Three studio critiquing cultures:
Fun follows function or function follows fun?

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Presentation structure

› Research motivation and questions

› Methodology

› Findings

› Conclusions

› Recommendations
To investigate differences and communalities in contemporary reviewing and critiquing cultures in three design disciplines: architecture, industrial design and mechanical engineering (with an emphasis on excitement and fun).
Research questions

Q.1
› Are skill-building and knowledge transfer evident in studio reviews?

Q.2
› What takes precedence: product performance or a fun/exciting outcome?

Q.3
› What are the teaching profiles of teachers and external reviewers?

Q.4
› Is learning augmented by meta-discussions in final reviews?

Q.5
› To what extent are teachers involved in the development of students’ design projects?

Q.6
› Do reviews focus on the design process? On the design product?
Methodology

Purdue dataset (+ Arch protocols)

Questionnaire

Mean scores into verbal scores

- Mechanical Engineering
- Industrial design (Junior + Grad)
- Architecture
- Reviewing model
- Task construal
- Design process and evaluation
- Studio ambiance
- High
- Medium high
- Medium low
- Low
<table>
<thead>
<tr>
<th>CONTEXT</th>
<th>Architecture</th>
<th>Industrial Design - Junior</th>
<th>Industrial Design - Graduate</th>
<th>Mechanical Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>D-search</td>
<td></td>
<td></td>
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<tr>
<td></td>
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</tr>
</tbody>
</table>

### SESSION INFORMATION (6 items)

- Percentage of reviewer(s) speaking time:
  - Ses. 1: 62%
  - Ses. 2: 74%
  - 2nd Rev.: 75%
  - Client Rev.: 29%
  - Final Rev.: 27%
  - D-search: 31%
  - Concept Rev.: 82%
  - Client Rev.: 32%
  - Final Rev.: 16%
  - Final Deb.: 75%

### A- REVIEWING MODEL (7 items)

- The reviewer(s) participate(s) in choosing ideas:
  - A7: 1.0, 4.0, 4.9, 1.5, N/A, 1.0, 3.0, 4.3, 1.0, 1.0, N/A

### B- TASK CONSTRUAL (8 items)

- There is an emphasis on achieving a “cool” “fun” exciting product that caters to emotions:
  - B5: 2.0, 2.0, 4.7, 3.0, 3.8, 3.0, 3.6, 3.0, 1.5, 2.3, 1.0
## Questionnaire - Examples

### CONTEXT
- Architecture
- Industrial Design - Junior
- Industrial Design - Graduate
- Mechanical Engineering

### SESSION
- Ses. 1
- Ses. 2
- 2nd Rev.
- Client Rev.
- Final Rev.
- D-search
- Concept Rev.
- Client Rev.
- Concept Rev.
- Final Rev.
- Final Deb.

### C - DESIGN PROCESS AND EVALUATION (10 items)

<table>
<thead>
<tr>
<th></th>
<th>Architecture</th>
<th>Industrial Design - Junior</th>
<th>Industrial Design - Graduate</th>
<th>Mechanical Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2</td>
<td>A commitment to the initial analysis is expressed</td>
<td>1.0</td>
<td>2.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

### D - STUDIO AMBIANCE (6 items)

<table>
<thead>
<tr>
<th></th>
<th>Architecture</th>
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<th>Industrial Design - Graduate</th>
<th>Mechanical Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>D3</td>
<td>The reviewer(s) act(s) as an expert/source of authority</td>
<td>4.0</td>
<td>3.0</td>
<td>4.1</td>
</tr>
<tr>
<td>D4</td>
<td>The reviewer(s) act(s) as a supporting &quot;buddy&quot;</td>
<td>1.0</td>
<td>1.0</td>
<td>1.3</td>
</tr>
<tr>
<td>D5</td>
<td>The reviewer(s) act(s) as a coach/facilitator</td>
<td>4.0</td>
<td>5.0</td>
<td>4.7</td>
</tr>
</tbody>
</table>

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Findings – Educational goals and priorities over time

Three studio critiquing cultures: Fun follows function or function follows fun?

DTRS’10 – Purdue university, October 2014
Findings – Teaching profiles

TEACHING MODEL
coach <> authority <> ‘buddy’

ARCH  IDJ  IDG  ME
high   high   high   low
med-high   med-high   med-high  low
high→low  low   med-low  med-low
med-low  high   low   low

DESIGN REVIEW

INSTRUCTIONAL STRATEGIES
knowledge <> skills ; sketching

ARCH  IDJ  IDG  ME
high   low   high   high
med-low  med-low  low   high
med-low  med-low  low   low
low   high   low   low

TEACHERS’ INVOLVEMENT
proposing ideas ; choosing ideas

ARCH  IDJ  IDG  ME
high   high→low  high  high
high   high  high   high
med-low  low   med-low   low
med-low  low   med-low  low
Findings – Student/teacher interaction

### SPEAKING TIME

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>high</td>
<td>low</td>
</tr>
<tr>
<td>high</td>
<td>low</td>
</tr>
<tr>
<td>high</td>
<td>low</td>
</tr>
<tr>
<td>low</td>
<td>high</td>
</tr>
</tbody>
</table>

### DESIGN REVIEW

### PEER PARTICIPATION

<table>
<thead>
<tr>
<th>Student Participation</th>
<th>voluntary</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH</td>
<td>low</td>
</tr>
<tr>
<td>IDJ</td>
<td>low</td>
</tr>
<tr>
<td>IDG</td>
<td>med-low</td>
</tr>
<tr>
<td>ME</td>
<td>low</td>
</tr>
</tbody>
</table>

### META DISCUSSION IN FINAL REVIEW

<table>
<thead>
<tr>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH</td>
</tr>
<tr>
<td>IDJ</td>
</tr>
<tr>
<td>IDG</td>
</tr>
<tr>
<td>ME</td>
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</tbody>
</table>

- low (with debrief: high)

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Findings – Contribution by teachers vs. reviewers

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Conclusions – Learning objectives

<table>
<thead>
<tr>
<th>Mechanical engineering</th>
<th>Industrial design</th>
<th>Architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skills acquisition (knowledge to be acquired alone)</td>
<td>Skills + knowledge</td>
<td>Skills + knowledge</td>
</tr>
<tr>
<td><strong>Performance driven; Focus on need satisfaction</strong></td>
<td><strong>Innovation driven; Focus on need discovery</strong></td>
<td><strong>Creativity driven; Focus on need satisfaction in new ways</strong></td>
</tr>
<tr>
<td>Full functionality requirements (functioning prototype)</td>
<td>Prototype level functionality requirements (partially conceptual)</td>
<td>Graphic simulation level requirements (largely conceptual)</td>
</tr>
</tbody>
</table>

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## Conclusions – Pedagogical strategies

<table>
<thead>
<tr>
<th>Mechanical engineering</th>
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<th>Architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teacher profile:</strong> Expert / Authority, Coach; <strong>External reviewers:</strong> Experts / Authorities</td>
<td><strong>Teacher profile:</strong> Coach, expert¹; <strong>External reviewers:</strong> Experts / Authorities</td>
<td><strong>Teacher profile:</strong> Coach, expert; <strong>External reviewers:</strong> Data not available¹</td>
</tr>
<tr>
<td><strong>Coaching:</strong> socialization into profession (practice)</td>
<td><strong>Coaching:</strong> assistance in sorting alternatives, examples / precedents; Socialization into professional practice</td>
<td><strong>Coaching:</strong> assistance in sorting alternatives; examples / precedents; Demonstrating (sketching)</td>
</tr>
<tr>
<td>Checklist assessment</td>
<td>Open-ended assessment</td>
<td>Open-ended assessment</td>
</tr>
<tr>
<td>Work in teams with heterogeneous disciplinary roles</td>
<td>Individual work¹</td>
<td>Individual work or small teams with homogeneous disciplinary roles</td>
</tr>
<tr>
<td>Realistic project with teacher as surrogate client</td>
<td>Realistic project with real clients</td>
<td>Realistic project with real clients¹</td>
</tr>
</tbody>
</table>

¹ In some respects the available data is not typical of design education.
### Conclusions – Crit and review contents and purpose

<table>
<thead>
<tr>
<th>Mechanical engineering</th>
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<th>Architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus on product, then process</td>
<td>Focus on process, then product</td>
<td>Focus on process, then product</td>
</tr>
<tr>
<td>Meta discussion mainly focused on lessons related to future professional practice</td>
<td>No meta discussion</td>
<td>Norm: Meta discussion to augment learning opportunities</td>
</tr>
</tbody>
</table>
Conclusions – Summary and added value

<table>
<thead>
<tr>
<th>Mechanical engineering</th>
<th>Industrial design</th>
<th>Architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rigid performance criteria; Performance centered</td>
<td>Relaxed performance criteria; Exciting product centered</td>
<td>Tradeoffs; Exciting style centered</td>
</tr>
</tbody>
</table>

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Recommendations – Cross disciplinary best practices

1. **Function and fun are not contradictions.** Both are desirable in design outcomes and reviewers of all types should encourage a synergy between them.

2. Crits should **focus on both skill and knowledge** acquisition.

3. One or another kind of **checklist** containing criteria for the assessment of **design outcomes** is relevant to all design disciplines.

4. **Meta-discussions** regarding broad design issues can augment deep learning opportunities in all design disciplines.

5. **Students** (peers) should be **involved in critiquing** and reviewing in all design studio settings.
6. **External reviewers** of various kinds are essential in all disciplines.

7. The discussion of **examples and precedents** helps build an inventory of cases, thus advances expertise.

8. In all design disciplines there is a need to cover the spectrum from preliminary scheme to realization (production, manufacturing, assembly, construction) and more generally, the **entire life-cycle of the product**.

9. **Process management** should be emphasized in all studio settings.

10. There is an acute need for a comprehensive **theory of design pedagogy** that would also lead to **training programs** for design teachers.
THANK YOU