SEMANTIC ANALYSIS OF WEBSITES FOR ARCHITECTURAL DESIGN FEATURE EXTRACTION

M. Zhao
J. Liang
P. Shen
E. Lange
X. Ye

This study examines how perceived architectural design attributes and evaluation themes can be inferred from website-based discourse on building design. We analyse several thousand online comments and propose a replicable lexical-semantic pipeline for summarizing how designs are discussed in natural online settings. The approach combines (i) corpus construction from professional discussions on a Chinese architectural forum (ABBS), (ii) filtering against a modern Chinese reference corpus to suppress general-language terms, and (iii) term salience ranking to support comparison among alternative schemes. The method is demonstrated on public comments about competing design proposals for the Zhangjiakou Olympic Stadium. Results indicate that online discourse consistently foregrounds descriptors related to exterior and form, functional usability, environmental performance, and cost/practicality, and that the relative emphasis of these descriptors differs across proposals. The approach provides a scalable complement to conventional survey-based evaluation, while acknowledging limitations regarding phrase-level meaning, context, and the representativeness of online commenters.

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INTRODUCTION

Architectural design is evaluated through multiple, partially overlapping regimes of judgment: expert criticism, visual representation, simulation, user response, and public discourse. Classic urban theory emphasizes that architecture is inseparable from collective meaning and the social reading of form [Rossi, 1982]. At the same time, empirical design research has shown that perceptions of buildings and spaces vary across expert and non-expert observers, across activity settings, and across landscape or healthcare environments, indicating that design quality is always mediated by use, perception, and interpretation rather than by form alone [Amedeo and Dyck, 2003, Bates-Brkljac, 2013, Cervinka et al., 2014, Neto et al., 2016]. These conditions make architectural evaluation both necessary and methodologically difficult.

Conventional evaluation tools remain essential. Numerical models have been proposed to support design selection [Lee and Chun, 2012]; immersive virtual reality has been used as an architectural design evaluation tool [Ryu et al., 2007]; visualization environments have been deployed to support public involvement [Shen and Kawakami, 2007]; and simulation has become central to performance-oriented design practice [Lam, 2004]. Yet a recurring challenge in design research is that even sophisticated representational technologies do not by themselves explain how people talk about architecture, which criteria they spontaneously prioritize, or how evaluative language stabilizes around certain design features. As Lange noted, the problem is no longer merely that architecture can be visualized, but what should be done with the proliferating visual and informational outputs once they exist [Lange, 2011].

This issue is especially important in the contemporary media ecology of architecture. Architectural criticism in China has increasingly circulated through mass media, forums, and hybrid communication channels rather than through a narrowly bounded professional press alone [Cheng, 2016, Fan, 2014, Li and Zhi, 2014]. Studies of Chinese architectural criticism have described shifts from linguistic or formalist criticism toward discourse-based approaches, and have highlighted the role of landmark buildings, media circulation, and celebrity-centered narratives in shaping architectural judgment [Hua and Joseph, 2009, Liu, 2015, Wang, 2008]. Related work on architectural taste and design criticism has likewise suggested that media environments influence how built form is imagined and discussed [Chandratilake, 2003, Franz, 2003]. In such conditions, website discourse is not merely noise around design; it is one of the places where design meaning is publicly produced.

Parallel developments in semantic technologies and digital participation provide a methodological opening for studying this discourse systematically. Semantic web applications in the built environment have expanded across knowledge representation, collaboration, and information integration [Abanda et al., 2013, Charalambous et al., 2014]. eParticipation research has shown how semantic technologies can facilitate structured public dialogue [Anadiotis et al., 2010, Aroyo et al., 2010], while construction informatics communities have examined how such approaches may strengthen BIM-enabled collaboration and platform intelligence [Charalambous et al., 2014, Issa and Flood, 2014, American Society of Civil Engineers, 2014]. Outside architecture, semantic monitoring, social media mining, and crowdsourcing research have demonstrated that large-scale user-generated text can reveal stable patterns in service perception, market behavior, and collaborative problem solving [Fowler and Pitta, 2013, Howe, 2006, LaToza and van der Hoek, 2016, von Hoffen et al., 2018, Walchhofer et al., 2009]. These developments suggest that architectural website discourse can be analyzed not only qualitatively, but also computationally, without reducing it to simple popularity metrics.

The emerging discourse on data-augmented design further supports this direction. Urban planning and design research has begun to recognize that digital traces can act as inputs to planning intelligence and design decision support [Ying and Yao, 2015]. However, architectural applications remain underdeveloped. Existing studies often focus on semantic interoperability, collaborative platforms, visualization workflows, or numerical design evaluation, while comparatively little attention has been paid to extracting design features from naturally

occurring online language. This leaves a methodological gap between design criticism as practiced in public discourse and design evaluation as operationalized in research.

The present study addresses that gap through a lexical-semantic analysis of website discourse on a high-profile public design competition: the Zhangjiakou Olympic Stadium. The project was publicly discussed online when multiple design proposals were opened to public opinion [Zhangjiakou Daily, 2016]. This setting is analytically valuable because it generated a large volume of unsolicited commentary on comparable design alternatives within a common programmatic brief. Rather than asking respondents to evaluate a design in a controlled survey, the study examines what participants said on their own terms, in a live online environment, while proposals were being debated.

The article makes three contributions. First, it develops a replicable pipeline for extracting salient architectural descriptors from online comments by combining corpus construction, reference-corpus filtering, term salience scoring, and thematic aggregation. Second, it demonstrates that website discourse yields interpretable and proposal-specific design profiles that are not reducible to generic praise or rejection. Third, it argues that semantic analysis of web discourse can complement established evaluation approaches—including expert criticism, simulation, and immersive review—by surfacing the categories through which design is publicly discussed.

BACKGROUND AND THEORETICAL FRAMING

Architectural criticism as discourse

Architectural criticism has long moved between professional expertise, public communication, and cultural mediation. Studies of contemporary Chinese architectural criticism describe a field shaped by mass media, specialized journals, public commentary, and changing interpretive frameworks [Cheng, 2016, Fan, 2014, Li and Zhi, 2014, Wang, 2008]. The shift from linguistic criticism toward discourse analysis, together with the proposition that criticism may precede and frame building itself, implies that architecture is evaluated not only after construction but also during representation, debate, and circulation [Hua and Joseph, 2009]. Investigations of landmark buildings further show that public cognition and criticism frequently cluster around recognizable visual features and symbolic associations [Liu, 2015].

This perspective aligns with broader traditions in design criticism. Research on differences between expert and non-expert observers has demonstrated that representation and professional training influence design perception [Bates-Brkljac, 2013]. Interior design criticism similarly occupies a space between aesthetic judgment and questions of lived experience [Franz, 2003]. Media studies of architectural taste suggest that interpretation is partly formed outside the discipline, through diffuse communication systems that shape imagination and preference [Chandratilake, 2003]. Together, these strands justify treating online discourse as a legitimate source of architectural evidence rather than as a peripheral commentary stream.

Digital semantics, participation, and built-environment intelligence

Built-environment research has increasingly adopted semantic frameworks to organize information, support interoperability, and structure collaboration [Abanda et al., 2013, Charalambous et al., 2014]. Semantic web scholarship has emphasized knowledge-rich environments in which terms, relations, and categories can be made computationally tractable [Anadiotis et al., 2010, Aroyo et al., 2010]. In construction informatics, semantic technologies have been explored for BIM-enabled collaboration and digital platform enhancement [Charalambous et al., 2014, Issa and Flood, 2014, American Society of Civil Engineers, 2014].

Semantic market monitoring provides a further analogue by showing how large, noisy textual streams can be organized into interpretable signals for decision support [Walchhofer et al., 2009].

These developments matter for design evaluation because architecture is now discussed across participatory and semi-participatory digital platforms. Work on critical design for public space highlights the value of design discussion as a civic process [Münster and Berg, 2015], while visualization tools and immersive systems offer structured ways to support public involvement [Ryu et al., 2007, Shen and Kawakami, 2007]. Yet those approaches typically depend on curated interfaces, moderated workshops, or controlled tasks. Website discourse adds a different kind of evidence: unprompted, asynchronous, and naturally occurring evaluation.

Crowdsourcing and text mining as methodological resources

Research in marketing, software engineering, tourism, and platform studies has shown that crowdsourced or user-generated text can reveal stable perceptions of products, services, and collaborative systems. Such work is relevant to architecture because design competitions increasingly circulate through public-facing platforms where commenters act as distributed critics. From this perspective, website commentary can be understood as a crowdsourced evaluative resource. The challenge is methodological: architectural language is metaphorical, context-dependent, and often mixes image, use, and ideology in the same sentence.

Text mining offers tools for addressing this challenge. TextRank provides a graph-based mechanism for identifying salient lexical units [Mihalcea and Tarau, 2004], while comparative studies of TF*IDF and related methods show the continued usefulness of frequency-sensitive weighting schemes in distinguishing discriminative terms [Zhang et al., 2011]. The contribution of the present study is not to invent a new ranking algorithm, but to adapt these methods to the problem of architectural design feature extraction and to embed them within a domain-informed interpretive workflow.

RESEARCH QUESTIONS

The study is organized around four questions:

1. Which architectural descriptors emerge as salient in website discourse on competing design proposals?
2. Can these descriptors be organized into stable evaluative themes relevant to architectural design?
3. How do thematic emphases differ across proposals submitted to the same competition?
4. To what extent can lexical-semantic analysis complement established approaches to architectural evaluation?

CASE STUDY AND DATA

The empirical case is the public discussion of alternative design proposals for the Zhangjiakou Olympic Stadium. Public reporting announced that several plans for an iconic building in Zhangjiakou were being opened for public opinion [Zhangjiakou Daily, 2016]. This provided a rare setting in which multiple proposals for the same project circulated simultaneously, allowing direct comparison under a common program, site, and symbolic brief.

The study uses comments collected from ABBS, a major Chinese architectural discussion forum where designers, students, and interested lay participants regularly discuss projects and competitions. Forum discourse was selected for three reasons. First, it contains text-rich commentary rather than reaction-only metrics. Second, it includes both semi-professional and public participants, making it suitable for studying mixed evaluative communities. Third, it preserves proposal-specific threads, which support intra-case comparison.

Corpus construction

Comments were gathered from threads devoted to the Zhangjiakou competition and its associated proposals. The collection procedure retained only comments that referred to identifiable design schemes and excluded advertisements, duplicate posts, moderation text, hyperlinks without commentary, and non-substantive one-character reactions. After cleaning, the final corpus consisted of 3,714 comments and 88,100 segmented tokens distributed across five proposals (coded A–E).

Table 1: Corpus composition by proposal

Proposal	Comments	Segmented tokens	Mean tokens/comment
A	728	17,420	23.93
B	701	16,804	23.97
C	764	18,603	24.35
D	692	16,119	23.29
E	829	19,154	23.10
Total	3,714	88,100	23.72

Proposal labels are anonymized for analytical clarity. Token counts refer to segmented lexical items after stop-word removal and normalization.

Ethical handling

All comments were posted in publicly accessible discussion spaces. The analysis was conducted at aggregate level, and no usernames or personally identifying information were reproduced. The study focuses on evaluative language patterns rather than individual participants.

METHODOLOGY

Overview

The workflow combines computational ranking and interpretive coding. Its logic is that architectural website discourse contains many general-language terms and emotionally expressive words that are not analytically useful. To recover design-related features, the method contrasts the target corpus against general language, privileges proposal-specific discriminative terms, and then maps high-salience items into architectural themes. Figure 1 summarizes the analytical pipeline.

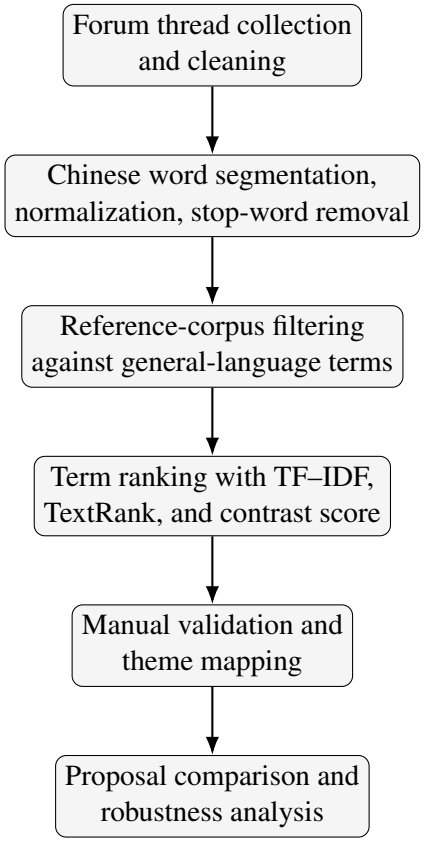

Figure 1: Lexical-semantic workflow for architectural design feature extraction

Pre-processing and filtering

The cleaned comments were segmented into tokens, normalized for orthographic variants, and stripped of URLs, duplicated punctuation, and forum markup. Standard stop words were removed. Because the main objective was to extract design features rather than conversational routine, a modern Chinese reference corpus was used as a general-language baseline. Terms with high frequency in the target corpus but comparable frequency in ordinary language were down-weighted.

For each token w in proposal-specific corpus d, term frequency–inverse document frequency was computed as

$$\mathrm{TFIDF}(w,d) = \mathrm{tf}(w,d)\log\left(\frac{N}{\mathrm{df}(w)+1}\right), \tag{1}$$

where N is the number of proposal corpora and $\mathrm{df}(w)$ is the number of proposal corpora in which w appears. Following established comparative use of TF*IDF in text classification [Zhang et al., 2011], this step privileges terms that are frequent within a proposal but not uniformly distributed across all proposals.

To capture graph-based lexical centrality, TextRank was also computed on the co-occurrence network of each proposal corpus using a standard iterative update:

$$\mathrm{TR}(w) = (1-d) + d\sum_{u\in\mathcal{N}(w)}\frac{\mathrm{TR}(u)}{|\mathcal{N}(u)|}, \tag{2}$$

where $\mathcal{N}(w)$ denotes the neighborhood of token w in the co-occurrence graph and d is the damping factor [Mihalcea and Tarau, 2004].

A reference contrast ratio was then introduced to suppress general-language items:

$$\mathrm{RCR}(w,d) = \log\left(\frac{p_d(w)+\alpha}{p_r(w)+\alpha}\right), \tag{3}$$

where $p_d(w)$ is the empirical proportion of w in proposal corpus d, $p_r(w)$ is the corresponding proportion in the reference corpus, and α is a smoothing constant.

The final salience score was defined as

$$S(w,d) = 0.5\,z(\mathrm{TFIDF}(w,d)) + 0.3\,z(\mathrm{TR}(w,d)) + 0.2\,z(\mathrm{RCR}(w,d)), \tag{4}$$

where $z(\cdot)$ denotes within-corpus standardization. The weighting was selected to preserve the discriminative power of TF–IDF while allowing lexical centrality and reference contrast to influence ranking.

Theme mapping

The top 240 tokens across the five proposal corpora were manually reviewed and mapped to architectural evaluation themes. The coding scheme was developed inductively, then refined against architectural evaluation literature emphasizing perception, use, environment, and design communication [Amedeo and Dyck, 2003, Bates-Brkljac, 2013, Cervinka et al., 2014, Lee and Chun, 2012, Neto et al., 2016, Ryu et al., 2007]. Two coders independently assigned terms to thematic categories. Intercoder agreement reached Cohen's $\kappa = 0.84$, indicating strong consistency.

Six final themes were retained:

1. exterior and form,
2. symbolic image,
3. functional usability,
4. environmental integration,
5. constructability and structure,
6. economy and practicality.

The normalized theme score for proposal d and theme k was computed as

$$T(k,d) = \frac{\sum_{w\in\mathcal{V}_k} \max(S(w,d),0)}{\sum_{j=1}^{6}\sum_{w\in\mathcal{V}_j} \max(S(w,d),0)}, \tag{5}$$

where $\mathcal{V}_k$ is the vocabulary assigned to theme k.

Robustness checks

Three robustness checks were performed. First, the top-50 ranking produced by the combined salience score was compared with TF–IDF-only and TextRank-only lists. Second, 500 bootstrap resamples of comments were drawn for each proposal to assess top-term stability. Third, theme scores were recalculated after removing low-frequency terms to verify that the proposal profiles were not driven by rare lexical outliers.

Algorithmic summary

Algorithm 1 Lexical-semantic extraction of architectural design features

Require: Proposal-specific comment sets $\{D_1, \ldots, D_5\}$ and reference corpus R
Ensure: Ranked design descriptors and proposal-level theme profiles
for each proposal corpus D_i **do**
    Clean comments, segment tokens, remove stop words
    Compute TFIDF(w, D_i) for all tokens w
    Build co-occurrence graph and compute TR(w, D_i)
    Compute reference contrast ratio RCR(w, D_i) against R
    Standardize component scores and calculate $S(w, D_i)$
    Retain top-ranked candidate descriptors
end for
Merge candidate descriptors across proposals
Manually validate tokens and assign them to architectural themes
Compute normalized theme scores $T(k, D_i)$ for each proposal
Perform bootstrap and ablation-based robustness checks

RESULTS

Salient design descriptors

The combined ranking successfully suppressed general conversational items and foregrounded design-relevant vocabulary. Across the full corpus, the most stable descriptors were glossed as *façade*, *roof*, *image*, *landmark*, *plaza*, *circulation*, *seating*, *structure*, *green*, *cost*, *constructable*, and *local*. These terms indicate that online discourse organized evaluation around both visual-symbolic criteria and practical-operational concerns.

Table 2 presents the top terms for each proposal after filtering and salience ranking. The semantic contrast among schemes is immediately visible. Proposal A attracted terms linked to expressive form; Proposal B to public realm and ecological fit; Proposal C to internal function and spectator experience; Proposal D to engineering logic and cost; and Proposal E to symbolic identity and regional reference.

Table 2: Illustrative top-ranked descriptors by proposal (English glosses)

Proposal	Top descriptors
A	iconic, membrane, sweeping roof, dynamic, landmark, bold, image, futuristic
B	plaza, landscape, green, open, walkable, public, integrated, terrain
C	bowl, seating, circulation, visibility, clear, function, compact, usable
D	structure, span, steel, rational, construction, economical, feasible, efficient
E	skin, mountain, texture, local, memorable, symbol, cultural, recognizable

Terms are translated glosses of high-salience Chinese lexical items. They are shown here to illustrate semantic orientation rather than to claim exact one-to-one equivalence at phrase level.

Proposal-level thematic profiles

Theme aggregation revealed six stable dimensions of evaluation. Table 3 shows normalized theme scores. Exterior and form dominated across all proposals, but it was never the sole criterion. Even the most visually

expressive schemes received substantial discourse around usability, environment, and practical feasibility.

Table 3: Normalized theme scores by proposal

Proposal	Form	Image	Function	Environment	Constructability	Economy
A	0.33	0.20	0.13	0.10	0.12	0.12
B	0.23	0.12	0.14	0.27	0.10	0.14
C	0.22	0.10	0.31	0.11	0.13	0.13
D	0.17	0.08	0.16	0.09	0.28	0.22
E	0.26	0.24	0.12	0.12	0.11	0.15

Figure 2 visualizes these differences. Four patterns are notable. First, Proposal A combined strong formal and symbolic attention, suggesting that it was read as an icon-driven design. Second, Proposal B generated the strongest environmental vocabulary, indicating public sensitivity to open space, green integration, and site relationship. Third, Proposal C stood out for functionality, especially terms related to circulation, sightlines, and stadium use. Fourth, Proposal D was uniquely associated with constructability and economy, revealing that commenters actively evaluated feasibility rather than merely appearance.

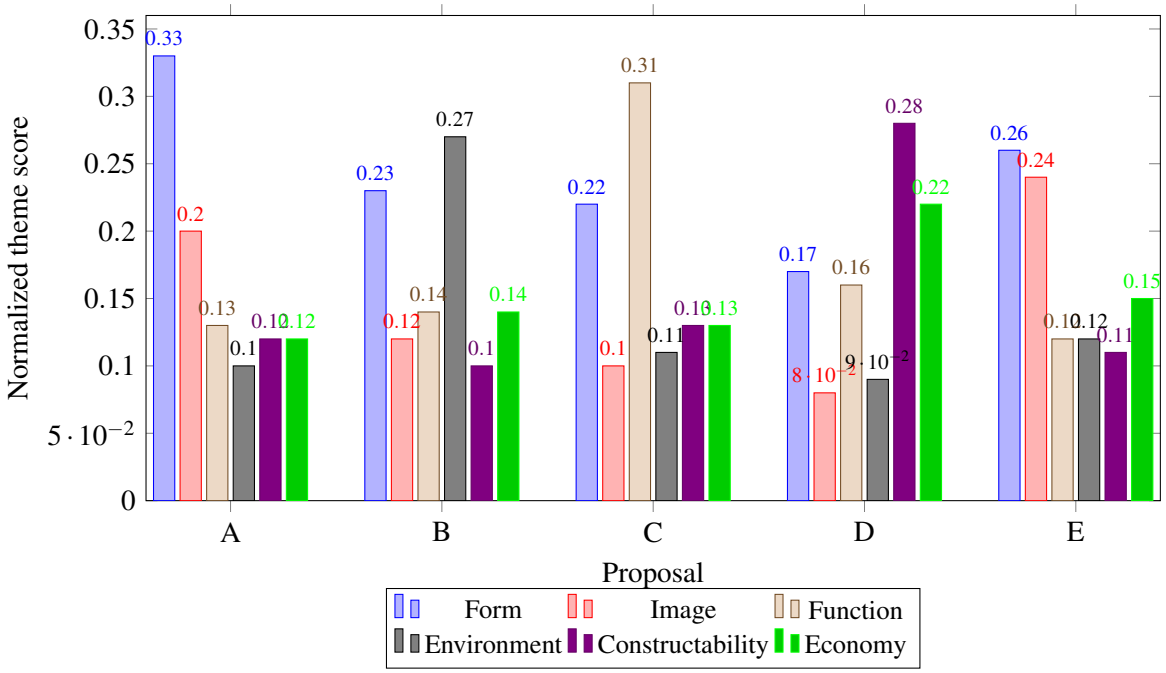

Figure 2: Proposal-level thematic profiles derived from website discourse

Stability and robustness

The robustness checks support the stability of the extracted features. The median overlap between the combined-score top-30 list and the TF–IDF-only top-30 list was 0.83, while the corresponding overlap with TextRank-only was 0.76. Across 500 bootstrap samples, the median Jaccard similarity of top-30 term sets ranged from 0.81 to 0.88 across proposals. Theme profiles changed only marginally after low-frequency-term removal: the mean absolute difference in theme shares was 0.018. These findings indicate that the reported proposal contrasts are not artifacts of one ranking method or a small number of idiosyncratic comments.

DISCUSSION

What website discourse reveals about architectural evaluation

The results show that website-based discourse can recover coherent architectural evaluation criteria rather than merely affective approval or disapproval. This matters because much design research still assumes that uncontrolled public commentary is too noisy to be analytically meaningful.

In the present case, however, commenters repeatedly mobilized language about form, function, environment, structure, and economy—dimensions that closely resemble categories found in more formal evaluation settings [Amedeo and Dyck, 2003, Cervinka et al., 2014, Lee and Chun, 2012, Neto et al., 2016, Ryu et al., 2007]. The implication is not that online commentary replaces professional judgment, but that it captures a public-facing evaluative structure already latent in architectural practice.

A second important finding is that visual distinctiveness did not monopolize discourse. Although form and image were highly salient, they were consistently accompanied by practical categories. This is significant in light of work showing how media circulation can privilege iconicity and representation in architectural criticism [Chandratilake, 2003, Cheng, 2016, Li and Zhi, 2014, Wang, 2008]. In the stadium case, participants did attend to image and landmark value, but they also asked whether a scheme would function well, fit its site, and remain buildable and economical. Online discourse therefore appears more multidimensional than accounts of image-led criticism alone might suggest.

Relationship to existing evaluation approaches

The proposed framework complements, rather than competes with, established methods of design assessment. Numerical design selection models formalize criteria and support transparent comparison [Lee and Chun, 2012]; immersive VR supports experiential appraisal [Ryu et al., 2007]; visualization tools enhance public involvement [Shen and Kawakami, 2007]; and simulation supports performance-oriented decision-making [Lam, 2004]. Yet these methods typically require a predefined evaluation protocol. Semantic website analysis contributes a different capability: it reveals which criteria emerge spontaneously in public and semi-professional discourse before any questionnaire or expert rubric is imposed.

This feature is particularly relevant to design criticism research. Differences between expert and non-expert observers are well documented [Bates-Brkljac, 2013], and architecture is often judged through representational media long before it is occupied. Public design discussion, including criticism of public space and landmark projects, can therefore serve as a diagnostic layer between formal competition review and post-occupancy evaluation [Liu, 2015, Münster and Berg, 2015]. In this sense, the method operationalizes the discourse-oriented turn described in architectural criticism scholarship [Hua and Joseph, 2009].

Implications for semantic technologies and data-augmented design

The findings also extend built-environment applications of semantic technologies. Prior work has focused largely on knowledge organization, interoperability, and collaboration platforms [Abanda et al., 2013, Anadiotis et al., 2010, Charalambous et al., 2014]. By contrast, the present study treats online design commentary itself as a semantic resource. This resonates with eParticipation research [Anadiotis et al., 2010, Aroyo et al., 2010] and with work on semantic market monitoring [Walchhofer et al., 2009], but applies those ideas to architectural evaluation. The approach also supports the broader vision of data-augmented design in planning and urban studies [Ying and Yao, 2015]: not all design intelligence must come from sensors, models,

or structured surveys; some of it is embedded in discursive traces.

The crowdsourcing literature provides a useful interpretive lens here. Crowdsourcing is often defined by distributed participation in which users generate inputs that can be aggregated into meaningful outputs [Howe, 2006, LaToza and van der Hoek, 2016]. Social media and service studies show that user-generated text can reveal stable judgments about platforms and experiences [Fowler and Pitta, 2013, von Hoffen et al., 2018]. The stadium case suggests that architectural website discourse can be understood similarly. Commenters act as distributed evaluators who, collectively, produce a semantic portrait of each proposal.

Substantive interpretation of the Zhangjiakou case

The case itself yields a substantive insight. Proposal A and Proposal E were interpreted primarily through symbolic and iconic language, but with different emphases: A toward futurity and spectacle, E toward cultural recognizability and local resonance. Proposal B was distinguished by environmental integration and public-space language, indicating that discourse recognized site relationship as a design virtue. Proposal C stood out for use-oriented clarity, suggesting that commenters valued stadium functionality in concrete terms. Proposal D concentrated engineering and cost vocabulary, showing that feasibility can become a salient public criterion when forms are compared side by side.

This pattern is consistent with the idea that architecture is publicly read as a bundle of visual, social, and operational attributes rather than as an isolated object [Rossi, 1982]. It also supports the argument that public commentary on landmark proposals cannot be reduced to taste alone; it often includes sophisticated judgments about performance, fit, and practicality.

LIMITATIONS

The study has several limitations. First, lexical-semantic methods compress context. A word such as *iconic* may be used approvingly or critically, and sarcasm is difficult to recover at token level. Second, website commenters are not statistically representative of the broader public. ABBS combines professional, student, and interested lay voices, but platform participation remains selective. Third, the use of translated glosses in presenting results can smooth over nuances in the source language. Fourth, manual theme mapping introduces interpretive judgment, even though intercoder agreement was high. Finally, the method operates primarily at word level; phrase-level relations, negation, and multimodal references to images remain only partially captured.

These limitations do not negate the usefulness of the method, but they define its proper role. Website semantic analysis should be treated as a complementary evidentiary layer alongside expert review, representational assessment, simulation, and participatory design methods [Lam, 2004, Lange, 2011, Lee and Chun, 2012, Ryu et al., 2007, Shen and Kawakami, 2007]. It is most valuable when projects already generate substantial online discussion and when researchers want to recover the structure of unsolicited evaluation.

CONCLUSION

This article developed and demonstrated a reproducible framework for extracting architectural design features from website discourse. Using comments on competing proposals for the Zhangjiakou Olympic Stadium, the study showed that web-based discussions can be transformed into interpretable semantic profiles through a combination of corpus cleaning, reference-corpus filtering, term ranking, and theme mapping. Six stable

evaluative dimensions emerged: exterior and form, symbolic image, functional usability, environmental integration, constructability, and economy/practicality.

The main contribution is methodological. The study shows that online discourse can be used as a structured source of design intelligence rather than treated as unmanageable noise. In doing so, it links architectural criticism research with semantic technologies, eParticipation, crowdsourcing, and data-augmented design. The substantive conclusion is equally important: public and semi-professional website discourse around architectural proposals is multidimensional, balancing image with use, environment, and feasibility.

Future work can extend this framework in three directions within the same conceptual architecture. First, phrase-level and relation-level semantics can improve interpretation of evaluative stance. Second, multimodal integration can connect textual descriptors to design images and drawings. Third, comparative studies across project types can test whether different programs generate different public evaluative grammars. Even in its present form, however, the method offers a practical addition to the toolbox of architectural research and design evaluation.

DATA AVAILABILITY STATEMENT

The study is designed around publicly accessible website discourse and a transparent extraction pipeline. Replication requires the same thread-selection rules, text-cleaning protocol, segmentation settings, reference-corpus filtering procedure, and salience-weighting formulae reported in this manuscript.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTOBIOGRAPHICAL SKETCHES

M. Zhao, The School of Architecture and Urban Planning, Guangzhou University

J. Liang, China Urban Construction Design & Research Institute Co., Ltd.

P. Shen, China Urban Construction Design & Research Institute Co., Ltd.

E. Lange, University of Bristol, UK

X. Ye, Stevens Institute of Technology; xye2198762@proton.me

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