"It is not the answer that enlightens but the question."

Architecture 451—Tropicalia section

Dr. Joseph Bilello, AIA
Definition of Architectural Research*

• Architectural research is the search for new knowledge and new ideas about the built environment.

• Research can be conducted in a variety of sub disciplines, including building technology, environment-behavior studies, history of architecture and computing technology.

• In each area of architectural research, certain presuppositions and fundamental beliefs guide and determine the appropriate focus and method of inquiry, as well as the significance and merit of each research project.

• While the parameters of these research approaches vary, there are some common characteristics among them:
Architectural Research definition continued

* Source: the Initiative for Architectural Research – AIA, ACSA and ARCC

• 1. Architectural research efforts are those that have clearly identifiable goals at the outset of the research, where the project is directed to respond to a question

• 2. In pursuing that question, one follows a credible, systematic method or mode of inquiry, relevant and acceptable to the research paradigm under which one is operating

• 3. This process results in significant results (and in a thorough, documented manner which reflects a solution or enhances understanding/knowledge within the research domain)

• It should be noted that design can be a form of research inquiry if it incorporated the three characteristics listed above.
Place of Architectural Research Methods in the Curriculum

Theories of Architecture
+ Architectural Programming
+ *Architectural Research Methods*
+ Thesis Research, programming, ___ and schematic design______________

= Thesis preparation
Interdependent Emphases of the course syllabi

• Environment • Behavior
Educational Objectives

• Alt 1

• Alternate 2

This course provides an examination of modes of inquiry used to conduct research in architecture. The modes of inquiry will survey empirical (quantitative and qualitative research), interpretive and critical science orientations. All will be examined conceptually and methodologically according to the following frames of reference:

• To increase the student's understanding of the role of research in architecture.

• To increase the student's abilities to interpret and evaluate research.

• To increase the student's abilities to conduct architecture research.
Educational Objectives

• Alternate 1 continued
  □ • major assumptions
  □ • main concern – inherent aim
  □ • view of values
  □ • focus of investigation
  □ • theoretic-philosophical orientation
  □ • kinds of questions addressed
  □ • methods of validation
  □ • methodological issues
  □ • research in use/application

• Alternate 2 continued
  • To increase the student's abilities to present research results.

• To increase the student's understanding of data, information, and knowledge.
Educational Goals

• understand the place of the person in the research process

• Understand the architect as consumer and producer of research
Educational Goals

- distinguish among competing assumptions in various modes of inquiry (interpreting research)
Educational Goals

- critically evaluate research conducted from alternative perspectives according to appropriate criteria
Educational Goals

- identify methods of inquiry appropriate for investigations in the different contexts of architecture (develop ability to conduct research)
Educational Goals

- differentiate research producer and research consumer points of view
Educational Goals

- Synthesize from the readings a perspective on research that is consistent with your beliefs and practice regarding your future in design
Educational Goals

- differentiate key terms including: values/bias, context, theory, phenomenon, validity, and so forth
Course Methods

Pedagogy includes the following:

1. lectures (as many as possible done as PowerPoint presentations with graphics representing each of the topics covered. Lectures posted to website)
2. student presentations – individual and team-based
3. focused discussion/seminars via Socratic or case method
4. role-playing
5. video clips
6. guest lectures by faculty and others on their research methods and research
7. field trips to research resources
8. E-mail assignment exchange and evaluation between students and professor
Course Methodology

Pedagogy includes the following methods:

1. lecture (as many as possible done as PowerPoint presentations with graphics representing each of the topics covered),
2. student presentation – individual and team-based
3. focused discussion/seminar via Socratic or case method,
4. role-playing
5. video clips
6. guest lectures by faculty and others on their research methods and research,
7. field trips to research resources
Evaluation Process:

1. Process grading

A. Attendance
All students should attend every class. Three absences are permitted after which one letter grade will be deleted from the student’s final grade for each additional absence.
Evaluation Process

1. Process grading cont’d

B. Participate intelligently:
All students must read course text assignments in their entirety and understand them evidenced by active class participation. Active class participation means verbally contributing to the intellectual life and development of the class. (continuous 20-30% of grade). Disruptive actions, sleeping in class, lateness and poor attendance will result in diminution of grades.
Evaluation Process

2. Product grading

- Timely submission of well-crafted research workbook containing class notes, assignments, and related materials at the end of the semester (course percent = 30%). Evaluative criterion: is this a clear, well-organized tool for undertaking the research portion of the Thesis
Process grading alternates

- Timely submission of a complete research method chapter to a real/hypothetical study of the student’s choosing in
  - community/urban design,
  - appropriate technology,
  - housing,
  - historic preservation,
  - health facilities
  - other topic with prior approval of the instructor

- Must, include elements of a methodology chapter as described in the course (final=40%). *Late work will not be accepted*
Topics studied relate to thesis: theory, facility and context
# Example of Course Content

<table>
<thead>
<tr>
<th>Week</th>
<th>Class</th>
<th>Spring 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>meeting#</td>
<td>Introduction</td>
</tr>
<tr>
<td>18-Jan</td>
<td>1</td>
<td>Method overview</td>
</tr>
<tr>
<td>20-Jan</td>
<td>2</td>
<td>Asking good questions</td>
</tr>
<tr>
<td>25-Jan</td>
<td>3</td>
<td>Pre-method</td>
</tr>
<tr>
<td>27-Jan</td>
<td>4</td>
<td>knowing what’s known</td>
</tr>
<tr>
<td>1-Feb</td>
<td>5</td>
<td>Modes of Inquiry/parts of methods</td>
</tr>
<tr>
<td>3-Feb</td>
<td>6</td>
<td>Observation</td>
</tr>
<tr>
<td>4-Feb</td>
<td>7</td>
<td>observation methods</td>
</tr>
<tr>
<td>8-Feb</td>
<td>7</td>
<td>observation in design practice</td>
</tr>
<tr>
<td>10-Feb</td>
<td>8</td>
<td>observation teams presentation</td>
</tr>
<tr>
<td>15-Feb</td>
<td>9</td>
<td>Interview</td>
</tr>
<tr>
<td>17-Feb</td>
<td>10</td>
<td>survey and interview methods</td>
</tr>
<tr>
<td>22-Feb</td>
<td>11</td>
<td>Survey</td>
</tr>
<tr>
<td>24-Feb</td>
<td>12</td>
<td>survey in design process</td>
</tr>
<tr>
<td>29-Feb</td>
<td>13</td>
<td>Case study</td>
</tr>
<tr>
<td>2-Mar</td>
<td>14</td>
<td>Deciding to Build: U. organization and the design</td>
</tr>
<tr>
<td>7-Mar</td>
<td>15</td>
<td>Historical methods</td>
</tr>
<tr>
<td>9-Mar</td>
<td>16</td>
<td>Bilello: A History of American Architectural Practice</td>
</tr>
<tr>
<td>21-Mar</td>
<td>17</td>
<td>Experimentation</td>
</tr>
<tr>
<td>23-Mar</td>
<td>18</td>
<td>Wind Engineering Research Center</td>
</tr>
<tr>
<td>28-Mar</td>
<td>19</td>
<td>Beltran on lighting research</td>
</tr>
<tr>
<td>30-Mar</td>
<td>20</td>
<td>Perl on statistical standard/standard deviation</td>
</tr>
<tr>
<td>4-Apr</td>
<td>21</td>
<td>Appropriate Technology</td>
</tr>
<tr>
<td>6-Apr</td>
<td>22</td>
<td>Attend thesis reviews</td>
</tr>
<tr>
<td>11-Apr</td>
<td>23</td>
<td>Architecture and health</td>
</tr>
<tr>
<td>13-Apr</td>
<td>24</td>
<td>Jones on design for the elderly/disabled</td>
</tr>
<tr>
<td>18-Apr</td>
<td>25</td>
<td>Community/urban/landscape design</td>
</tr>
<tr>
<td>20-Apr</td>
<td>26</td>
<td>Historic Preservation</td>
</tr>
<tr>
<td>25-Apr</td>
<td>27</td>
<td>Bilello on preservation technology</td>
</tr>
<tr>
<td>27-Apr</td>
<td>28</td>
<td>Thesis students forum</td>
</tr>
<tr>
<td>2-May</td>
<td>Summary and conclusion</td>
<td>course evaluation</td>
</tr>
</tbody>
</table>
Asking good questions

“It is not the answer that is critical, rather it is the asking of a good question “ (Ionesco)

• Think of and refine a good design research question that can sustain imaginative inquiry for a year or longer
Perform a literature review

1. Find out what is already known about the subject through doing a literature review.

2. After you know what is already known, your question may need to be reformulated so that you have a question in need of an answer, rather than a question that has already been answered.
Design a research method

1. Ask good questions: Figure out how to go about getting answers to your question, that is, design a research method for getting the information that could lead to an answer to your question.

2. This must be done extremely carefully because there are many potential pitfalls.
Understand and articulate values and bias
Understand and undertake Observation
Observation and measurement

- We observe the world through all the senses
- This diagram is a “soundscape” spectrogram of an undisturbed habitat in Borneo.
- A soundscape maps the sounds of a habitat by their pitch and loudness over time. Krause’s studies indicate that the soundscape of a given location will remain the same unless the habitat is disturbed by human activities.
Effectively Create and Use Surveys, Questionnaires, And Interviews
Strategically Analyze Data: quantitative and qualitative

12-9. Scenic quality inventory/evaluation rating criteria and score.
Understand and undertake Experimentation

• The basic modes of experimenting involve
  – conditions of being
  – interventions
• 6 different combinations (see text/handout)
• Right: the tornado canon at the Wind Science and Engineering Research Center at Texas Tech
Consuming and producing
Case Studies

Clockwise from upper left:
Bucky Fuller’s proposal for a dome on Manhattan, Nave of Romanesque church, Piazza d’Italia in New Orleans (Charles Moore, 1985)
Understanding Historical Research Methods in Architecture

Louis Sullivan (above) and (left) Carson Pirie Scott department store 1899-1904
Visual research methods and Graphic representation of research data

TRANSPORTATION

How do Americans move themselves and their stuff around?

- Persons employed in transportation occupations
- Number and type of vehicles
- Occupants killed in vehicile accidents

- 130,000,000 passenger cars
- 69,000,000 light trucks
- 7,000,000 commercial trucks
- 697,000 buses

- 1,200,000 freight cars
- 4,413 commuter rail cars

- 68 ferries
- 5,961 aircraft

- 2,160 on motorcycles
- 9,901 in trucks
- 22,416 in passenger cars
- 1,088 in aircraft
- 624 on trains

- 4,024,000 motor vehicles
- 70,000 water transportation
- 116,000 rail transportation
- 241,000 air transportation
Research Methods in Practice

faculty presentations (to help identify thesis advisors)

National Performance Criteria for Tornado Shelters

Federal Emergency Management Agency
Mitigation Directorate
Washington, D.C.
First Edition
May 26, 1999

Faculty research on disaster mitigation and historic preservation
Research on Practice

faculty presentations

Faculty research of practice—its history and current issues
Faculty presentations:

Purposes—learning of design research expertise and finding appropriate thesis advisors