 [6] Comp Arch Studio A Asia Pacific	ARCH 433 [3] Prof Pract Law and Ethics		ARCH 573 [3] Asia-Pacific Architecture				15	
		S	ARCH 502 [6] Comp Arch Studio B Asia Pacific	ARCH 600 [3] Research Methods Seminar	ARCH 518 [3] Advanced Systems		ELEC 6xx 6xx[3] Asia Pacific Issues			15	
	All coursework above, required workshops and documents must be completed to enter practicum [See also Prerequisite Chart]										
	6	F	ARCH 504 [12] Arch Pract Studio A								12
S		ARCH 505 [12] Arch Pract Studio B								12	
7	F	ARCH 507 [6] Arch Doc Studio A	ARCH 534 [3] Forms + Frames Prac				ELEC 5xx/6xx[3] Asia/Pacific Topic		ELEC 5xx 6xx [3] Open Elective	15	
	S	ARCH 508 [6] Arch Doc Studio B	ARCH 535 [3] Arch.D Seminar				ELEC 5xx 6xx[3] Asia/Pacific Topic		ELEC 5xx 6xx [3] Open Elective	15	
		80	21	21	15	18	13	33	24	215	

Figure 4: Program Chart Prior 7 Year Architecture Doctorate (Arch. D.)

		ARCHITECTURE STUDIES					GENERAL STUDIES			CR.	
YR	SEM	DESIGN	PRACTICE	TECHNOLOGY	HIST/THEORY	ELECTIVES	REQUIRED	REQUIRED	ELECTIVES		
PRE-PROFESSIONAL	1	F	ARCH 101[4] Basic Arch Studio A			ARCH 100[3] Intro to Built Environ		ENG 100[3] Writing	HIST 151[3] World Civilizations	ART 1xx[3] Freehand Dwg	16
		S	ARCH 132[4] Design Communicate				ELECT 2xx [3] Oral /O Core]	MATH 140[3] Trigonometry	HIST 152[3] World Civilizations	ELECT 1xx 2xx [3] Hawaiian Focus	16
	2	F	ARCH 201[4] Arch Studio	ARCH 200 [3] Prof Pract of Arch		ARCH 271[3] World Arch+Urbanism		PHYS 151+L [4] College	LANG 101 [4] [L Core]		18
		S	ARCH 235[4] Comp App in Arch		ARCH 320 [3] Intro to Arch Sys A	ARCH 272[3] World Arch + Urbanism		ELECT 1xx 2xx [3] Conc Req or Elec	LANG 102 [4] [L Core]		17
	3	F	ARCH 341 [4] Int Arch Studio A	ARCH 433 [3] Prof Pract & Ethics	ARCH 321 [3] Intro to Arch Sys B	ARCH 371 [3] Design Theory			LANG 201 [3] [L Core]		16
		S	ARCH 342 [4] Int Arch Studio B		ARCH 322 [3] Sustainable Systems		ARCH 3xx4xx [3] Conc Req or Elec [W]	BIO SCI [3] Bio Sci Core	LANG 202 [3] [L Core]		16
	4	F	ARCH 415[6] Asia Pac Urban Studio					ELECT 3xx-4xx [3] Conc Req or Elec		ELECT 3xx-4xx [3] Conc R or Elect [W]	12
		S			ARCH 3xx4xx [3] Conc Req or Elec	ARCH 3xx4xx [3] Conc Req or Elec	ARCH 3xx4xx [3] Conc Req or Elec	ELECT 3xx-4xx [3] [Soc Sci Core]		ELECT 3xx-4xx [3] Conc Req or Elec	15
	Summer coursework required for incoming 2nd Degree Students with insufficient prior architecture coursework										176
			ARCH 540 [6] Architecture Studio I Intro to Design	ARCH 531 [3] Adv Design Communication I	ARCH 522 [3] Architecture Systems Intro to Systems	ARCH 571 [3] Architecture History					15
PROFESSIONAL D. ARCH	1	F	ARCH 541 [6] Architecture Studio II	ARCH 533 [3] Adv Design Communication II	ARCH 523 [3] Arch Systems II Wood & Steel	ARCH 575 [3] Asia-Pacific Arch Hist & Theory	ARCH 551 [1] Architecture Topics				16
		S	ARCH 542 [6] Architecture Studio III		ARCH 524 [3] Arch Systems III Conc & Masonry	ARCH 575 [3] Arch & Urban Design Theory	ARCH 551 [1] Architecture Topics		ELECT 5xx-6xx [3] Open Elect University Wide	16	
	2	F	ARCH 543 [6] Arch Studio IV Urban Design	ARCH 545 [3] Advanced Practice	ARCH 525 [3] Arch Systems IV Sustainability	ARCH 539 [3] Research Methods Seminar	ARCH 551 [1] Architecture Topics			16	
		S	ARCH 544 [6] Arch Studio V Comprehensive	ARCH 546 [3] Doctorate Project I	ARCH 526 [3] Arch Systems V Integration		ARCH 5xx6xx [3] Arch Elective			15	
	3	F	ARCH 547 [12] 549 [12], 550 [12] Professional Studio	ARCH 554 [3] Professional Studio Topics						15	
		S	ARCH 548 [9] Doctorate Project II				ARCH 5xx 6xx[3] Arch Elec			12	
			45	12	12	9	9			3	90

Figure 5: New D. Arch. Four + Three Program Chart

Dean Llewellyn directed the curriculum toward a four plus three format to convert the established seven year Doctor of Architecture degree program into a four year Bachelor of Environmental Design degree followed by a three year Doctor of Architecture first professional degree. The intent of the change is to offer students choices in several concentration areas:

Architecture, Urban Design, Construction Management, Historic Preservation, and Interior Design.

2.2. New curriculum (Fig. 5)

The new curriculum is expected to have a positive impact on research collaboration with professionals. Highlights of the changes that impact research include:

- The research methods course is offered in the sixth year just prior to the first Doctorate Project research course.
- The Practicum is now one of three Professional Studios, from which students can choose. This means Doctoral students are now required to spend only one semester in a setting off campus.
- The Forms and Frames of Practice Seminar is no longer a required course. It has been replaced by an Advanced Practice course in the sixth year.
- The 200 level introductory Professional Practice course student learning objectives now include understanding of primary practice models in the environmental design disciplines.

Previously, in the maturing stages of the UHM SoA doctorate program, one of the biggest problems was

that several students were unable to complete their D. Arch. project in the preferred two semesters, leading to endless re-enrollments in either one of the doctorate project studios. The primary reason for this shortcoming was that they were not prepared well enough to start working on a doctorate project; in many cases, it wasn't until mid-semester when they finally had come up with a project topic, submitted a D. Arch. project proposal, and formed their doctorate committee – needless to say, the rest of the semester was not sufficient to complete the first part of the project. As a solution, a research methods seminar was implemented and composed so that it directly addresses the issues of a D. Arch. Project, in addition to the actual research methodology. Thus, the actual *process* of working on a doctorate project now starts with the Research Methods Seminar (ARCH 539). As the name implies, the course deals with research methodology in a seminar setting, focusing on analyses of the built environment. The goal is to engage the participants in critical thinking, discussion, reading and writing about contemporary issues in architecture, in addition to studies on research methodologies, to form a preliminary basis for a D. Arch. project. Each student is required to be active with formulating one's own D. Arch. project topic, carrying out preliminary background research for it, and producing a D. Arch. project proposal.

In this course, writing is emphasized as a primary tool in conducting general research work and preparing for any scholarly project, in order to underscore its significance for an articulated, logical, and eloquent

presentation of ideas. The course thus involves written coursework on the investigation of various ideas for a doctorate project; on the development of a specific research topic; on the review of relevant scholarship and literature; on the formulation of research questions, arguments, and hypotheses; and on the selection of appropriate methodology for research and/or design analyses; followed by a detailed plan for the D. Arch. project.

The focus on methods in this course, in turn, is intended to make the participants conscious of their thoughts and approaches and to take those up as rational, not merely as intuitive acts, in terms of both architectural research and design. The intent is to allow the fullest exploration of ideas and subject matters for the D. Arch. project by literature reviews on the existing body of knowledge, by studies on the design and research precedents, and by experimentation with various research methods and topics of inquiry.

The sequence of the Doctorate project studio I and the Professional studio, as well as the format of the latter, have recently changed, too. From the very beginning of the UHM SoA doctorate program, an elemental part of the curriculum was the Practicum studio conducted in the School's Practicum firms, or in alternative settings (e.g., Architecture for Humanity or other self-directed experiences), during two off-campus semesters preceding the Doctorate project studios. But lately other professional experience options have been added, preferably taking place between the Doctorate project studios. Now all these constitute the Professional studio with three options: Community design (ARCH 547), Practicum (ARCH 549), and Alternative experience (ARCH 550).

Although the Professional studio contents are otherwise not the focus of this paper, it is important to note that especially the scholarly component of the Professional studio is thoroughly incorporated with the D. Arch. project as it was in the Practicum before. Also, the students are strongly encouraged to choose the Professional studio option, and within that option the location, available expertise, etc., in correspondence to their doctorate project topic. As the new Professional studio options weren't established until a good year ago, it is difficult to say how these new procedures will affect the D. Arch. projects, though it is anticipated that the research conducted during the Professional studios will have a positive impact on the scope, width and breath of the doctorate projects prior to their completion.

2.3. Doctor of Architecture final research project

Like before, the pedagogical centerpiece of the UHM SoA Doctorate of Architecture program is the independent D. Arch. project that is the academic culmination and capstone experience demonstrating advanced understanding of the chosen topic. In general, the doctorate project is to be a scholarly contribution to the knowledge in the field of architecture by presenting research and creative activity that has been conducted by the student under the supervision of a doctorate committee.

The doctorate project may take the form of a primarily written document which represents research and conclusions in written form that may or may not be supported by graphic data and information, or may take the form of an architectural design project which presents research in written form complemented by architectural design solutions presented in graphic form. In short, the D. Arch. project is expected to be principally concerned with creative explorations into architecture supported by research.

Whichever form a D. Arch. project takes, its research component is a vital, required element of the exploration; either leading to theory development or informing a design process during the final stage of the process, or any combination thereof. An integral part of the UHM SoA D. Arch. program also is the related research conducted during the Professional studio semester/s in which research activity is combined with professional experience occurring in an off-campus location, prior to the completion of the doctorate project and the doctoral candidate's entry into professional practice and/or academic service. In other words, the final D. Arch. project is the culmination of research collaboration of students with professionals. Students invite faculty and practicing architects to sit on their doctoral project committee. The responsibility of the committee is essential to assure that the research is appropriate and utilizes the most current resources.

Similarly to the earlier-mentioned problems in *starting* the research in the Doctorate project studio I, the doctorate candidates have faced great difficulties in *finishing* the project in a timely manner within the semester of the Doctorate project studio II (ARCH 548). The primary reason is that the doctorate project must be completed by April/November 15 for the graduation by the end of the semester in question, making the final term one month shorter than "ordinary" semesters.

A solution was the Pass/Fail defense added around the mid-semester in order to create a milestone helping in scheduling the stages of completing the degree requirements. The Pass/Fail defense has, indeed, facilitated most students in facing the even tougher final weeks of the semester. Those who pass the Final defense by April/November 15, have submitted the complete doctorate project document material by the due date (the last day of instruction of the semester), and have met all other degree requirements, are awarded the Doctor of Architecture degree at the end of the appropriate semester. At that point, even those of the graduates who were confronted with obstacles, delays, harsh criticism or other difficulties admit that overcoming all that was worth the fight, as in the end, being proud of one's project is what counts. This holds true especially after the graduation, as at last then one can apply the expertise gained in the doctorate project process to the future endeavors in the profession of architecture.

The following is one student's reflection on his academic research experience with emphasis on the collaborative support and guidance he received directly or indirectly from the many architects who support the School's research efforts.

3. INDIVIDUAL PROGRESSION

As a recent graduate of the Doctor of Architecture (D. Arch.) program at the University of Hawai'i at Mānoa (UHM), I (Samuel Haagenson) am able to offer a first-hand account of an individual progression through the program. This section will focus on my personal journey through the UHM program and how the research curriculum provided me with a unique link to professional practice.

3.1. Undergraduate curriculum

The research curriculum in the original D. Arch program begins with the undergrad courses. (Fig. 4) Electives that fulfil the credit hour requirements provide many opportunities to tailor one's education to individual interests. I personally chose to focus my education on traditional culture, its effects on architecture, and the possibilities it creates within the field of architecture. This was accomplished through elective coursework on topics such as general history, cultural history, art history, and architectural history, and focus more directly on the culture(s) that I was most interested in by enrolling in specific language and cultural practice and history courses. During this time, I was concurrently completing standard architectural education coursework and general university requirements. The result was a great accumulation of knowledge in my particular area of interest by the time I completed the undergraduate curriculum, more than would have been possible with less freedom in the elective coursework.

3.2. Practicum program

While I was a student at the UHM, each student spent two consecutive semesters enrolled in a Practicum Studio. This studio is a unique form of a research-based unpaid internship at different reputable firms located around the world. The School places the student at firms based upon their personal research interests having a correlation with the firm's history, experience, research, or current projects. Although part of the Practicum involves "typical intern work" in various areas of practice aligning with NCARB's IDP requirements, the Practicum Studio is made unique by the research and one-on-one interaction with the firm's CEO(s) and/or upper level management. It is through this direct relationship that the student is able to discuss one's research and collaborate with a highly respected and experienced professional within the industry.

3.2.1. Practicum Studio 1 - Kober Hanssen Mitchell Architects (KHMA) in Honolulu, Hawai'i.

For my first Practicum semester, I was placed by the School at Kober Hanssen Mitchell Architects (KHMA) in Honolulu, Hawai'i primarily because of my interest in traditional culture and its relationship to architecture, in particular my interest in traditional Hawaiian culture. KHMA has a history of successful projects that reflect traditional Hawaiian culture, and was at the time working on the design of a Hawaiian cultural center.

Also, the firm's CEO, Kurt Mitchell, is Native Hawaiian and has a strong understanding of traditional cultural values and practices.

During my time at the firm, I conducted research on indigenous Hawaiian vernacular architecture. My goal was to gain a better understanding of why indigenous architecture took on the forms and functions that it did, and how the cultural values and practices directly impacted these forms and functions.

I performed the research using traditional research methods, such as producing a literature review on existing publications and other written documentation, finding material evidence in museums, and conducting personal interviews with experts on the topics. I also had the opportunity to discuss my work on a regular basis with Mr. Mitchell, who helped me to view the investigation from an experienced architect's perspective. Through these regular discussions he pointed me in the right direction and helped me to refine the research. Also, as a student in the firm, I was able to travel to some of the other Hawaiian Islands to perform tasks for the firm, and at the same time visit historic cultural and architectural sites that aided my research. By the end of the semester, I had accomplished my research goals, and the firm was able to utilize my research on their current projects. This mutually beneficial collaboration is a unique aspect and goal of the Practicum research.

3.2.2. Practicum studio 2 – NBBJ: Seattle Washington

I was placed at NBBJ in Seattle, Washington for my second Practicum Studio because NBBJ had designed several buildings which in some form successfully integrated traditional culture into a contemporary design.

For my research project during this semester, I completed a case study on a building designed by NBBJ that integrated a traditional culture into the design of the Alaska Native Medical Center in Anchorage, Alaska. My goal was to understand how the firm researched culture and what methods were used to integrate the culture into the design. To complete the research, I interviewed the project architect and other members of the design team extensively. I was also fortunate enough to visit the project site in Anchorage and tour the building, interview various user groups for the building, and learn a little more about indigenous Alaskan Native culture through these discussions and fieldwork in area.

Throughout the entire semester, I was able to discuss my research with Jim Jonassen, Managing Partner at NBBJ. We had weekly discussions in which Mr. Jonassen was able to describe why certain decisions were made, how they affected the design of the building, and even how things perhaps could have been designed differently. Because of his significant experience and expertise, he was able to guide my research and writing process in a way that allowed it to be more focused and have a more successful outcome. NBBJ is still designing buildings for the same client in Anchorage, and the case study I wrote during this

semester has now become required reading for new team members working on these projects.

3.3. D. Arch. project

My D. Arch. project (final project before graduation) was a continuation of the research I had begun during my undergraduate coursework and continued in the Practicum Studios. The title of my project was "Contemporary Design as a Tool for Cultural Preservation." Through all of my previous research, I had formed the personal view that traditional cultures are very important to the continued existence of humanity, and therefore need to be preserved. Rather than buildings simply reflecting or integrating the traditional culture of the land where they sit, I feel that buildings can take this idea a step further and actually be a tool in the preservation of the culture *as a whole*. The project therefore puts forth a prescriptive design process that uses design itself as a method of promoting the continued existence and vibrancy of a traditional culture, much beyond that of reflecting traditional architecture and built forms. This design methodology is a process that can be used for any culture and any building type.

The project had three distinct parts. The first consisted of two in-depth case studies examining existing buildings where the design was greatly influenced by the traditional culture. The first of these was the Alaska Native Medical Center, for which I did most of the research during my second Practicum Studio. The other was a case study of the National Museum of the American Indian in Washington, D.C. For this case study, in addition to literature search, I also interviewed and spent time with the project architect, Johnpaul Jones, FAIA of Jones+Jones in Seattle, Washington, who was able to explain in detail how traditional Native American culture influenced the design. This interview was made possible through Jim Jonassen of NBBJ, my Practicum Faculty. The second distinct part of the project was my thesis statement, which described the cultural design methodology in detail and how it can be applied. The third distinct part of the project was the implementation, which demonstrated the use of the cultural design methodology through the design of a specific project for a particular culture.

Although the D. Arch. project is a student's final demonstration and showcase of the research performed while attending the university, it is most definitely not an "individual" project. It is a highly collaborative process between the students and their D.Arch. Committees. The committee members are chosen by the student based upon their individual knowledge and expertise within a particular area of the student's research project. They are there to guide the student throughout the process, but also actively participate in open discussions, critiques, and presentations to help the student form one's hypotheses, analyses, and evaluations shaping the research.

My committee chairperson was Clark Llewellyn, AIA, who is the Dean of the UHM School of Architecture, and also experienced in designing buildings for Native

American groups of people. Another member was Daniel Chun, FAIA, who is a prominent architect in Hawai'i with a great deal of experience in designing buildings for Hawaiian groups and organizations, and also has experience designing educational buildings, which was important as this was the type of facility I chose to design in order to demonstrate the application of the cultural design methodology. The third member of the committee was Davianna McGreggor, a professor at the University of Hawai'i who teaches various cultural studies courses. She is a published author of traditional Hawaiian cultural practices (the culture which I chose for the implementation phase of the project), and a respected cultural activist within the Hawaiian community. It was through the collaboration with this committee that I was able focus my research and complete it successfully.

3.4. Professional practice

The unique collaborative approach to research at the University of Hawai'i has provided a link for me to professional practice. After completing the Practicum Studios, I was hired by KHMA (the firm where I spent my first Practicum) to be a regular full time employee. I was hired partially because the firm was aware of my work ethic and particular areas of skill, but also because they felt that the research I had been working on could be of value to the firm.

There were two project teams in particular that I was placed on because of my research. One was for the ongoing design of a cultural center for the Kaho'olawe Island Reserve Commission. Kaho'olawe is an uninhabited Hawaiian island with very limited access and great importance to Hawaiian culture, and this project was to serve as a cultural center located on the island of Maui to teach visitors about Kaho'olawe who will more than likely never have the opportunity to visit the island. The other project was the design of a remote self-sustaining shelter on Kaho'olawe for environmental and cultural preservation teams visiting the island. The design requirements were made especially unique by the complete lack of modern infrastructure and the extreme cultural significance. For both of these projects, the research I had completed as part of the curriculum at UHM was applied in both the research process of the project and the implementation of the design ideas.

I am still an intern architect, although I hope to be licensed within the year, so I am unsure exactly what direction my career in architecture will take me. It is certain, however, that I will continue to practice and research the issue of contemporary design as a tool for cultural preservation in hopes of furthering the preservation of traditional cultural practices and values. It is because of the unique collaborative research processes incorporated into the University of Hawai'i curriculum that I have not only become interested in this area of architecture, but also have been given the tools to impact the future of cultural preservation.

4. OTHER D. ARCH. PROJECTS

4.1. From academia to profession

Similar to Carol Sakata's development of the Practicum Studio as her doctoral project, several other courses have been developed as D. Arch. research projects. The projects envision programs for the UHM SoA such as a Master of Landscape Architecture Program and a Project Management Program.

A forthcoming D. Arch. Project titled "Learning Leadership in Architecture: Teamwork, Collaboration, and Project Management" is expected to further strengthen our curriculum. Annette Salvador states that her goal for the project is

. . . to develop an Academic strategy for two pre-professional student leadership courses in the Architecture Doctorate program. This paper will be a combined empirical, analytical, and case study investigative approach in strategizing how student leadership development in an architectural curriculum enriches the individual's personal and professional development.

Collaborative interactions are also reinforced via Todd Riches' committee members who were Carol Sakata, FAIA, and Ronald Skaggs, FAIA, both influential in the development of the Practicum Studio and accreditation for our doctoral degree. In his D. Arch. project "Starting an architecture firm: From academia to profession", Riches states: "Starting an architectural firm straight out from college seems a bit challenging, almost impossible" (Riches 2008: vii). Yet, doing precisely that is the goal of his doctorate project:

This work is presented in the hope that by realizing what is required to establish a design firm, the graduate will be able to dispel the misconceptions of incompetency (in the area of business operations), acquire confidence in starting a firm, and either start a firm or become a greater hired asset from the day of graduation. (Riches 2008:vii)

To reach the realization, Riches begins with a tentative business plan, analyses the concerns and possibilities of starting a design firm, goes on presenting the history of leadership and various business structures, and compares case studies within three firm models (S, M, L). Next, he discusses the culture of start-up firms, consultant support structures (lenders, attorneys, accountants, etc.), functions of successful organizations, and ends in business planning with The Five Laws of Business Success: The Law of Frequency, The Law of Vision, The Law of Perception, The Law of Accountability, and the Law of Leadership (Riches 2008:117-118) and their applications.

Besides being an invaluable source of information for those recently graduated and, indeed, having the courage, competence and confidence to start one's own firm, working on this doctorate project certainly made Todd Riches courageous, competent and confident to do so; one of the many advantages the doctorate projects can bring along.

The lack of confidence in one's capabilities of stepping into the leading roles of the profession, most probably is the reason why very few doctorate candidates have had the courage to take the bull by the horns, both in terms of starting a firm soon after the graduation or addressing the issues of professional practice in a doctorate project. Homer Williams definitely did not have that problem when he enrolled in the UHM SoA doctorate program, after decades of experience in the professional practice as an architect and a CEO of large architectural firms (among many other responsibilities in the field of architecture) – a step perhaps better depicted as "from profession to academia".

Williams starts his D. Arch. project by stating that the "work has been in the making since I first worked on a bank project in the early 1960s and could find no reference guide or source available that described bank design" (Williams 2008: i) and, as there still wasn't one more than 40 years later, he decided to write "The design and planning of financial institutions". Without going into the very informative contents of the project, such as development of bank design and projections of its future, this study is not only a guide on the design of financial institutions, now finally available, but also an interesting record on the architect-client relationship. It also is an elucidating example of the valuable role of a doctorate program in attracting experienced practitioners to share their knowledge of the profession with a wider audience.

Another example of a well seasoned builder, architect, and educator is Phillip Gallegos who returned to the academia as a doctorate candidate to work on his D. Arch. project "Architects as master builders: One view of the profession and education", conducted at the UHM SoA in 2005-2006 when he also assisted the School as an instructor. His study is primarily concerned about the divorce between architectural schools and the current design-build services, and Gallegos calls for the architectural educators and practitioners to bridge the gap between education and work. The study is comprised of an overview of the celebrated "master builders", that is, architects *and* engineers from Vitruvius and Brunelleschi to Calatrava, followed by samples of the author's career as a designer-builder and as an educator of design-build studios, as well as a review of other current design-build programs in architecture schools. In conclusion, though based on highly critical analysis on most current practices in architecture schools, Gallegos is optimistic:

It appears that the future will be one in which the architect, in the professional world and in the educational world, will create in an environment of collaboration. This is the one profound and significant finding of this exploration. The lessons of design *and* construction are the lessons of additional skills required in the delivery of high value design. It is a lesson of added value to the core activity of design in architecture. (Gallegos 2006:Chapter 8, 2)

A similar view of the profession of architecture, though from a different perspective, is presented in Melanie Wong's D. Arch. project "Understanding collaboration: A journey through the public process of architecture". As her initial interest was community involvement in the planning and building process, that was addressed in both of her Practicum experiences preceding the doctorate project research. For the first semester, Wong chose a challenging Architecture for Humanity project in India as an alternative for any of the School's Practicum firms. Under the supervision of Purnima McCutcheon, AIA, LEED AP, she gained invaluable hands-on experience in working with a NPO and the local people building their community center. For her second Practicum semester, she, in her own words, "wanted something more traditional" (personal discussion, 03/05/09) and selected EHDD Architecture in San Francisco from the SoA Practicum firms primarily because of their involvement in community design. Together with her Practicum mentor, Charles Davis, FAIA, she did not only participate in the firm's decision making and design processes, but also in her Community service assignment Wong volunteered in helping yet another NPO, Rebuilding Together San Francisco, in renovating the Hunter Point Youth Center including budgeting, labor coordination, and other organizational tasks with the projects director, Kat Sawyer, a local community activist. According to Wong, her Practicum experiences were very important part of exploring the rough idea for her final project and determining its scope. In her D. Arch. project, the point of departure is participatory design, existing method mainly in urban planning, while Wong's argument is that the same method is applicable to the built environment at a smaller scale as well. Her initial research question was:

If the built environment is part of people's everyday life and the process of creating architecture is about discourse, can the people affected by the built environment be part of the discourse in creating architecture?
(Wong 2008:i)

In order to find out the answer, she joined forces with a representative of a local Hawaiian charter school: "The collaboration was to be a journey of two actions, to discover possibilities for the school's permanent campus and an exploration of public participation in architecture" (Wong 2008:1). As this was a site-specific design project at the location of the school's temporary facilities in Honolulu's Makiki Valley, the research included site analyses, precedent studies, programming, and other conventional design methods, but important also was mapping the "cultural site" which overlapped with the actual participatory design process. This included frequent meetings with the school's representatives and the neighbors as the stakeholders of the school; among the latter the native Hawaiian community of Maunaloa, holding the respect as the original settlers of the land. The doctorate candidate functioned as the facilitator of the meetings, gaining real-life experience as part of her D. Arch. project, while

the charter school gained a preliminary, conceptual master plan and capital campaign images.

Further, a significant part of the learning process for the candidate was the comprehension of the cultural values: "As [Maunaloa is] the only native Hawaiian community in the valley, following proper protocol and etiquette was vital to establish a connection" (Wong 2008:143). Although the author records many problems that occurred during the process, the challenges were, no doubt, educational and the methods of data collection, such as workshops, community exercises, and surveys (all documented in the appendixes of the thesis), offer valuable information for analogous projects in Hawai'i. Besides serving as an example of a participatory architectural practice and related design methodology, this doctorate project also exemplifies fieldwork as an elemental part of the design process.

4.2. Fieldwork and historic preservation

As fieldwork, originally associated with anthropological research, has normally been a useful means in cultural studies, it quite naturally also is the primary method in cross-cultural or culture-specific architectural research. Moreover, field studies have often been successfully incorporated in interpretive-historical research on numerous architectural phenomena; either as background studies for contemporary issues or as bases for historic preservation projects.

One of the very early doctorate projects completed at the UHM SoA that addresses all the above aspects is Neil Chapagain's study on adobe structures, applied to a historic preservation project of the remote walled settlement of Lomathang in the Upper Mustang region near the present Nepal-Tibet border. This project, titled "Earthen architecture of the Trans-Himalayan region of Nepal: Preservation and appropriate practice", was based on the author's extensive fieldwork in the area and collaboration with local preservation authorities already before he enrolled in the UHM SoA doctorate program. At first, his D. Arch. project includes an all-embracing overview of earth as one of the first building materials used by human beings, with detailed descriptions of its history, building types, energy efficiency, construction systems, and material analyses, exemplified by various examples in Africa, Asia, Central and South America, and Europe.

Second, Chapagain goes on analyzing the geographical, climatic, cultural, and socio-economic context as well as architectural typology of the Trans-Himalayan region, from where he proceeds to problematic issues, such as incorrect maintenance and repair efforts, seismic risks, and negative impacts of tourism in terms of social consequences and heritage preservation. This leads to specific recommendations for solutions to the above problems, demonstrated in a design project of the historic preservation of Lomathang. In it, the author not only addresses the preservation of both the tangible structures and traditional practices but also their appropriate incorporation into the contemporary context, including some new techniques, continuation of community participation in keeping the tradition alive, and re-

establishment of the status of earthen buildings as part of the local identity as opposing to the perception of "buildings for poor" (Chapagain 2005:228).

As for historic preservation, a rather polemic approach is presented in the D. Arch. project "Changing the perspective of facadism within San Francisco" by Deidre Stevens who argues that facadism can be a valid type of historic preservation, although it is a highly controversial concept – according to Stevens "facadism, in fact, has been compared with 'Satanism' by preservationists" (Stevens 2008: viii). This project, too, includes interpretive-historical research on the topic's background with several case studies across the world, added with extensive fieldwork; in this occasion in San Francisco with analyses of five preservation projects that can be regarded as facadism, followed by the author's proposed standards for facadism's "Do's and "Don't's. Particularly interesting in this project, from methodological point of view, is the process from hypothesis (that facadism can be valid), to analysis (that it depends), to conclusion:

Based on my current understanding of facadism after completing this research, I have come to the conclusion that facadism should only be used in historic structures in specific instances. Facadism should only be used when it is determined to be the most appropriate approach for a project. It can be justified when a historic property has been damaged beyond repair (by fire, earthquake or another natural disaster) and when most or all character defining features have been lost. (Stevens 2008:241)

In this project as well, the Practicum program was an integral part of the research allowing lengthy fieldwork in San Francisco. One of the firm's Practicum Mentors, Katherine Petrin, Architect Historian, also served as a member of the doctorate committee bringing along invaluable insights of the city and its preservation practices and policies which functioned as an elucidating basis for the analyses and propositions of the final project.

4.3. Culture as form-giver

Among the forthcoming D. Arch. projects at the UHM SoA, that of Damon Gray does not only include extensive fieldwork as part of the design process in a historic, culture-specific neighborhood, but also embraces a wide interdisciplinary approach. As a matter of fact, the doctorate candidate only recently enrolled in the Doctorate project studio I, although the study has been going on already more than a year; if the Research methods seminar is counted, it started in fall 2007. This is because the D. Arch. project proposal, submitted in the end of the Research methods seminar, clearly indicated that survey questionnaire is one of the central data collection techniques for this project, but also its weakest link. Moreover, the scope of the project is very wide and ambitious.

Nevertheless, the candidate was willing to do additional studies as needed in order to carry out the appropriate research for the inquiry on a new typology of a

community center, combining sacred and secular functions, in the Centro Historico of Puebla, Mexico. Therefore, he took a class in the Study of religion and another on Sacred places, at the Department of Anthropology he studied fieldwork methods, and at the Department of Sociology survey research methods. In summer 2008, he spent two months in Puebla, conducting the fieldwork and the survey (available online at www.encuestapuebla.com), and the following fall semester he was enrolled in the Directed study course for the analyses of the fieldwork. Now, in the first Doctorate project studio, the theory development for this new building typology is underway so that also programming is done before the completion of the actual design in the Doctorate project studio II in fall 2009. This doctorate project is far from typical, but it just goes to show how interdisciplinary research can be beneficial (if time provided) in the pursuit of achieving fresh insights into architectural design and in expanding the research resources within the discipline of architecture.

All culture-specific design projects, of course, do not have to include as extensive research as the one described above. One case in point is Claire Rohlinger's D. Arch. project "Residential design for the Samoan way of life" in which her objective was to design affordable housing appropriate for the lifestyle and cultural values of the large Samoan community in Hawaii, or for anyone who desires communal life. In addition to the high living costs and scarcity of affordable housing in Honolulu, the problem statement was based on the observation, affirmed by the research on Samoan culture among the Samoan immigrants in Hawai'i, that the extended family system and community hospitality are still strong values:

However, in the existing public housing in Honolulu, this is almost impossible because the physical size of the units is too small. They are designed in size to house nuclear families, not extended families. Yet, the [Samoan] families still take in others as needed and often end up violating housing regulations. They do this because the extended family is the support system and they are obliged to help each other whether it is financial, healthcare or housing assistance. (Rohlinger 2008:28)

Another significant outcome of the research was that social control in traditional Samoan society, provided by the open housing configuration, is not possible in the private, closed housing units of urban Honolulu, leading to the lack of community scrutiny and frequent domestic violence in the public housing complexes with Samoan population (Rohlinger 2008:29-32). It did, on the other hand, take some time to reach the proper theoretical background for the architectural solutions to these problems. As often happens in research, one source led to another and finally Oscar Newman's *Creating defensible space*, discussed already in the Research methods seminar but then overlooked by the candidate, opened the deadlock, although not all of these theories were applicable in this context.

Quite interestingly, the initial hypothesis that courtyard typology is the housing solution for Hawaii, turned out to be part of the solution, even if the research at first did not seem to support that at all. (The candidate already discarded the idea.) But when compared to the openness of Samoan housing to the concept of defensible space, it became apparent that a combination of pavilion and courtyard typology was the answer to the problem and led to very successful design both aesthetically and culturally, with minimal private rooms, maximal public areas, and multifunctional transitional spaces in between. This also reduced both the floor area per unit and the total building costs.

Different theoretical approach to design, and an interesting application of the memory sketch method within qualitative research, is presented in Sun-Young Rieh's doctorate project "Creating sense of place in school environments: The lived experience of elementary school children in Hawaii", though the end product is not a design project *per se*. Instead, the goal was to locate characteristics that enhance the sense of place in school environments, the Place Generators as the author calls them, and "provide critical design guidelines for successful school environment that promises positive child development in terms of sense of place" (Rieh 2007:v). The beginning of the study, thus, focuses on the definition of the concept sense of place that has attracted considerable attention ever since the "descriptive nature of the phenomenological approach opened a new paradigm in returning to foundations of meaning, things, and experience in the fields of human and built environments" (Rieh 2007:1), while the Place Generators were identified as follows:

Since there are no consensus rules for when a space becomes a place, and qualification of place requires something beyond physical elements, these spatial configurations that seem to catalyze sense of place have never been put together seriously as a group. However, there are elements mentioned in various contexts, regardless of scale, by many scholars such as Heidegger (boundary), Norberg-Schultz (center, boundary, and path), Moore (path, pattern, edge), Lynch (landmark, district, node, path, edge), Relph (inside-outside), and Meiss (limit and threshold, path and orientation). These spatial configurations can be categorized as "boundary", "center", "path", "threshold", and "edge". (Rieh 2007:12)

These five Place Generators are further defined and analyzed primarily from the perspective of Claire Cooper Marcus's long term research related to memory sketches and Rieh's own experiments with her students' memory sketches. In the end of the study, Rieh tests her hypothesis of the Place Generators with the same method among children in three elementary schools in Honolulu, concluding:

These spatial articulations [the Place Generators] must be combined carefully with other characteristics found to affect children's

sense of place in this research, such as functional diversity, conceived aspects (including privacy), thermal comfort, articulated outdoor space and children's participation in the design and/or construction of the school setting. (Rieh 2007:148)

With regard to the different forms of D. Arch. projects, various types of design guidelines are a common outcome of those belonging between the purely research-oriented and design-oriented projects. On the other hand, as hermeneutic research requires rather advanced studies in philosophy, D. Arch. projects like the one by Rieh above are exceptional, though interdisciplinary studies hopefully will increase those as well. In this case, the author is a long-term architectural practitioner, theorist, and educator, who spent her sabbatical at the UHM SoA both as a doctorate candidate and an instructor. This, again, serves as an example of the doctorate program's potential in attracting seasoned architects to share their experience, knowledge, and inspiration with the faculty and the students.

5. ASSESSMENT

5.1. Pre-professional courses

All courses are evaluated each semester by students per University and School policies. Practicing architects who participate as adjunct faculty are requested to submit their assessment of the student performance as well as a self-evaluation in addition to the impact on their firm resources. In general participant architects tend to submit positive statements in writing and prefer to divulge negative criticism through verbal "suggestions for improvement".

5.2. The practicum studios

Since their inception in 1994 Practicum Studios have been assessed using several methods including:

- Discussions at each firm involving the Practicum Director, Practicum Faculty, Student, Unit Mentors and other firm staff participants in the teaching/research efforts.
- Gatherings at the School for Practicum Faculty, full time faculty, and students facilitated by a professional architect
- Interviews conducted by independent consultants and the Practicum Director
- April 2004 Practicum/Arch D Program Evaluation and Recommendation conducted by Adjunct Professor Richard Green, FAIA.

Major Practicum research related concerns cited:

- Expand the research portion of the program
- Improve communications between the School, the firms and the off-campus students by providing more resources and staff support.
- Develop more tangible methods to "give back" to the Practicum Firms (Practicum Faculty/Firms are not compensated) to assure continued participation.

The most recent facilitated evaluations occurred in the academic year 2007-2008. The evaluations were generally positive. However, based on the direction of the new curriculum the decision was made to reduce the required Practicum Studio to one semester rather than two and provide students two other choices in lieu of the Practicum. To many, this means a great loss of research experience in a practice setting.

5.4. Opportunities

- Students are offered multiple career path choices through the concentration areas offered
- Travel opportunities have increased
- A Community Design Studio has been established
- Expanded relationships with international Schools and firms extend the outreach of the School from Asia Pacific to the greater Pacific Rim and beyond
- Off-campus courses are managed by the Outreach College resulting in the tuition for such courses being credited directly to the School

5.5. Needs

- Due to budget cuts, some concentration courses are not currently offered.
- Courses that include travel require a minimum number of students and in some cases, such courses may not be offered
- Tuition costs for Outreach College courses are in general higher than normal tuition.
- Proper staffing is necessary to maintain the level of coordination initially expended to launch the practice strand to properly communicate with firms

6. CONCLUSION, FUTURE ASPIRATIONS

The revised curriculum promises exciting possibilities. However, one change in the new curriculum which should be reconsidered is the reduction of the Practicum Studio to one semester. According to Don Goo, FAIA, past Practicum Director, as stated in a 2006 Practicum Brochure

In addition to individualized learning in two different office settings, Practicum students complete a research project and participate in a community or professional organization activity. The chance to choose among locations around the United States and the Asia/Pacific region provides graduates with a global perspective that is essential in today's practice.

This viewpoint is supported by other Practicum Faculty. In a 2008 discussion, Kurt Mitchell, AIA, a Practicum Faculty stated

"Research knowledge is powerful, showing you know what to do on projects but also demonstrates a leadership style. Today's clients fund research on projects because they understand this will yield a better solution overall. The Practicum Studio allows students and firms to collaborate on research which might not otherwise be possible. "

The unique relationships developed between the School and nationally and internationally respected architects and their firms are valuable and fragile. The collaborative research work accomplished as a result of these relationships must be sustained. Current developments in technology and concern for the environment along with the awareness of global interdependency of nations make this an ideal time to advance the architecture profession. It is our belief that collaborative research is one way to bring the profession and the academy together to accomplish great advancements for the built environment. We offer these thoughts for discussion and look forward to creative solutions for the dilemmas of collaboration.

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