Crowdsourcing in architecture as a collaborative design method

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Introduction

Crowd-sourcing is an Internet based information goods production method that is used for intellectual challenges like idea generation, problem solving, classification, quality assurance and validation.

Architecture has been considered a form of fine art, but it is identified also as knowledge based industry, where architects apply existing knowledge to solve new problems (Porat, 1977) and is generated by collaboration of individuals and teams (Picon, 2016). This research will explore the crowd-sourcing model and its application to architecture.
Introduction

The research will explore and review the historic perspective of crowd-sourcing in architecture, the recent development of crowd-sourcing methods and the creative process of the architect. The tension between the author and the collaborative manner of architecture will be discussed as well as the interpretation of architectural creativity as top-down and bottom-up processes.
A crowd-sourcing model will be developed, applied, measured and studied in explorations and experiments. An architecture design competition will be selected in order to compare the output of the model to a control group - made out of professional architects.
Introduction

The new information technologies offer new possibilities in harnessing creativity from local and global crowds, suggesting to disrupt the perception of the genius architect with a bottom-up creative collaborative practice.
Is the crowd sourcing model an applicable production model for architecture?
Authorship & collaboration in architecture:

Design theory

Crowdsourcing design process

<table>
<thead>
<tr>
<th>Quality-control approach</th>
<th>Description</th>
<th>Sample application</th>
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<tbody>
<tr>
<td>Expert review</td>
<td>Domain experts check contribution quality.</td>
<td>Academic conferences and journals, Wikipedia, 3</td>
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<tr>
<td>Output agreement</td>
<td>If workers independently and simultaneously provide the same description for an input, they are deemed correct.</td>
<td>ESP Game</td>
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<tr>
<td>Input agreement</td>
<td>Independent workers receive an input and describe it to each other.</td>
<td>Tag-A-Tune</td>
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<td></td>
<td>If they all decided that it’s a same input, it’s accepted as a quality answer.</td>
<td></td>
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<tr>
<td>Ground truth</td>
<td>Compares answers with a gold standard, such as known answers or common sense facts to check the quality.</td>
<td>CrowdFlower, MTurk</td>
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<tr>
<td>Majority consensus</td>
<td>The judgment of a majority of reviewers on the contribution’s quality is accepted as its real quality.</td>
<td>TurKit, Threadless.com, MTurk</td>
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<tr>
<td>Contributor evaluation</td>
<td>Assesses a contribution based on the contributor’s quality.</td>
<td>Wikipedia, Stack Overflow, MTurk</td>
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<tr>
<td>Real-time support</td>
<td>Provides shepherding and support to workers in real time to help them increase contribution quality.</td>
<td>Reference 12</td>
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<tr>
<td>Workflow management</td>
<td>Designs a suitable workflow for a complex task; workflow is monitored to control quality, cost, and so on, on the fly.</td>
<td>References 13,14</td>
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Crowdsourcing critique

Preliminary model

Requirements
Defining the requirements, base model and solution space

Design
Model creation

Critique
Providing specific feedback to enhance the requirements

Reduce
Choosing the most fitting models
Research design and methodology

Studio experiment: Offline process with a small group of architects

Process evaluation: Experiment with an online process with a small group of architects

Quality evaluation: Experiment with a crowd of architects and evaluate the design quality in a design competition

Conclusions