Building Stories

RENEE CHENG
University of Minnesota
Title: Arch 5650: Building Stories elective course open to any M.Arch student, typically the class is composed of students from all levels of the program, some who have completed the required professional practice class and others who have not. Building Stories meets twice per week for seven weeks, falling within the School’s spring modular system. Two architects, one coming each Tuesday, the other each Thursday, do not need to coordinate with each other but are loosely linked by themes such as global practice or practice management.
THE CLIFF-HANGER

The cliff-hanger is a storytelling format employed by penny-dreadfuls, pulp-fiction, and action movie series. While stories from practice may lack car chases, they are full of charged human situations, financial drama and passionate design advocacy. These stories, told well, can rival any of Scheherazade’s Thousand and One Nights.

EVERYONE HAS A STORY TO TELL

Building Stories’ prime objective is to address the most difficult to teach areas of professional practice, those underserved areas without a home in professional curricula.

Most practitioners have one or two very knowledgeable colleagues they turn to for advice on project management, contracts or conflict resolution. Most will also be able to name a few colleagues who are natural teachers, who can explain even complex things to a relative novice. Unfortunately for the schools, the overlap between these two sets is extremely small, explaining why there are so few excellent professional practice teachers. Compounding this problem is the fact that teaching is hard. Teaching when the students have no immediate “need to know” is practically impossible. If a student needs to know the size of a structural member or the rise-to-run ratio of an ADA compliant ramp in order to advance their design, they are extremely receptive to anyone providing tools or information that will meet their need. Building Stories places students in the position where they urgently need to know how to address difficult practice issues.

Building Stories, a course developed by two full-time faculty with extensive expertise in documenting case studies, uses a cliff-hanger format. Some of the most fascinating stories from practice fall within areas that are notoriously difficult to teach in a classroom setting: financial, contractual, personnel, management, etc. Stories can be told during internship mentoring, but an effective academic setting can make learning targeted, consistent and accessible to larger numbers of students.

This professional practice elective has been offered to M.Arch students since 2009. Building Stories meets twice per week for seven weeks, falling within the School’s spring modular system. Two practitioners, one coming each Tuesday, the other each Thursday, do not need to coordinate with each other but are loosely linked by themes such as global practice or practice management.

Non-faculty practitioners who have detailed knowledge of the project join discussions. By placing the students in the shoes of the practitioners, Building Stories makes the minutiae of practice mesmerizing.

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ONE FORMAT / MANY STORIES

Building Stories is a framework that can support a variety of project stories told from a variety of points of view.

STORY #1: THE DETAILS

PLOT: Architect 1, specialist in detailing of high profile design projects, covered construction conflict resolution. Each session addressed a different detail condition. Students were given the design intention, climate information, primary materials, structural dimensions and HVAC clearances. Students researched manufacturers and precedent studies to produce wall sections. Sections were reviewed according to criteria of design consistency, appropriate thermal and water management. Group discussed cost, material specification, construction sequence, tolerances, trade sequence and other issues related to construction and design. After reviewing the student’s work, the practitioner revealed the actual completed detail. Non-faculty partner of Architect 1 actively participated in developing course material and plans to attend discussions this spring.

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STUDENT PROPOSAL

ACTUAL RESOLUTION

STORY #2: MANAGEMENT

PLOT: Architect 2, a project manager working for a large contractor, covered project and practice management issues. Each class session focused on a different aspect of the same project, the renovation of the contractor’s own office. Over the course of the project, the budget and scope tripled and major strategic planning and marketing issues were raised. Students were asked to diagram decision-making structures, distinguish the umbrella construction company from the sub-groups managing buildings and performing construction services. Students were also asked to outline a strategy for resolving issues, such as steps to terminate the contract for a consultant.

CLIFF-HANGER: Architect 1, specialist in detailing of high profile design projects, covered construction conflict resolution. Each session addressed a different detail condition. Students were given the design intention, climate information, primary materials, structural dimensions and HVAC clearances. Students researched manufacturers and precedent studies to produce wall sections. Sections were reviewed according to criteria of design consistency, appropriate thermal and water management. Group discussed cost, material specification, construction sequence, tolerances, trade sequence and other issues related to construction and design.

STUDENT PROPOSAL

ACTUAL RESOLUTION

STORY #3: DEVELOPING WORLD

PLOT: Architect 3 owned a small US firm working in developing countries. Stories from this session focused on a full range of issues in pre-design, project and practice management and entrepreneurship. Each class covered different design issues and construction issues. Non-faculty partner in the firm consists on story development and attends some discussions. Design case example: a church for a remote pilgrimage site in Madagascar regularly housing 500 people expanding to provide covered space for 2000. Students proposed ways that a low cost building could use limited materials, skills and transport. Discussion included project financing, risk management and entrepreneurship.

CLIFF-HANGER: Construction case: local architect stopped work on a project due to poor concrete. Students had to outline the plan of action, similar or different to responses typically followed in the US. In this case, students identified issues were both relational and technical. Discussions cover design in the developing world has relatively low cost of labor, high cost of materials/transport, unstable governments, and politics of NGOs.

STUDENT PROPOSAL

ACTUAL RESOLUTION

STORY #4: BUILDING AN ICON

PLOT: Architect 4 owns a firm known for iconic buildings in the Middle-east. Stories covered the full range of issues similar to 3 above, except with an emphasis on commercial strategies used with high profile clients. Each class covered different projects, revealing firm business strategies, risk management and marketing negotiations. Students were asked to make mock presentations, evaluate risks for business opportunities and recommend ways that American architects can position themselves in niche markets abroad.

CLIFF-HANGER: Construction case: local architect stopped work on a project due to poor concrete. Students had to outline the plan of action, similar or different to responses typically followed in the US. In this case, students identified issues were both relational and technical. Discussions cover design in the developing world has relatively low cost of labor, high cost of materials/transport, unstable governments, and politics of NGOs.

STUDENT PROPOSAL

ACTUAL RESOLUTION
Walker Hennepin Facade
GLASS TO ROOF DETAIL

Project: Walker Center Facade
Location: Minneapolis
Instructor/Architect: John Cook, HGA
Theme: Details
Student: Katy Dale

Problem is described by practitioner, John Cook, executive architect, explaining design goals of the glass to roof connection of Walker Art Center by design architects Herzog and de Meuron.
Sketch from architect John Cook describing the minimum dimensions and clearances that the students must incorporate into their design.
Walker Hennepin Facade
GLASS TO ROOF DETAIL

What are the systems?

Glazing:
- exterior insulated glass
- interior single pane glass

Structure:
- steel frame - W12 beams
- 3"x5" lateral resistant column
- 3"x5" load bearing steel column

Roof:
- structural deck with pavers

Interior:
- ceiling finish system

Other:
- utilities? (MEP, HVAC, FP)

Student, Katy Dale, initial sketch identifying key areas of the wall section she proposes
**Exterior Glazing**

**Considerations:**

Vertical mullion for insulated glass; Butt glazing insulated glass is not recommended; deflection may cause premature failure

Walker window detail from Assign #4

Student sketch and reference source for how mullion and glazing might be handled
**Structure**

Considerations:

Primary steel structure
- size & spacing

Roof deck
- type
- thickness

Transition to 3”x5” steel column
- welded?
- bolted?
Roofing System

Considerations:
Leveling paver pedestal system
Insulation/waterproofing membrane
1/4"/12" slope to interior roof drain

Student sketch and reference of generic roof layers applied to this particular situation
**Cantilever to Exterior Glass**

**Considerations:**
- Minimize depth of roof/ceiling assembly at glass
- Roof deck termination
- Finished soffit
- Electrical lighting

Student sketch of support for cantilevered segment of roof parapet
ARCH 5650 BUILDING STORIES

DEVELOPMENT

WALKER HENNEPIN FACADE
GLASS TO ROOF DETAIL

JOHN COOK
VICE PRESIDENT, HGA

Actual realized detail by instructor
Comparison of actual detail on left and student proposed detail on right shows all basic systems were addressed with different, but feasible alternatives.
Mortenson Campus

Linda Morrissey
Senior Construction Manager
Mortenson Construction

Project: Mortenson HQ Entry
Location: Minneapolis
Instructor/Architect: Linda Morrissey
Theme: Details
Student: Eric Stowers

Project management of a new entry sequence for an existing office complex
Focus on decision making and schedule.
Mortenson Campus

**Student work showing diagram of tasks and project phases on timeline**

**ENTITLED ACTING AS OWNER:** M.A. MORTENSON COMPANY

**BUILDING OWNERS:**
- 700 M.A. MORTENSON COMPANY
- 4000 NORTH WIRTH ASSOCIATES

**ARCHITECT:** RSP ARCHITECTS

**DELIVERY METHOD:** DESIGN_BUILD

**PRIMARY USER GROUP:** MORTENSON CONSTRUCTION

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**RFP**

**FACILITY STUDY**

**COST MODEL**

**PROJECT APPROVAL**

**CONSTRUCTION DEMOLITION**

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**INITIATION MTG**
- LINDA + DAVID
- 2007.07.11

**DEPARTMENTAL PROGRAMMING**
- PERSONAL NORTH_WIRTH

**PRELIM SEQUENCING**
- WHEN = 22 PHASES

**TENANT IMPROVEMENT (OFFICE) EXPEDITED**

**PRELIM SITE_ENTRY CONCEPTS**
- PRELIM CONFERENCE CONCEPTS

**SHAPE TO SERVICE**

---

**RSP ARCHITECTS**
- KKE ARCHITECTS
- ARCHITECTURAL ALLIANCE

**RSP ARCHITECTS**
- RSP ARCHITECTS
- RSP ARCHITECTS

**4000 LOWER LEVEL CORRIDOR**

**RAMP STAIR ENCLOSURE (2)**

**NEW PARKING TUNNEL**

**MAINTENANCE UPGRADE**

**EXISTING TUNNEL UPGRADE**

**FRONT PLAZA CANOPY**

**NEW ROOFTOP AHU’S**

**EXERCISE ROOM**

**LOADING DOCK**

**NEW ROOFTOP AHU’S**

---

**SINGLE ENTRY**

**CENTRALIZED CONFERENCE**

**SITE CIRCULATION, PARKING RECONFIG**

**BELOW GRADE EXPANSION**

**NEW LINK AT GRADE**

**NEW SITE PAVING, SIDEWALKS**

**RENOVATE / RELOCATE**

**NEW PARKING TUNNEL**

**RAMP STAIR ENCLOSURE (2)**

**MAINTENANCE UPGRADE**

**EXISTING TUNNEL UPGRADE**

**FRONT PLAZA CANOPY**

**NEW ROOFTOP AHU’S**

**RENOVATE / RELOCATE**

---

**CONSTRUCTION MANAGEMENT**

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**1. AS IS CONDITION**

**GROWTH INTO 4000 SPACE AS AVAIL**

**2. BUY OUT 4000 LEASES**

**CONVERT 700, MULTI-TENANT**

**3. ADD 2 FLRS TO 4000**

**CONVERT 700, MULTI-TENANT**
Mortenson Campus

student work

SCHOOL OF ARCHITECTURE - UNIVERSITY OF MINNESOTA

PROFESSIONAL PRACTICE MODULE

ARCH 5650 BUILDING STORIES

CONSTRUCTION MANAGEMENT

Mortenson Campus

student work

CHARACTER INTERACTION

M.A. ‘Mort’ Mortenson

Tom Gunkel

David Mortenson

Linda Morrissey

Jim Lesinski

David Mortenson

Executive Vice-President

Linda Morrissey

Sr. Pre-construction Manager

Jim Lesinski

President & CEO

Tom Gunkel

Executive Vice-President

Jim Lesinski

President & CEO

THE EVENT WITH THE GREATEST IMPACT

_The event with the greatest impact thus far is the facility analysis that revealed many surprises and challenges._

_The facility analysis revealed numerous needs and challenges, significantly boosting the project scope._

_The facility analysis was conducted to determine whether to renovate or relocate._

_The facility analysis revealed many surprises and challenges._

_INTERVIEW & HIRE RSP ARCHITECTS_

_PROJECT LEADERS _REGULAR COMMUNICATION BETWEEN LINDA MORRISSEY (SR. PRE-CONSTRUCTION MANAGER) AND DAVID MORTENSON (EXECUTIVE VP)_

_PROJECT BRIEF_

_M.A. Mortenson Construction Company acting as owner, design/builder, and primary user._

_The project is a pre-construction study with no schematic construction offices._

_POTENTIAL OPTIONS_

_LISTENING PROJECT STRUCTURE WHERE THE MORTENSON CONSTRUCTION COMPANY ACTS AS GENERAL CONTRACTOR FOR SELF._

 компании background

_M.A. Mortenson Construction Company acting as owner, design/builder, and primary user._

_The company is a privately held construction company with six geographic construction offices._

_The event with the greatest impact thus far is the facility analysis revealed many surprises and challenges._

_QUESTION & PROJECTIONS: WHAT IF?_

_What if David Mortenson had not made the budget error? How will this affect the future of the project?_ The company's budget will be impacted.

_What if a different architecture firm was selected? Would the facility analysis have been different?_ There would likely be a different facility analysis.

_What if the design team did not take the budget error into account when designing the project?_ The design team would have had to incorporate cost-saving measures.

_What impact will the design team's response to the budget error have on the future of the project?_ The project's future will be impacted by the design team's response.

_What can the team do to mitigate the impact of the budget error?_ The team can work to increase efficiency and reduce costs.

_What will be the impact on the company's reputation?_ The company's reputation may be affected.

_company background_

_M.A. Mortenson Construction Company acting as owner, design/builder, and primary user._

_The company is a privately held construction company with six geographic construction offices._

_The event with the greatest impact thus far is the facility analysis revealed many surprises and challenges._

_QUESTION & PROJECTIONS: WHAT IF?_

_What if David Mortenson had not made the budget error? How will this affect the future of the company?_ The company's financial stability will be impacted.

_What if a different architecture firm was selected? Would the facility analysis have been different?_ There would likely be a different facility analysis.

_What if the design team did not take the budget error into account when designing the project?_ The design team would have had to incorporate cost-saving measures.

_What impact will the design team's response to the budget error have on the future of the company?_ The company's future will be impacted by the design team's response.

_What can the team do to mitigate the impact of the budget error?_ The team can work to increase efficiency and reduce costs.

_What will be the impact on the company's reputation?_ The company's reputation may be affected.

_student work showing diagram of organizational chart, timeline of who was involved at what time in the project sequence_
The student response to the problem posed by the practitioner, Poul Bertleson. The problem was how to achieve a king post structure for the roof of this new construction without the use of scaffolding, cranes or other expensive mechanical devices. Labor is inexpensive but structural material and machines are limited. This student considered several options based on historical examples of block and tackle and from simple jack tools assumed to be available.
Project: Weisman Art Museum, University of Minnesota
Location: Minneapolis
Instructor: Tom LaSalle, LaSalle Group (owner’s rep)
Guests from Frank Gehry’s office
Theme: Project Management
Student: Rob Holley

The problem was how decisions were made in the design of the addition to the Weisman Art Museum. Since several members of the team were in class, students notes focused on the decision making process and outcomes of team success.
Syllabus

COURSE DESCRIPTION

Professional practice education by means of case study analysis
Prerequisites: None (although Arch 5621 Professional Practice is advantageous)
Teaching Format: 7 week half-semester module, five hours per week, two sessions of two and half hours each.

COURSE OBJECTIVES
The intent of this class is to provide a structure where practitioners can share lessons learned through their own experience with minimal preparation and while offering maximum learning to the student.

This course will enable the students to:

1. Acquire practice knowledge through case studies analysis and professional practice simulation,
2. Understand practice knowledge through decision-making processes to resolve cases at critical moments, and
3. Work collaboratively with peers and practicing professionals to learn about the dynamics of practice.

INSTRUCTORS
Reflective practitioners have much to offer students. Through their experiences with real-projects of varying complexity and types, they can impart specific knowledge and introduce broad principles that are critical to the daily practice of architecture.

Renee Cheng, Professor, author of this course
Contact: rcheng@umn.edu
Office Hours: Thursdays 2:30-3:30 Rapson 101, Wednesdays 10-11 MacNeal 32

Julie Macleod
Contact: jom.macleod@gmail.com
Office Hours: email to arrange

Nathan Knutson, AIA, LEED AP Managing Principal, VJAA, Minneapolis, MN
Contact: nathan-knutson@vjaa.com
Office Hours: email to arrange
COURSE TOPICS
Focus of this version of Building Stories will be design and program as a primary driver of architecture. There are many times over the course of a project where the design ideas are challenged by logistical, programmatic, cost or other factors. Two practitioners with extensive design practice experience will share their stories of working in high stakes design projects. Julie Oseid MacLeod will use the Princess Nora University (the largest University for women in the world) as a base for her stories. Nathan Knutson will focus on program as driver of design in VJAA’s 2015 PanAm games, Tulane and St. John’s projects.

COURSE STRUCTURE
The course has two parallel courses embedded within its structure. Each week we will alternate between presentations of case study examples of the instructor’s professional practice projects followed in the next week by critique/comparison/discussion of student’s proposed resolutions of case studies.

Alternating Weeks: Presentation of Cases
Instructors will use diagrams, drawings, images, models and other media to explain case study projects and frame a decision moment during the project development. The case will be used to elicit questions about the project and to set the framework for the week’s assignment.

Alternating Weeks: Review of Student Analysis of Cases
Students will be asked to speculate on the possible ways to address the critical moment by presenting a decision-making path and proposed solution.

SCHEDULE

Julie Macleod: 2 ½ hour class session on Tuesday

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<thead>
<tr>
<th>Week</th>
<th>Course Topic</th>
<th>Notes</th>
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<tr>
<td>01</td>
<td>Introduction</td>
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<td>02</td>
<td>Case Context</td>
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<td>03</td>
<td>Case Issue #1 Assignment</td>
<td>Case Issue #1 Discussion</td>
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<td>04</td>
<td>Case Issue #2 Assignment</td>
<td>Case Issue #2 Discussion</td>
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<td>05</td>
<td>Student Presentations</td>
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<td>06</td>
<td>2 Hour Work</td>
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<td>07</td>
<td>Student Presentations</td>
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<td>2 Hour Work</td>
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ILLUSTRATED NOTEBOOK ASSIGNMENT

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<tr>
<th>Case #1</th>
<th>In-class Example</th>
<th>How to Set Up a Problem &amp; Propose a Solution</th>
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<td>Discussion Case #1</td>
<td>Case #1 Discussion</td>
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<td>3 Student Presentations</td>
<td>Case #1 Discussion</td>
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<td></td>
<td>3 Student Presentations</td>
<td>Case #2 Discussion</td>
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Nathan Knutson: 2 ½ hour class session on Thursday

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POLICIES
Assignments:

Student work will consist of two case study analyses – one for each instructor’s sequence. Deliverables will vary depending on case type and theme. Case analysis assignments should require students to clearly present their thought process as it led them to their proposed solution, decision or course of action. This may be in the form of sketch-quality drawings, precedent analysis, text or diagrams as prescribed by the instructor. Students should expect to devote 12 hours for each of the two analysis exercises. Each case analysis assignment will have detailed expectations and describe deliverables estimated to fit within this time frame.

Project Notebook

Each student will be required to complete a detailed notebook with sketches that gives evidence to the understanding of each case as well as the ability to analyze, argue, communicate, decision-make, defend, reason and research each case independently (see description on last page of syllabus).

Reading

No readings are required but numerous reference materials will be needed including: Architects Handbook for Professional Practice and Architectural Graphic Standards

Attendance

Format of this course makes it extremely difficult to accommodate absences. Absences may be grounds for failure or withdrawal at the discretion of the instructor.

Grading

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<thead>
<tr>
<th>Activity</th>
<th>% of final grade</th>
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<tbody>
<tr>
<td>Knutson Case Analysis: Content &amp; Presentation</td>
<td>25%</td>
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<tr>
<td>Macleod Case Analysis: Content &amp; Presentation</td>
<td>25%</td>
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<tr>
<td>Notebook: Content &amp; Presentation</td>
<td>40%</td>
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<tr>
<td>Class participation</td>
<td>10%</td>
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<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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Final grades will be based on the following University Grading Policy:

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<tr>
<th>Grade</th>
<th>Points</th>
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<tr>
<td>A outstanding work</td>
<td>90-100</td>
</tr>
<tr>
<td>B more than required</td>
<td>80-89</td>
</tr>
<tr>
<td>C meets requirements</td>
<td>70-79</td>
</tr>
<tr>
<td>D less than required</td>
<td>60-69</td>
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<tr>
<td>F failed, insufficient work</td>
<td>60 or below</td>
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Late Work
Late work will be accepted only at the discretion of the instructor and is subject to 1/3 grade deduction for every 24 hours past the deadline.

Incomplete Work
Incomplete work will not be accepted without instructor’s prior approval and written agreement as to revised due dates and grading policy. The grade of incomplete can only be given if the work is substantially complete and the student has documentation of illness or extreme circumstances.

Project Notebook Requirements
Compile all required content in a thoughtfully designed bound notebook, electronic or hard copy. There must be an identifying cover and spine on the binder for hard copy. Partition and sub-divide each topic in a way that helps to organize the information. You will be graded on the clarity of this organization, graphic composition as well as the content. Use color to separate text from annotation.

Notebook Contents (minimum required content)
- Complete and legible seminar notes, text and graphics as appropriate
- Annotated relevant information distributed during class
- Design sketches of problems posed and solutions offered - DO NOT reprint moodle
- unless you annotate to show why you are including
- Analysis of problems posed and solutions offered, use color to show your comments
- Photographs (edited and annotated)
- Strategy and solution for individual assignment
- Critique of individual assignment
- Annotated Bibliography: Sources of information (Including Web)
- Additional materials for at least 25% of the class sessions
- Name (or Initials) and Date on every entry (in a consistent location)