RESEARCH ON RESIDENTIAL LANDSCAPE SEMANTIC STRUCTURE BASED ON INTERNET ADVERTISING

Zhiyan Liul, Zao Li 2, YangChen3, Jun Zeng 1, Wei Feng 1
1. College of Architecture & Art Hefei University of Technology, Graduate Student;
2. College of Architecture & Art Hefei University of Technology, PhD
3. College of Architecture & Art Hefei University of Technology, Undergraduate Student
Research Background and Purpose

- Real estate Internet advertising has become an important method of selling forward deliver housing in the context of China’s rapidly developing housing industry.

- As residents’ request to the living environment of is improved, developers and designers pay more attention to the planning of residential landscape.

- Based on the word description adopted in the network text ads of the real estate, by studying the selling point and elements in residential landscape with the analysis method of semantic ontology, this essay is trying to find out the current status and trends of the development of landscape in residential areas.
Target City —— Hefei

Hefei City

Picture 1 Location of Hefei

Residential Landscape in Hefei

www.hfhouse.com
www.hfhouse.com
Research Methods

1. The Website

2. The Advertisements

3. Analyzing in Excel

4. The Ontology
Research Methods

- **Step 1**  
  Filter advertisements in Word
### Research Methods

**Step 2**

Analyze advertisements in Excel

---

<table>
<thead>
<tr>
<th>序号</th>
<th>楼盘名</th>
<th>楼盘名英文名称</th>
<th>网址</th>
<th>楼盘文案中的景观描述提取</th>
<th>序号</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>永华怡居阁</td>
<td><a href="http://newhouse.hfhouse.com/15283.html">http://newhouse.hfhouse.com/15283.html</a></td>
<td></td>
<td>预见绿色城市生活</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>银城国际公寓</td>
<td><a href="http://newhouse.hfhouse.com/15841.html">http://newhouse.hfhouse.com/15841.html</a></td>
<td></td>
<td>52平方米中低档小区社区-阳光花园，位于临</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>水房路北侧河道东岸，占地面积300亩，建筑</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>率约65%。作为合肥首个中档中低档社区，</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>配套设施完整；地面升降机，停车库等</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>华药香水园</td>
<td><a href="http://newhouse.hfhouse.com/15715.html">http://newhouse.hfhouse.com/15715.html</a></td>
<td></td>
<td>阳光品质生活水系是生活，强调中低层、</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>联排别墅高品质生活，强调生活</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>安徽原生生活</td>
<td><a href="http://newhouse.hfhouse.com/15634.html">http://newhouse.hfhouse.com/15634.html</a></td>
<td></td>
<td>中央水系景致中的水系生活</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>中央水系景致中的生活品质；</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>金城丽景</td>
<td><a href="http://newhouse.hfhouse.com/16484.html">http://newhouse.hfhouse.com/16484.html</a></td>
<td></td>
<td>中央水系景致中的水系生活</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>中央水系景致中的水系生活</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>恒品阁</td>
<td><a href="http://newhouse.hfhouse.com/16478.html">http://newhouse.hfhouse.com/16478.html</a></td>
<td></td>
<td>中央水系景致中的水系生活</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>龙源现代城</td>
<td><a href="http://newhouse.hfhouse.com/16354.html">http://newhouse.hfhouse.com/16354.html</a></td>
<td></td>
<td>中央水系景致中的水系生活</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>香樟名筑</td>
<td><a href="http://newhouse.hfhouse.com/16325.html">http://newhouse.hfhouse.com/16325.html</a></td>
<td></td>
<td>中央水系景致中的水系生活</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>瑞泰江南花园</td>
<td><a href="http://newhouse.hfhouse.com/16320.html">http://newhouse.hfhouse.com/16320.html</a></td>
<td>40000平米瑞泰江南花园</td>
<td>中央水系景致中的水系生活</td>
<td>9</td>
</tr>
</tbody>
</table>
Research Methods

Step 3: Example of Ontology

[Ontology of Residential Landscape.ont]

Residential Landscape

Residential Internal Landscape

Landscape Elements

Water

Elements with water

Animals

Plants

Air

Smell

Color

Light

Sound

Constructre

Categories of Residential Internal Landscape

Landscape Elements

Matter

Landscape Sculpture

Architectural sculpture

Figure sculpture

Architecture Sketch

Pavilion

Platform

Building

Wall

Bridge

Gallery

Plank

Road and Facility

Human

Dynamic in Landscape

Water

Motion

Trees

Grass

Others

Motion

Flower bed

Paifang

Bench

Xie

Motion in Landscape

Motion

Feelings about Landscape

Motion

Motion

Feel

Behavior

Feel

Design

Landscape Design

Landscape design [+]

Categories of Residential

Natural

Sense

abstract

with Architecture

Residential External Landscape

Waterscape

Greenbelt

Square

Garden

Chinese Garden

Landscape

Figure sculpture

Architectural sculpture

Construction Landscape

Construction Landscape

Color in Landscape

Smell

Constructre Landscape

Motion in Landscape

Motion

Feelings about Landscape

Motion

Motion

Others

Motion

Trees

Grass

Others

Motion

Residential Landscape

Residential Internal Landscape

Residential External Landscape
Extract words from Internet advertising

- Among all 520 real estate advertisements we have studied, 253 of them have a language description of the landscape.
5. Analyzing the Ontology of Residential external landscape

A city’s original natural or artificial environment is frequently used in the external landscape to make the landscape image of a real estate more abundant. The Developers usually for purpose look out for the public environment surrounding when locating the residential. Landscape features such as large-scale water and mountains near the estate are often mentioned many times to attract purchaser.
6. Analyzing the Ontology of Residential internal landscape

- The internal landscapes of the residential areas are divided into five major categories of advertising language for statistical analysis in our study. They are “Landscape Categories”, “Landscape Elements”, “Motion in Landscape”, “Human Sense” and “Design Method”.
6.1. Analyzing the Ontology of landscape

- Within the study of landscape category analysis in residential areas, “Waterscape (59)” appears the most frequency among landscape categories mentioned in advertising.

It is not difficult to find the design of residential areas now considers very much on the water features. But nearly 40% words are general description. They just say “Waterscape (22)”. Which means in the online advertising developers only consider to have water features in residential landscape, but not enough details for a specific type of consideration.

The second is [Fountain (11)], then is [Lake (6)], [River (59)], [Swimming Pool (5)] and [Stream (5)]. Through the statistics we find fountains used most in residential water elements, but large scale waterscapes are comparatively less used. Compared with large scale waterscape, the fountain is easy to control, more water is conserved.
6.2. Analyzing the Ontology of landscape elements

3. Water (152)

Research extract 494 words related to landscape elements from all the 520 estate advertisements. And order them in accordance with the more to less into 9 categories as “Water (152)”, “Plants (108)”, “Color (74)”, “Constructed Landscape (62)” (constructed landscape is architectural sketch and facilities in landscape), “Light (36)”, “Sound (33)”, “Smell (12)”, “Air (8)”, and “Animals (7)”.

2. Plants (108)

Just like the water elements, abstract description word “Plants elements” appear more in landscape, generally described word like “flower”, “Grass”, “Tree” appear 71 times. But only 37 words have a specific description of name and species.

1. Color (74)

Words described colors in residential appear a lot in online advertising the number is 74 times. “Green (65)” takes the most majority of them.

4. Constructed Landscape (62)

“Constructed landscape” is a very important part of landscape elements. A splendid landscape sketch can often highlight the uniqueness of residential landscape design, so they appear frequently in advertisements.

6.2. Analyzing the Ontology of landscape elements
6.2. Analyzing the Ontology of landscape elements

5) Light (36)
“Description about light” appear 36 times. Most of them are describing “Sunlight” (27) of them related to birds, another is [Butterflies]. How to bring some of the animals into the residential landscape setting is also a problem, as ecological and aesthetic considerations, as pets will be developed in residential design to developers. Most of the words about sound are describing the quiet atmosphere in landscape.

6) Sound (33)
Description about “Sound” appear 33 times in online advertising. Audition, as the most important feeling besides vision, is gradually being important in residential design to developers. Most of the words about sound are describing the quiet atmosphere in landscape.

7) Smell (12)
Words about “Smell” only appear 12 times.

8) Air (8)
6.3. Analyzing the Ontology of behavior in landscape

Not all the landscape elements are stand. Online advertising industry also needs fresh feeling to attract people. Research also counts advertisements words about human behavior and the dynamic behavior of landscape itself in categories. These words appear 141 times in all.

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision</td>
<td>32</td>
<td>Vision, Saw, Overlooking, View, See, Owned, Overlook, Have</td>
</tr>
<tr>
<td>Others</td>
<td>30</td>
<td>Leisure, Enjoy, Play, Live, Tour, Write, Relax, Entertainment, Cave</td>
</tr>
<tr>
<td>Movements</td>
<td>16</td>
<td>Walk, Exercise, Running, Climb</td>
</tr>
<tr>
<td>Tactility</td>
<td>12</td>
<td>Near, Touch, Open window, Enjoy the cool air, Close</td>
</tr>
<tr>
<td>Communication</td>
<td>10</td>
<td>Communicate, meet, care, cooperate, help each other</td>
</tr>
<tr>
<td>Audition</td>
<td>3</td>
<td>Listen</td>
</tr>
<tr>
<td>Gustation</td>
<td>1</td>
<td>Enjoy tea</td>
</tr>
</tbody>
</table>

Human behaviors in landscape. Descriptions about human behaviors are 104 times. [Vision] is the most frequent type of landscape, which appears 32 times. Then is the word describing [Movements]. [Walk] appears 10 times. [Walk] is the most frequent movement of people in residential landscape environment. It is clear from the two points above that viewing during walking is a common behavior in a scenic residential landscape. It is important to do some design focusing on the walking behavior in the landscape.
6.3. Analyzing the Ontology of behavior in landscape

2) Dynamic of landscape elements itself

In the 37 words describing these movements, “Water Dynamic (17)” “takes up half of them.

<table>
<thead>
<tr>
<th>Landscape Dynamic (37)</th>
<th>Water Dynamic (17)</th>
<th>Others (11)</th>
<th>Grass Dynamic (5)</th>
<th>Tree Dynamic (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Through 7, Spray 3, Winding 2, Waves 1, Moisturizes 1, Jump 1, Looming 1, Splash 1</td>
<td>Around 4, Interspersed 3, Blow on one’s face 1, Permeability 1, Filled</td>
<td>Extension 3, Grow like Clusters 1, Enter 1</td>
<td>Surrounded by 1 Everywhere 1, Whirling 1, Swaying 1</td>
</tr>
</tbody>
</table>
6.4. Human feeling in the landscape

A lot of adjectives are used by developers in Internet Advertising of estate to describe people's feelings of landscape. Research counts advertisements words to find out what is the landscape experience that the developers want to offer to their Residents.

There are totally 287 words which describe the feelings of people. According to the different types of experiences, Among them, [Natural 自然] appears 27 times. Next is [Health 健康（11）] and [Ecology 生态（6）]. As it shows, many developers request natural landscape for ecological health.
6.5. Analyzing the Ontology of landscape design

The words about landscape design are appeared frequently in real estate online advertising. By statistical studies of the samples, we classified these words into “The Methods of Landscape Design”, “Landscape Design Elements on Humanity”, “Ecological and Energy Efficient Elements in Landscape Design”, “Landscape Images” and “Designer and Awards”.
6.5. Analyzing the Ontology of landscape design

1) Design Methods of Landscape
Among Landscape design practices words mentioned in the estate advertisements, there are 94 words about "Shape Processing Technique" , 74 words about "Spatial Processing Technique" , 22 words about "Design Theme" , 18 words connected with "Viewpoint Design" , 6 words for "Combination of Design" and other 3 words.

a) Shape Processing Technique
The 94 words about "Shape Processing Technique" were further divided into "The Spot (25)" , "The Line (25)" , "The Surface (13)" , "Combination of Design (11)" , "Others (19)".

b) Spatial Processing Technique
The 74 words about "Spatial Processing Technique" were further divided into "Altitude Difference (24)" , "Enclosing (21)" , "Vertical Design (10)" , "Built on Stilts (7)" , "Others (12)".
6.5. Analyzing the Ontology of landscape design

c) Design Theme
Among "Design Theme (22)"，the word, “Waterscape (6)”, appears most. Other water-related themes include “Water system”, “Water body”, “Water area”, “Lakeview” and “Water loving”。“Landscape of earth-sheltered building” which seldom appeared in the past, are found once in the research.

d) Combination of Design
Modern and Traditional，Natural ecology and Form of architecture are usually been found in this area.

e) Viewpoint Design
The words reflecting the consideration of [Viewpoint] appears 18 times. For example [see view]，[visual perception]，[scene will change at every step]，[borrowed scenery]，[visual interest]，[guided landscape]，[ecology ken] etc. It can be seen that the design for viewpoints in the landscape is need for more consideration.

f) Other Methods
In the other words of Design Methods of Landscape, the appearance of [Retain the old Landscape] and [Respect history] suggests the landscape design elements on the bases of respect for the original landscape has been recognized by some developers.
2) Landscape design elements on humanity

There are also many words about [humanity（142）] in landscape design. [humanity（19）], [living（17）] and culture文化（10）] are the most familiar words, followed by residence居住（9）] and people foremost以人为本（8）]. In residential landscape design developers are aware of the importance of humanistic concern. However through the 5 highest frequency words, we can easily find this humane care of the design have remained at the vague abstraction.
3) Ecological and Energy Efficient elements in landscape design

Ecological and Energy Efficient elements (113) are mentioned a lot in landscape design. [Ecological (41)] is the most frequent word. The next is [Natural (20)] and [Health (9)].

Like [humanity (124)], most advertise words about ecological design are overviews of general terms. Just a few words like [Wetland Reserve (2)], [low carbon (2)], [air quality (1)], [negative ion (1)] can be seen as specific eco-energy saving measures in these advertisements.
4) Landscape Images

Landscape Images (107) means using the reference of some existing design of landscape to make a similar image of landscape in the Internet estate advertisements. There are 19 words about [Chinese Landscape Image 中国景观意象]. The most popular word is [Garden 园林 (8)], followed by [River South 江南 (5)]. It is need to be attention that the word [Huizhou style 徽派], which is connected with the local traditional culture just appears once in these Internet advertisements. While in view of the Anhui-style architecture is mainly architectural elements, the emblem of Anhui-style residential landscape design is slightly less.
Rhetoric is used 95 times in all the 253 real estate advertisements which have landscape propaganda. [Metaphor比喻（36）] is the most frequent method, then is [Quote引用（25）] and [Personification拟人（24）]. This rhetoric makes people have a perceptual feeling about landscape from abstract word describing. It also makes the landscape more vivid.
8. The result of our Research

we have studied and understood the development and trends of residential landscape. We have had a certain understand in the common landscape elements and the design method. It has help us to know the focus point of residential landscape to developers in current China’s second tier cities. The research had found some of the lacking elements in residential landscape and some design method immature.

Totally We just want study the landscape semantic structure based on internet advertisements to do some guide significance for the developing and designing of residential landscape.
Thank You!

Thanks for my tutor Dr. Zao Li and other researchers

- Zhiyan Liu
- Zao Li
- Yang Chen
- Jun Zeng
- Wei Feng

1. College of Architecture & Art Hefei University of Technology, Graduate Student
2. College of Architecture & Art Hefei University of Technology, PhD
3. College of Architecture & Art Hefei University of Technology, Undergraduate Student

The study was subsidized by Research Project Fund in Chinese Ministry of Education, Humanities and Social Sciences (Project Grant No. 09YJCZH030) and the RFDP of Hefei University of Technology (Project No. GDBJ2009043). To express my sincere gratitude to these two groups.