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Interdisciplinary Journal of Signage and Wayfinding; Volume 1; Issue 1

The Effect of Font Characteristics on Large Format Display Legibility

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Abstract

Objective: To assess the legibility of a large set of existing large format display fonts.

Background: The enormous selection of fonts allows for creative design; however, while there has been a lot of research on print and computer font legibility, only a limited number of large format display font studies have been conducted.

Method: Sixty-four subjects from 19-87 years of age viewed 64 displays using 33 fonts shown on a computer monitor. Viewing began at a very small size, which grew larger to simulate a driver or pedestrian approaching a sign. Subjects attempted to read the displays at the smallest possible size. Threshold legibility was determined for each font.

Results and Conclusions: Font selection can make a very big difference in the distance at which a display can be read; however, there are many fonts that have equivalent legibility. Case can sometimes, but not always, have a large impact on display legibility, with uppercase often performing significantly better than lowercase. The choice of serif versus sans-serif alone does not have an important effect on display legibility. Age impaired sign reading ability, but not until the participants were over sixty. Finally, fonts that share a family name (e.g., Times Bold versus Times New Roman) can have dramatically different legibility distances.

Application: The results of this research can immediately and directly aid letter manufacturers, display designers, and display owners, as they now know how far away a large number of fonts can be read, and the impact of choosing one font style over another.

Keywords: Vision, driver, legibility threshold, font style, display, letter height

Background and Objectives

Many elements, such as internal contrast, letter height, and letter width, contribute to the readability of large visual displays (e.g., highway and on-premise signs, billboards, banners, posters, etc.); however, one of the main factors is letter style or font (Garvey and Kuhn, 2011). While there have been many studies on print and computer font legibility (e.g., Yager et al., 1998; Legge and Bigelow, 2011), most evaluations of font legibility for large displays has been conducted in the highway, airport, and railway environments and, therefore, have been restricted to simple and unembellished fonts (Garvey et al., 1995). The font choice for large displays is limited only by the imagination of designers. While the enormous available selection of fonts (and limitless potential for future fonts) allows for creative design, it also creates difficulties for letter manufacturers, sign shops, designers, and display owners, as they have no way of assessing these fonts' relative legibility distances. This is because only a limited number of studies have been conducted in this field, assessing only only a small number of fonts each (e.g., Kuhn et al., 1998; Garvey et al., 2001, Zineddin et al., 2003; Garvey, 2007). The present study is the first to address the visibility of a substantial set of existing large display fonts.

Laboratory Experiment to Evaluate Large Visual Display Font Legibility

Overview

The study was conducted in a laboratory setting where many fonts could be evaluated in a short period of time using high-resolution, computer-generated graphics.

Method

Fonts

A set of 33 fonts was selected for evaluation (Table 1 lists the fonts with their exact names; abbreviated versions of these names are used throughout the paper). They represented the most popular fonts used in the commercial signing industry and a selection of additional fonts that are asked for by designers, but that have questionable legibility according to sign industry representatives. Thirty-one of the fonts were tested in both all uppercase and lowercase (initial capital letter followed by lowercase letters). The lowercase of two of these 31 fonts (i.e., Copperplate Gothic and Trajan Bold) consisted of a larger capital letter followed by smaller uppercase letters. Two of the 33 fonts are only available in all uppercase (i.e., Country Gothic and Ribbon). This resulted in a total of 64 unique conditions being tested. The fonts were displayed as scale-sized, one-word displays on a high-resolution computer monitor (for example, Figure 1). Each of the fonts was tested using all of the words in Table 2. The subjects viewed the displays under a simulated daytime lighting environment.

Table 1. Fonts evaluated, in alphabetical order.

| Adobe Garamond Pro	Garamond Bold *(Monotype version, bundled with windows)*	Mistral
Architectural GT	Georgia	Myriad Pro
Arial Bold	Gill Sans MT	Old English Text MT
Arial	Gotham Medium	Optima Bold
Avant Garde Medium BT	Goudy Old Style Bold BT	Optima Regular
Avenir LT Std 65 Medium	Helvetica Bold	Palatino Linotype
Brush Script MT Italic	Helvetica	Papyrus
Copperplate Gothic Bold	Helvetica Neue LT Std 45 Light	Ribbon GT
Country Gothic GT	Helvetica Neue LT Std 67 Medium Condensed	Times Bold
Frutiger LT Std 55 Roman	Kabel Ultra BT	Times New Roman
Futura Bk BT Book	Minion Pro	Trajan Pro Bold
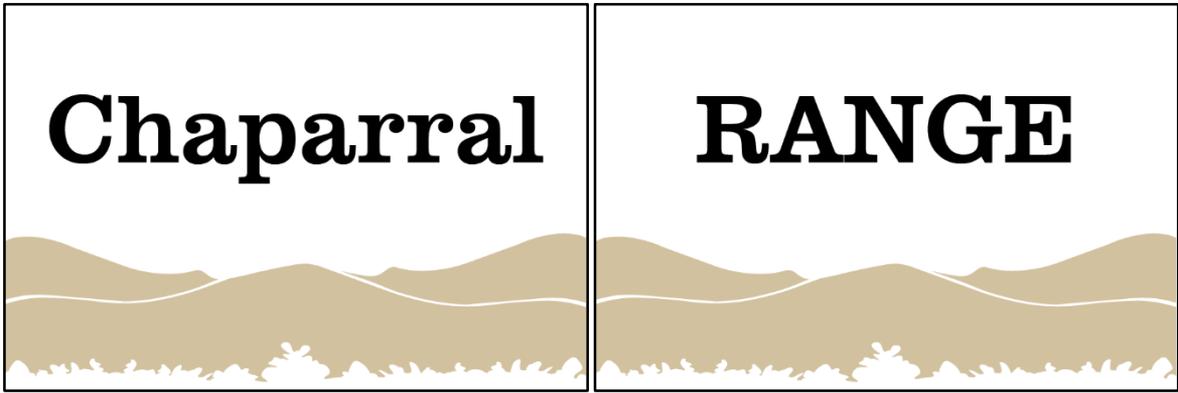
Figure 1. Example displays in the Clarendon font using lowercase and all uppercase.

Table 2. Words used.

Sunday	Gardens	Wadsworth	Perennials
Radiant	Trailhead	Riverside	Rutherford
Appleton	Harding's	Cardinal	Crawfordsville
Benneton	Pershing's	Frederick	Agency
Hangar	Cafeteria	Stables	Forestry
Traffic	Gelateria	Fountain	Smith
Solarized	Concourse	Marketplace	Thomas
Pharaoh	Fairway	Maplewood	Siracusa
Magnolia	Cloverton	Arboretum	Aurum
Flowers	Wilmington	Moonbrook	Goldberg
Appalachian	Campus	Planetarium	Savannah
Groundwater	Acorns	Byzantine	Freeway
Canals	Galleria	Emporium	Gloucester
Waterways	Trenton	Pavilion	Metro
Junction	Station	Davenport	Turnpike
Distribute	Terminal	Umbria	Trails

Subjects

A total of 64 subjects participated in the research project (27 males and 37 females). The subjects ranged from 19 to 87 years of age. All subjects were tested for binocular static visual acuity using a GOOD-LITE Co. light box and Sloan Letters at 10 feet (for results see Table 3).

Table 3. Age groups and visual acuity.

Subject Age Group	Number of Subjects			Mean
	Total	M	F	Acuity
Younger (19-34)	20	14	6	20/17.82
Middle Age (35-59)	23	6	17	20/17.41
Older (60-87)	21	7	14	20/20.84
Total	64	27	37	20/18.66

Test Site and Apparatus

The study was conducted at the Thomas D. Larson Pennsylvania Transportation Institute on The Pennsylvania State University's University Park campus (Figure 2). To display the fonts and record the subjects'

performance, the apparatus consisted of a Sony 48-Inch 1080p 60Hz Smart LED TV and associated Dell OptiPlex 7020 Mini Tower desktop computer. A program was written using MATLAB to display the stimuli and collect the legibility data.
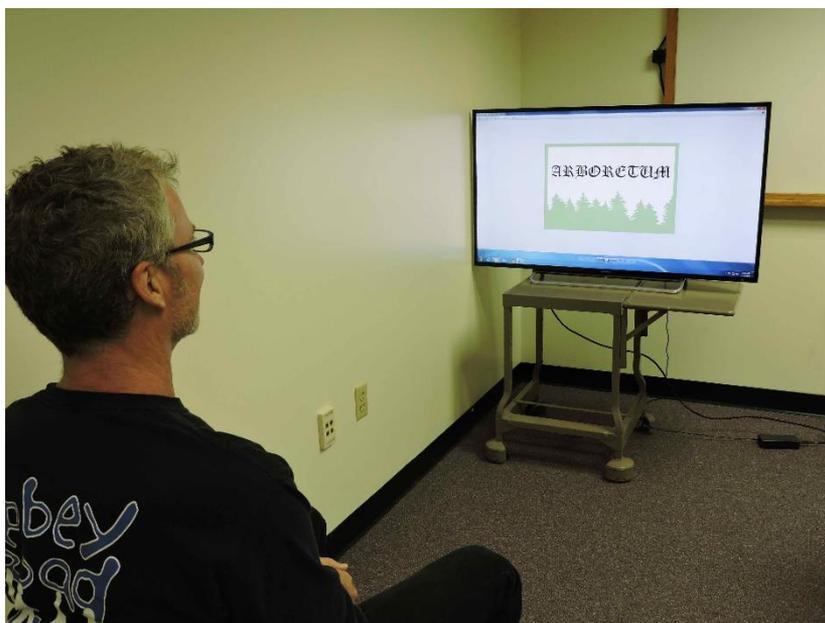

Figure 2. Test Site: "Arboretum" in Old English uppercase.

Variables

The main independent variables were Age Group (Young [19-34], Middle [35-59], and Old [60-87]) and Font (the 64 levels described above). In addition, the following variables were evaluated: Case (uppercase vs. lowercase), Style (serif vs. sans serif), Font Weight (e.g., bold vs. condensed), Word Superiority (rank ordering of the 64 words), and Art/Word combination (some displays were shown with graphics that matched the test word).

The dependent variable was threshold legibility size (the smallest size at which the participant could read the word). To standardize the readability of the fonts to larger displays used in the built environment, threshold legibility size (in millimeters) was converted to Legibility Index (LI). LI is the standard used in the transportation field to express the legibility of a display as a function of the number of feet of legibility distance that can be expected for each inch of letter height. For example, if a font had an LI of 35, a display with 10-inch letters would be readable 350 feet away (35 x 10 = 350), and 500 feet away if the LI was 50 (50 x 10 = 500).

Procedure

The 64 subjects each viewed all 64 fonts, for a total of 4,096 individual observations. The fonts were shown randomly beginning at a very small capital letter height (5 mm) and growing larger (up to a maximum of 85 mm) to simulate a driver or pedestrian approaching a display. The subjects were seated 21.34 feet from the screen that displayed the fonts. The subjects attempted to read the displays at the smallest possible size; however, they were instructed not to read it aloud until they were sure what it said. The threshold LI was determined for each font for each subject. Statistical analyses were conducted to evaluate the effect of the independent variables on LI.

Analyses and Results
Age Group Effect

The subjects were divided into three age groups. The youngest age group (19-34) had a mean LI of 35.99, the middle age group (35-59) had a mean LI of 35.61, and the oldest age group (60-87) had a mean LI of 31.31. To determine whether the differences among age groups were statistically significant, the effect of age group on display legibility was evaluated using a one-way analysis of variance (ANOVA). The p-value was set at 0.05.

The ANOVA showed that there were indeed statistically significant differences among the age group mean LIs ($F(2, 61) = 4.76$, $p = 0.01$). To determine which of the groups differed significantly from the others, a Scheffé post-hoc test was conducted. The Scheffé was used because the group sizes were different. There was no significant difference between the young and middle age groups ($p = 0.98$); however, both the young group and the middle age group had significantly higher LIs than the old group ($p = 0.03$ and $p = 0.04$, respectively). The mean LI of the young group was 4.68 points higher than that of the old group, and the mean LI of the middle group was 4.30 points higher than the mean LI of the old group.

While it is possible, of course, for small differences in mean LI to result in statistical significance with large sample sizes like those used in this study, a difference in mean LI of about 5.0 has been operationally defined to be a minimum important or practical difference (see Mace et al., 1994). A 5-ft/in of letter height difference in LI would, for example, result in 50 feet more legibility distance for a display with 10-inch letter heights. A practical implication is that at 25 miles per hour, this would give a driver an additional 1.36 seconds to read the sign. At 4.3 and 4.7, the differences among the age groups, while being statistically significant, only just approach practical significance.

Font Effect

The primary objective of the research, the effect of font on large visual display legibility, was evaluated. As discussed above, there were 64 conditions tested in this research study. In this analysis each will be considered a unique "font," even though, as discussed above, many are simply upper and lowercase versions of the same fonts. A separate Case Effect analysis is included below to tease out any differences due to the case variable.

Substantial mean LI differences were found among the 64 fonts, ranging from Gill Sans uppercase with a high of almost 50 ft/in of letter height, to Mistral lowercase, with a low LI of 15.5 (Table 4). The statistical analyses (one-way ANOVA) revealed a statistically significant effect of font on LI ($F(63,4032) = 41.16$, $p < 0.01$). Because there were 64 levels of the variable, a post-hoc test was used to determine which of the fonts were statistically significantly different from the others. As multiple comparisons were made, a post-hoc test that reduces the chance of Type I errors (which could lead to incorrectly stating that a paired comparison was significant when it in fact was not) was used. The Fisher's LSD method was selected for this study. While Fisher's LSD is often considered to be overly liberal (allowing more Type-I errors), the common alternative of using the Tukey HSD (honestly significant difference) is often considered to be too conservative. The consequences of incorrectly concluding that one font is statistically significantly more legible than another are not particularly serious, so the Fisher's LSD method was selected. To further address this liberality issue, mere statistical significance was not the only criterion used for font recommendation, but rather the combination of statistical significance and practical importance described above.

For all cases where one font was at least 5-ft/in of letter height larger, the findings of the Fisher's LSD analysis were that they were statistically significantly more legible. As a result of this, simply choosing a font that has at least a 5-ft/in of letter height larger mean in LI in Table 4 will ensure the selection of a font that is both statistically and practically more legible. For example: Goudy Old Style Bold UC is more legible than Helvetica Light UC.

Table 4. Ranking of font effect: LI from high to low.

Rank	Font	Example	Mean LI (ft/in)
1	Gill Sans UC	MAGNOLIA	49.64
2	Avenir Medium UC	MAGNOLIA	46.37
3	Copperplate Gothic UC	MAGNOLIA	46.29
4	Helvetica UC	MAGNOLIA	44.86
5	Kabel Ultra UC	MAGNOLIA	44.14
6	Times Bold UC	MAGNOLIA	43.22
7	Futura Medium UC	MAGNOLIA	42.83
8	Garamond Bold UC	MAGNOLIA	41.98
9	Optima Bold UC	MAGNOLIA	41.62
10	Architectural UC	MAGNOLIA	40.18
11	Goudy Old Style Bold UC	MAGNOLIA	40.12
12	Helvetica Bold UC	MAGNOLIA	39.88
13	Arial UC	MAGNOLIA	39.32
14	Avenir Medium LC	Magnolia	39.28
15	Kabel Ultra LC	Magnolia	39.04
16	Futura Medium LC	Magnolia	38.83
17	Georgia UC	MAGNOLIA	38.81
18	Copperplate Gothic SC	MAGNOLIA	38.58
19	Ribbon UC	MAGNOLIA	38.11
20	Optima Bold LC	Magnolia	37.90
21	Times Bold LC	Magnolia	37.80
22	Papyrus UC	MAGNOLIA	37.74
23	Helvetica Medium Condensed UC	MAGNOLIA	37.53
24	Architectural LC	Magnolia	37.36
25	Trajan Bold UC	MAGNOLIA	37.07
26	Gotham Medium UC	MAGNOLIA	36.72
27	GillSans LC	Magnolia	36.32
28	Palatino UC	MAGNOLIA	36.19
29	Garamond Bold LC	Magnolia	36.14
30	Arial Bold UC	MAGNOLIA	36.03
31	Frutiger UC	MAGNOLIA	35.74
32	Avant Garde Medium UC	MAGNOLIA	35.73

Table 4. Ranking of font effect: LI from high to low (continued).

33	Minion UC	MAGNOLIA	35.42
34	Helvetica Light UC	MAGNOLIA	35.14
35	Country Gothic UC	MAGNOLIA	33.89
36	Helvetica Medium Condensed LC	Magnolia	33.62
37	Goudy Old Style Bold LC	Magnolia	33.57
38	Arial Bold LC	Magnolia	33.52
39	Arial LC	Magnolia	33.40
40	Palatino LC	Magnolia	32.96
41	Trajan Bold SC	MAGNOLIA	32.88
42	Frutiger LC	Magnolia	32.85
43	Avant Garde Medium LC	Magnolia	32.56
44	Optima UC	MAGNOLIA	31.98
45	Adobe Garamond UC	MAGNOLIA	31.49
46	Georgia LC	Magnolia	31.39
47	Minion LC	Magnolia	31.22
48	Helvetica Bold LC	Magnolia	31.22
49	Gotham Medium LC	Magnolia	30.73
50	Times New Roman UC	MAGNOLIA	30.67
51	Helvetica Light LC	Magnolia	30.30
52	Helvetica LC	Magnolia	30.08
53	Optima LC	Magnolia	29.61
54	Myriad UC	MAGNOLIA	27.42
55	Adobe Garamond LC	Magnolia	25.89
56	Times New Roman LC	Magnolia	25.79
57	Myriad LC	Magnolia	25.27
58	Brush Script UC	MAGNOLIA	24.20
59	Papyrus LC	Magnolia	21.95
60	Old English UC	MAGNOLIA	21.92
61	Mistral UC	MAGNOLIA	19.29
62	Old English LC	Magnolia	18.42
63	Brush Script LC	Magnolia	15.49
64	Mistral LC	Magnolia	14.52

Case Effect

For over 60 years, research has shown that using lowercase words can improve *recognition* distance over all-uppercase words (Forbes et al., 1950). The current study, however, used a *legibility* paradigm, which has not been shown to benefit from the use of lowercase letters (Forbes et al., 1950; Mace et al., 1994; and Garvey et al., 1997). The difference is that in recognition tasks, the reader knows what word he or she is looking for and merely has to match a mental image of that word with the word on the display; this is helped with the use of lowercase because the ascenders and descenders create a unique overall word shape or footprint. In a legibility task, the reader does not know what the display will say and therefore has to read all or most of the individual letters to build the word.

The effect of case (uppercase vs. lowercase) on font legibility was evaluated using separate ANOVAs. For all the 31 fonts that had upper and lowercase conditions, the uppercase words had higher mean LIs than the lower. In 22 of the cases, that difference was statistically significant (Table 5). The comparisons that were not statistically significant are shaded in red, those that were statistically significant, but not practically important are shaded in yellow, and those that were both statistically significant and practically important are shaded in green. The statistically significant differences in LI as a function of case, ranged in magnitude from 3.91 for Helvetica Medium Condensed to 15.79 for Papyrus.

Table 5. Case effect on LI.

Font	Case	Mean LI	LI Difference	F-value	p-value
Adobe Garamond	LC	25.89	5.60	18.21	<0.01
	UC	31.49			
Architectural	LC	37.36	2.82	2.46	0.12
	UC	40.18			
Arial Bold	LC	33.52	2.51	2.16	0.14
	UC	36.03			
Arial	LC	33.40	5.92	14.59	<0.01
	UC	39.32			
Avant Garde Medium	LC	32.56	3.17	3.86	0.05
	UC	35.73			
Avenir Medium	LC	39.72	6.65	12.69	<0.01
	UC	46.37			
Brush Script	LC	15.49	8.71	40.71	<0.01
	UC	24.20			
Copperplate Gothic	SC	38.58	7.71	18.37	<0.01
	UC	46.29			
Frutiger	LC	32.85	2.89	3.22	0.08
	UC	35.74			
Futura Medium	LC	38.83	4.00	4.32	0.04
	UC	42.83			
Garamond Bold	LC	36.14	5.84	9.65	0.00

	UC	41.98			
Georgia	LC	31.39	7.42	25.39	<0.01
	UC	38.81			
Gill Sans	LC	36.32	13.32	56.86	<0.01
	UC	49.64			
Gotham Medium	LC	30.73	5.99	14.78	<0.01
	UC	36.72			
Goudy Old Style Bold	LC	33.57	6.55	14.98	<0.01
	UC	40.12			
Helvetica Bold	LC	31.22	8.66	28.42	<0.01
	UC	39.88			
Helvetica	LC	30.08	14.78	23.86	<0.01
	UC	44.86			
Helvetica Light	LC	30.10	5.04	10.61	0.01
	UC	35.14			
Helvetica Medium Condensed	LC	33.62	3.91	5.34	0.02
	UC	37.53			
Kabel Ultra	LC	39.04	5.10	7.06	0.01
	UC	44.14			
Minion	LC	31.22	4.20	7.35	0.01
	UC	35.42			
Mistral	LC	14.52	4.77	35.72	<0.01
	UC	19.29			
Myriad	LC	25.27	2.15	3.76	0.05
	UC	27.42			
Old English	LC	18.42	3.50	3.92	0.05
	UC	21.92			
Optima Bold	LC	37.90	3.72	3.71	0.06
	UC	41.62			
Optima	LC	29.61	2.37	3.15	0.08
	UC	31.98			
Palatino	LC	32.96	3.23	3.88	0.05
	UC	36.19			
Papyrus	LC	21.95	15.79	122.98	<0.01
	UC	37.74			
Times Bold	LC	37.81	5.41	10.45	0.02
	UC	43.22			
Times New Roman	LC	25.79	4.88	17.14	<0.01
	UC	30.67			
Trajan Bold	SC	32.88	4.19	7.42	0.01
	UC	37.07			

Serif vs. Sans Serif

Arditi and Cho (2005) studied the effect of serif on font legibility and found very little effect on either reading speed or threshold letter size. In their study, they held all aspects of the font constant except for the serif variable. Unlike those researchers, the current study allowed all other aspects of the fonts (e.g., x-height, stroke width, letter width:height) to vary naturally, and simply combined the results of all of the serif fonts and compared that with the results of all of the sans-serif fonts. Although the method differed, the results were similar to those of Arditi and Cho.

Of the 33 fonts tested, 11 had serifs and 18 did not (Table 6). Four fonts were not used in this analysis because their unusual character did not lend itself to this distinction; these were Brush Script, Old English, Country Gothic, and Mistral. Separate analyses were conducted for the fonts in uppercase and lowercase with the data from all the observations combined. With mean LIs of 32.99 and 33.13 respectively, there was no statistical difference between the serif and the san-serif fonts in the mixed case analysis ($F(1, 1726) = 0.08$, $p = 0.77$). A statistically significant effect was found in the lowercase analysis ($F(1,1726) = 5.35$, $p = 0.02$); however, with mean LIs of 37.91 for the serif and 39.12 for the sans-serif fonts, the difference (i.e., 1.21 ft/in of letter height) is not practically significant.

Table 6. Fonts used in the serif/sans serif analysis.

Serif	Sans Serif
Adobe Garamond, Garamond Bold	Arial, Arial Bold
Architectural	Avant Garde Medium
Copperplate Gothic	Avenir Medium
Georgia	Frutiger
Gaudy Old Style Bold	Futura Medium
Minion	Gill Sans
Palatino	Gotham Medium
Times Bold, Times New Roman	Helvetica, Helvetica Light, Helvetica Medium Condensed, Helvetica Bold
Trajan Bold	Kabel Ultra
	Myriad
	Optima, Optima Bold
	Papyrus
	Ribbon

Font Family

Five of the fonts tested in the study had more than one "weight," such as bold or condensed (Table 7). ANOVAs were conducted on these "font families" to determine if this had an effect on legibility distance. Separate one-way ANOVAs (and a post-hoc test for Helvetica, as it had four levels) were conducted for the fonts in both uppercase and lowercase.

Table 7. Fonts used in the font family analysis.

Font	Weight			
Times	Times New Roman	Times Bold		
Arial	Arial	Arial Bold		
Optima	Optima	Optima Bold		
Garamond	Adobe Garamond	Garamond Bold		
Helvetica	Helvetica	Helvetica Light	Helvetica Medium Condensed	Helvetica Bold

Uppercase

- **Times Bold**, with a mean LI of 43.22, was significantly more legible than Times New Roman, with a mean LI of 30.67 ($F(1, 126) = 69.64$, $p < 0.01$).
- **Optima Bold**, with a mean LI of 41.62, was significantly more legible than Optima, with a mean LI of 31.98 ($F(1, 126) = 33.35$, $p < 0.01$).

- **Garamond Bold**, with a mean LI of 41.98, was significantly more legible than Adobe Garamond, with a mean LI of 31.49 ($F_{(1, 126)} = 37.00$, $p < 0.01$).
- **Helvetica's** ANOVA revealed a statistically significant effect ($F_{(3, 252)} = 11.36$, $p < 0.01$). As discussed with earlier analyses, because there were more than two levels of this variable, a post-hoc test was necessary to determine which of the Helvetica weights were significantly different than the others. The post-hoc test known as the Bonferroni was used, showing that Helvetica (LI = 44.86) was significantly more legible than Helvetica Bold (LI = 39.88), Helvetica Light (LI = 35.14), and Helvetica Medium Condensed (LI = 37.53), with p values of 0.03, <0.01, and <0.01, respectively. Also, Helvetica Bold was statistically more legible than Helvetica Light ($p = 0.04$).

Lowercase

- **Times Bold**, with a mean LI of 37.80, was significantly more legible than Times New Roman, with a mean LI of 25.79 ($F_{(1, 126)} = 74.41$, $p < 0.01$).
- **Optima Bold**, with a mean LI of 37.90, was significantly more legible than Optima, with a mean LI of 29.61 ($F_{(1, 126)} = 24.98$, $p < 0.01$).
- **Garamond Bold**, with a mean LI of 36.14, was significantly more legible than Adobe Garamond, with a mean LI of 25.89 ($F_{(1, 126)} = 46.15$, $p < 0.01$).
- **Helvetica's** ANOVA revealed a statistically significant effect ($F_{(3, 252)} = 5.53$, $p < 0.01$). The Bonferroni post-hoc test showed that the only significant pairings were Helvetica (LI = 36.08) vs. both Helvetica Bold (with a mean LI of 31.22) and Helvetica Light (LI = 30.30), with p values of 0.01, and <0.01, respectively.

Word Analyses

Word Superiority

Due to various factors (e.g., familiarity and word length), some words are easier to read than others and can be read at smaller sizes or further away. This is why this research design included a complete counterbalancing of words and fonts, where each of the 64 font conditions was tested using each of the 64 words. This avoided the possibility that a font might merely seem more legible because it was tested using easier words. To demonstrate what kind of effect word-selection could have, the words were rank-ordered by LI (Table 8). The most legible word was Sunday, with an LI of 45.62, and the least legible was Crawfordsville (LI = 22.81). The difference between these two words was an LI of almost 23 ft/in of letter height.

Table 8. Word superiority effect: rank ordering of words by LI (high to low).

Rank	Word	Mean LI
1	Sunday	45.62
2	Metro	45.60
3	Station	43.71
4	Smith	43.47
5	Thomas	43.29

6	Traffic	42.91
7	Radiant	41.70
8	Agency	40.85
9	Flowers	40.40
10	Freeway	40.12
11	Hangar	39.82
12	Campus	39.79
13	Trenton	39.17
14	Turnpike	38.93
15	Canals	38.82
16	Gardens	38.75
17	Terminal	38.70
18	Pavilion	38.47
19	Fountain	37.74
20	Trails	37.63
21	Cardinal	37.60
22	Stables	37.16
23	Riverside	36.84
24	Magnolia	36.25
25	Acorns	36.13
26	Galleria	35.68
27	Cafeteria	35.58
28	Frederick	35.57
29	Junction	34.97
30	Aurum	34.68
31	Trailhead	34.56
32	Appleton	33.70
33	Fairway	33.33
34	Emporium	33.14
35	Goldberg	32.79
36	Concourse	32.77
37	Savannah	32.42
38	Maplewood	32.26
39	Pharaoh	32.04
40	Harding's	31.40
41	Forestry	30.97
42	Umbria	30.87
43	Waterways	30.74
44	Distribute	30.74

45	Wadsworth	30.73
46	Perennials	30.42
47	Appalachian	30.06
48	Solarized	30.01
49	Planetarium	29.60
50	Marketplace	29.56
51	Rutherford	29.49
52	Davenport	29.39
53	Groundwater	29.39
54	Arboretum	29.25
55	Cloverton	29.24
56	Byzantine	29.22
57	Wilmington	29.16
58	Benneton	28.65
59	Moonbrook	27.73
60	Gloucester	26.40
61	Gelateria	26.20
62	Pershing's	26.11
63	Siracusa	25.39
64	Crawfordsville	22.81

Words and Art

All of the displays tested had a combination of words and a graphic element. In ten instances, the graphic had a relation to the word (e.g., a drawing of a flower and the word "Flowers"). To determine whether this had an effect on LI, a series of one-way ANOVAs were conducted (Table 9). Only two of the ten analyses resulted in statistical and practical significance (these are shown in green shaded cells; as above, the red cells are not statistically significant and the yellow are statistically significant, but not practically important). The large difference in the display with the Coffee Cup graphic is most likely due to the inherent difficulty of the word "Gelateria," rather than any improvement that the image had on the legibility of the word "Cafeteria."

Table 9. The effect of matching graphic on word legibility.

Word	Graphic	Mean LI	F-value	p-value
Sunday	Sun	45.62	2.99	0.09
Radiant		41.70		
Appleton	Apple	33.73	8.08	**0.01**
Benneton		28.65		
Hangar	Airplane	39.82	2.08	0.15
Traffic		42.91		
Magnolia	Flower	36.25	4.64	**0.03**
Flowers		40.40		
Moonbrook	Crescent Moon	27.73	1.72	0.19
Planetarium		29.60		
Cafeteria	Coffee Cup	35.58	27.38	**<0.01**
Gelateria		26.20		
Cloverton	Clover	29.24	0.00	0.96
Wilmington		29.16		
Campus	Squirrel	39.79	3.79	0.05
Acorns		36.13		
Frederick	Horse	35.57	0.53	0.47
Stables		37.16		
Arboretum	Tree	29.24	1.06	0.30
Forestry		30.97		

Summary

The objective of this research was to determine the relative legibility distances of a large set of fonts that are used on large-scale visual displays. This research gives users the ability to compare the legibility distances of these fonts and make an informed decision about which to use on their displays. Several results are clear:
- Font selection can make a very big difference in the legibility distance of large displays; however, there are many fonts that have equivalent legibility (see Table 4).
- Case (upper vs. lowercase) can sometimes, but not always, have a large impact on display legibility, with uppercase often performing significantly and substantially better than lowercase, at least under the conditions of this research study (see Table 5).
- The choice of serif vs. sans serif alone does not have an effect on legibility distance for large format displays (see Table 6).
- Font weight can dramatically impact the distance at which a display can be read. Just because a font shares a family name (e.g., Helvetica) does not mean it will have equivalent legibility (see Table 7).
- Word selection can have a dramatic impact on the legibility distance of displays, with simpler, shorter, more familiar words being read at greater distances, regardless of font (see Table 8).

- The matching of a word to an image or graphic on a display does not, in general, have an impact on legibility (see Table 9).

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Signage as Marketing Communication:
A Conceptual Model and Research Propositions

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ABSTRACT

Further advancement of the growing knowledge base in the emerging, cross-disciplinary field of signage should benefit from investigation into *how* and *why* communication effects of signs occur, as such insights could potentially inform evidence-based decision-making. To facilitate such research, the authors propose a conceptual model of signage as a marketing communication tool. Model components include objective and subjective traits of signs, characteristics and states of viewers, contextual variables, conscious and intuitive process mechanisms, and communication outcomes, including affective, cognitive, and behavioral responses to signs. In addition to providing directions for further research, the model provides a framework for mapping published findings onto a "big picture," and for identifying missing pieces of the puzzle.

INTRODUCTION

Signage plays multiple, important roles in marketing communication, including identification of businesses, way-finding (Calori, 2007), branding (Bitner, 1992), and advertising (Taylor et al., 2005). As the oldest and most fundamental form of marketing communication, signage can potentially effect a broad array of marketing outcomes, such as purchasing and other consumptive behaviors, as well as the thoughts and feelings that precede and shape such behaviors. As but one example of the communicational role of signage, research has shown outdoor, on premise signs to be more influential as a source of new product information than messages conveyed by radio, internet, and newspaper ads. In the same study, indoor signs tied with magazines in a rating of perceived usefulness as an information source, but signs were rated as more useful than all media other than television (Kellaris, 2011).

Signs may also serve as inferential cues and basis for thin-slice judgments about the businesses they represent (Olson & Jacoby, 1973). This conjecture was substantiated in a series of studies conducted at the University of Cincinnati. A survey of business students found that

79% agree with the statement, "I can often infer the quality of a business from its signage" (Kellaris, 2010). A large, commercial survey of adult shoppers conducted by BrandSpark found 41.5% made quality assumptions based on a store having clear and attractive signage (Kellaris, 2012). Indeed, practical wisdom from the sign industry holds that a sign is to a business what a handshake is to a sales call (Taylor et al., 2005), i.e., a first impression and instant disclosure of personality.

Visual marketing can communicate with consumers through both conscious and non-conscious processes. Thus, signage may not only convey information and impressions – it may even *persuade* through non-conscious processing of design attributes. Consider, by analogy, the work of Henderson and Cote (1998) on logos. Their work demonstrates that design attributes such as the degree of naturalness (representative, organic designs), harmony (balance, symmetry), and elaborateness (complexity, depth) can influence outcomes such as true and false recognition, feelings, and shared meanings. When visual information is easier (versus more difficult) to process, people tend to like it more and perceive it as more credible. Hence design attributes of signage that facilitate processing should confer benefits of processing fluency, such as an object (brand, store, business) seeming more familiar and being better liked (Janiszewski & Meyvis, 2001).

Despite the undeniable importance of signage as a marketing communication medium and branding tool, there is to date no comprehensive, conceptual model depicting the relationships between attributes of signs, characteristics of shoppers and the conditions under which they view signs, the conscious and non-conscious processes by which visual communication shapes outcomes, and the broad array of outcomes that can be effected by signs as a result of these processes. Why is such a model needed? We contend that if designers, planners, businesses, and regulators are not fully informed concerning how signage operates, i.e., how it is processed by viewers, it cannot be optimally designed, strategically placed, effectively used, and fairly controlled.

TOWARDS A MODEL OF SIGNAGE COMMUNICATION

A conceptual framework is a theoretical road map that shows how we get from here to there. "Here" in this case, refers to signs – their design characteristics and placement. "There" refers to customers and prospective customers' reactions, including cognitive, affective, and behavioral responses to signs. Perhaps the simplest type of map would depict only here and there. We call that a stimulus-response model. Signs are stimuli and customer reactions are responses. To fill in such a map, one need only identify the various stimulus properties of signs and all the different types of responses, such as recognition, recall of information, affective evaluations, behavioral intentions, etc.

A better map, however, would depict not only here and there, but also the places in between – in other words how we get from here to there. In the parlance of psychological science, the places in between are known as mediators or intervening processes. They help answer the questions *how and why* this has an effect on that. General systems theory describes a three-component model consisting of inputs (signs), processes (thinking and automatic processes), and outputs (reactions to signs). This is an improvement over the simple stimulus-response model, but still lacks an important element: _who_ is doing the processing.

According to field theory (Lewin, 1943), human responses are a joint product of environment (stimuli) and person (traits of individuals). Whereas a blue sign may look better to one person, a purple sign may look better in the eyes of another. Hence it would provide an incomplete picture to study, say, aesthetic judgment as a direct function of color without considering who is doing the judging, as well as the intervening how and why that leads to the judgment. Two individuals viewing the same object may arrive at different judgments because they have different tastes and preferences, they apply different evaluative criteria, or they use entirely different thought processes. For example, whereas one may critically evaluate each element of an object against a subjective list of aesthetic criteria, the other may make an instantaneous thin-slice judgment on the basis of a global impression. Hence the characteristics of signs, characteristics of the people who see them, and the psychological mechanisms used to process information are all important determinants of ultimate responses.

Yet another important element to consider in a conceptual framework is the "context" or situational variables that shape responses. The same person may process the same sign differently depending upon the situation. Examples of situational variables include shopping goal (i.e., recreational versus task-driven shopping), time limitations (leisurely processing vs. being in a rush), and contextual cues such as the proximity of a sign to other signs or its relationship to a building ("congruity").

Based on the afore-going discussion, the conceptual framework we propose has five main elements: 1. Design characteristics of signs, including both objective and subjective properties, 2. person traits, 3. contextual variables, such as the placement of signs and their relationship to the surrounding environment, 4. mediating processes, including conscious and automatic, unconscious processes, and 5. response variables, including cognitive, affective, and behavioral responses. This is a mere skeleton of the framework. The research literature as elaborated below puts some flesh on these bones, but it remains for future research to breathe life into the creature.

Design characteristics of signs

Signs can be characterized in terms of their design properties – the constituent attributes that comprise signs and convey information. Although there have been several published attempts to define attributes of signs (e.g., Calori 2007; Taylor et al., 2005), there is currently no standard, exhaustive, widely-accepted taxonomy describing the constituent design properties of signs. We propose that this is an urgent need because description is a *necessary but not sufficient condition* for higher goals of research, such as explanation, prediction, and influence of outcomes. Adam had to name the animals before Aristotle could classify them, Leonardo daVinci could dissect them, Darwin could explain how they got here, and Jim Fowler could control them during appearances on the Johnny Carson Show. The point is that taxonomy – description and classification – are requisite steps to further scientific discovery.

In delineating the constituent properties of signs, it is important to distinguish between *objective* characteristics such as size, shape, color, versus *subjective* characteristics, which are descriptive labels that viewers attach to objects. Objective properties reside within an object and comprise the object; subjective properties are intermediate reactions that reside within the perceiver. So, for example, one might characterize a sign as "attractive" or "interesting." These are not really constituent properties of signs, but rather viewers' evaluations. As another example, legibility is not an objective property of signs, but rather a perception on the part of viewers, as is "quality."

Here is a short list of objective properties gleaned from the literature: size, type (e.g., textual vs. graphic, static v. changing, digital v. non-digital), shape, material, colors, font (type and size), luminance, message content, informational density, and complexity. Each has been studied in some context.

To this list we can add subjective properties of signs – evaluative labels viewers may attach to signs, such as attractiveness, perceived quality, novelty/familiarity, interestingness, perceived complexity, legibility, perceived clarity/ambiguity, congruity with expectations (or "surprisingness"), and congruity with architecture or surrounding environment ("aesthetic congruity"). Objective properties such as size, shape, materials, and colors should combine interactively to create subjective impressions such as attractiveness, interestingness, etc. Moreover, certain properties such as complexity or informational density may operate through the subjective filter of perceived complexity, font and size through a subjective filter of perceived legibility, etc. (Note that whereas perceptions of complexity tend to diminish over repeated viewings across time, one person's complexity can be another person's simplicity. Similarly, the same size and font will be differentially legible to Superman versus Mr. Magoo.)

The above lists represent an initial attempt at identifying potentially important objective and subjective properties of signs. Perhaps additional properties can be identified by surveying designers and manufacturers of signs. Although properties were delineated, they were not classified. Further refinement of this scheme – adding to the list and classifying elements into a taxonomic order – is a task commended to future research efforts.

Person traits

There are many ways to characterize individuals who compose the audience for signage. The challenge is to identify a relevant set of traits that have some explanatory power to elucidate the processing of and responses to sign communication. On the basis of our review of the marketing communication literature, we propose the following:

Age. *Due to declining fertility and increasing life expectancy, the average age of the population is increasing (Weil, 2009).* Age matters because both visual acuity (Klein et al., 1991) and cognitive speed (Salthouse, 2000) vary across age groups. *Those of us who have had the experience of fumbling for reading glasses or asking an excited young person to repeat something a little slower intuitively understand visual acuity and cognitive speed. These issues have profound implications for signage communication, because as the population ages signs get a little fuzzy and we cannot read them as fast.*

Familiarity. Familiarity of a stimulus is a function of amount and frequency of exposure. In the case of signage, highly familiar, frequently encountered signs should be processed differently than unfamiliar signs upon first encounter. The literature indicates that familiarity has several effects, such as reducing perceived complexity of a stimulus (Cox and Cox, 1988) and, *ceteris paribus*, increasing liking of a stimulus (Zajonc, 1968). Generally, exposure increases familiarity and familiarity enhances information processing, including both recall and the acquisition of new information (Johnson & Russo, 1984). However, there is some evidence to suggest that extreme familiarity can reduce recall and learning of information (Edell & Keller, 1989). Thus, it would seem prudent to consider not only the characteristics of a sign, but exposure conditions and audience familiarity as well.

Internal states. Information is processed differently depending upon internal states of the perceiver, such as arousal and affect. Arousal tends to have the ironic effect of attracting more attention, but interfering with acquisition of information (Eysenck, 1982). Theory and evidence also show that affective states (such as elevated or depressed moods) influence information processing (Isen et al., 1978). In general, people in good moods are more receptive to information – particularly positive information (Wadlinger & Isaacowitz, 2006); however, they may ignore it if it holds potential to deflate their mood ("mood preservation hypothesis" per Goodstein, 1994).

Motivational predispositions. Processing may also be influenced by differential motivational states and traits, such as the need for cognition (Cacioppo, Petty, & Morris, 1983) or the need for cognitive closure (Webster & Kruglanski, 1994). Need for cognition refers to the extent to which people enjoy and regularly engage in the process of thinking. Individuals characterized by a high need for cognition are internally motivated to process information such as that communicated by signs. Individuals characterized by a low need for cognition may be thought of as "cognitive misers." They are not lacking in intelligence, but they only think when they have to think. Thus, they are less apt to process information found on signs unless there is some compelling reason to process it or they are externally motivated to do so. The need for cognitive closure refers to individuals' desire for a definitive conclusion. An individual with a high need for closure is decisive, prefers order and predictability, and dislikes ambiguity. Such individuals are prone to form quick judgments and to stick with them. Individuals with a low

need for closure will not rush to judgment. Rather, one will take their time to process and decode information.

In most cases, the audience for signage would be composed of a mix of people low and high in the needs for cognition and cognitive closure. Creators, users, and regulators of signage could benefit from an understanding of how a given sign may be processed quite differently (or not at all) by different members of an audience as a function of motivational states. As an example of an implication for design, signs should be constructed to represent brands/organizations and convey messages though multiple routes, including both conscious and automatic, unconscious processes (Courbet & Fourquet-Courbet, 2014), because communication takes places via different routes for individuals characterized by different motivational states or traits. As an example of a regulatory implication, consider that in some cases signage may be like a warning label on a bottle of medicine. Informational content may be there, but it may not be processed as intended by some audience members due to the format. Hence, to be meaningful to the public, regulatory guidelines should be developed on the basis of how information is likely to be processed and used.

Attentional states. Attention is a requisite condition for visual information processing. One cannot attend to all information in one's environment without being overwhelmed by information overload. Hence, perception is selective. People tend to filter out less relevant information and attend to relevant information. Such is the case when one is consciously looking for or reading a sign. Yet the task is often performed under conditions of divided attention, as when a shopper is driving to a store. The strategic placement of signage can help mitigate some of the challenges to information processing imposed by divided attention, but cannot fully overcome common distractions during exposure, such as attending to the road, attending to GPS directions, attending to passengers, radio, mobile phone, etc. Hence a comprehensive model of signage communication must consider the attentional state of viewers as it is likely to shape the processing of information from signs.

Contextual variables

There are three contextual issues that seem particularly germane to the processing of information from signage. All three relate to placement. The first is the distance of the sign from viewers, (or average distance given a distribution of viewing distances), which will influence visibility, attention, recognition, legibility, and attendant processing of the information. Obviously this variable will interact with size to influence outcomes. When size and distance combine to reduce processing fluency, effortful processing may either not take place ("too hard") or will evoke the unintended negative consequences of meta-cognition (Schwartz, 2004).

A second contextual issue is that of perspective or angle of view. Research indicates that the same message or object viewed from different angles will be processed differently. For example, in a seminal study of camera angle effects, Kraft (1987) found differences in comprehension, recall, and evaluations as a function of vertical angle. He speculated that angle effects may stem from our experience in the natural visual world. Looking up *at* an object, as a child looks up at an adult, may translate to looking up *to* the object. Meyers-Levy and Peracchio (1992) examined the influence of camera angle on attitudes toward products pictured in ads.

They found that products were perceived as strong or potent when photographed from low, upward-looking camera angles. The same products were perceived as relatively weak and inferior when photographed from a high, downward-looking angle. This effect, however, may depend on the amount of processing viewers devote to the ad (Peracchio & Meyers-Levy, 2005). The implication for sign placement seems straight forward. A ground-mounted sign that people look down on will be perceived differently from the same sign mounted up on a building, even if the signs are otherwise identical in design and content. Regulators and users of signs should consider potentially deleterious effects of down-angles when determining the placement of ground-mounted signs.

Yet another placement issue concerns where a sign lies within a viewer's field of vision. When an object is squarely in a viewer's field of vision (within 1.5 degrees of the focal point), the visual signal is sent to both hemispheres of the brain. However, when an object is outside the focal range, contralateral conduction takes place (Beaton, 1985). That means whereas an object placed to the left of the main focus will be sent to the brain's right hemisphere for processing, an object placed to the right of the main focus will be sent to the brain's left hemisphere for processing. Whereas hemispheres have different processing styles, a peripherally placed object may be evaluated differently. Janiszewski (1988) tested this idea with ads placed to the right or left of focal newspaper articles and found that whereas pictorial ads placed in the left visual field were evaluated more favorably than those placed in the right visual field, verbal ads placed in the right visual field were evaluated more favorably than those placed in the left visual field. It appears that people form pre-conscious attitudes toward objects (such as ads) and that these attitudes can be swayed by mere placement of the object within the visual field. By analogy, verbal information conveyed by a sign placed in the right visual field of most passers-by and pictorial information conveyed by a sign placed in the left visual field of most may generate the most positive impact. We say *may* because we are not aware of published field tests that have examined this directly in a signage context. But, if your business were on the left side of a one-way street, we would advise a pictorial sign mounted at drivers' eye level.

A third contextual issue is that of a sign's relationship to its surrounding environment. There is a vast literature that suggests an object will be perceived, remembered, and evaluated differently depending upon its immediate surroundings ("context effect") and its relationship to its immediate surroundings ("stimulus congruity"). If a sign is highly distinctive – larger, more colorful, or otherwise different from other signs in the immediate environment – it may effectively attract attention, but the incongruity makes it more effortful to process. Ditto for signs that are aesthetically incongruent with the surrounding architecture of which they are a part. This could have a number of unintended consequences, such as negative evaluation. Ironically, such incongruous signs may even be less memorable due to the absence of a pre-existing cognitive schema, i.e., a pattern of thought that facilitates the organization of information in memory (Heckler & Childers, 1992; Meyers-Levy & Tybout, 1989), and due to weak linkages in established associative memory networks (Schmitt et al., 1993). The relationship between stimulus congruity and outcomes such as remembering and liking is not strictly linear. A moderate amount of incongruity can tickle interest, particularly if the incongruity can be resolved with a little effort, which leads to enhanced liking and recall. Thus, from a marketing communication standpoint, there is no reason for signage to be maximally

high in congruity with the surrounding environment. Slight incongruity may be perceived as interesting, novel, or creative.

Processes

There are a number of psychological processes by which exposure to signage may lead to various consumer responses. These include both conscious and unconscious processes.

Conscious processes occur when one looks at a sign ("attention") and attempts to read or otherwise interpret meanings conveyed by the sign ("perception"). Once a basic message has been decoded, other processes such as memory (encoding and storage) and evaluation can occur. These processes are generally well known and well understood. To be effective as a marketing communication medium, signs must attract and retain attention, be easily understood, easily recognized, and evaluated positively.

Unconscious processes, by contrast, are generally less well known and less understood (Courbet & Fourquet-Courbet, 2014). Yet they may offer better explanations for how signage works. They may be the more powerful forces underlying sign communication.

One example of an unconscious process is meta-cognitive experience. Meta-cognitive experience refers to the experience of thinking ("processing fluency" per Schwarz, 2004). Thinking can be relatively easy or difficult, depending upon what we are thinking about. A growing body of research evidence shows that people tend to use the ease or difficulty of thinking as information in its own right. So, when the information conveyed by a sign is easy to process, easy to understand, and easy to retrieve from memory, the information tends to seem more familiar, liked, trusted, believed, evaluated positively, etc., as previously noted. The reverse is also true. Signs that are difficult to process, understand, or recognize, may seem unfamiliar and disliked despite repeated exposure. Such processing fluency effects take place without conscious awareness. That is, they are automatic – they just happen.

Yet another example of an unconscious process is associative learning or conditioning. Recall Pavlov's dogs. Evidence from the marketing and psychology literature suggests that humans' responses may also be conditioned through unconsciously learned associations. For example, when people like the features in an advertisement, such as the background music, they tend to develop a liking for the advertised brand by association (Gorn, 1982). By analogy, if people like the design features of a sign (e.g., colors, pleasing design), they may "learn" to like the brand or organization represented by the sign simply by association. Like processing fluency effects, conditioning takes place automatically, without the conscious awareness of individuals. People form attitudes, which later translate into intentions and behaviors.

Thin-slice judgment is yet another process by which people formulate lasting impressions. Thin-slice judgment is an effortless, automatic process that takes place without conscious deliberation (Bargh, 2002). Popular sources describe the phenomenon as a sort of intuition, an instantaneous impression (Gladwell, 2005). Given that consumer audiences are often not highly motivated to process commercial signage, and given that signage is often viewed from a moving vehicle under conditions of divided attention, it seems likely that thin-slice judgment would play a role in the "processing" of signage. Thus, signs designed under an assumption that people will stop, read, and think, may not be as effective as those designed under an assumption of thin-slice processing. Because thin-slice judgments are made on the

basis of quickly accessible cues, the design features of a sign might be more significant than the verbal message content (Peracchio and Luna, 2006). In fact, in thin-slice judgment the design features *are* the message content.

There are still other psychological mechanisms that operate in the cracks between conscious and unconscious processing. Anchoring and adjustment is one such process (Wilson et al., 1996). Upon initial exposure to a stimulus (sign), people may form an impression that becomes a strongly held attitude. Upon repeated exposure to the stimulus (sign), people may gain additional information or have additional thoughts that lead to an adjustment of the initial impression. These adjustments, however, tend to be slight and may never overcome the initial impression. One possible reason for this is so-called "selective hypothesis testing" (Cronley et al., 2005). Once people have formed an initial impression or opinion, they tend to gather additional information selectively to confirm their opinion, ignoring other information that might conflict with that opinion. Although anchoring and adjustment involve conscious thought to form the initial opinion, people are generally unaware of their proneness to selective hypothesis testing. Thus, the tendency to "seize and freeze" on an opinion may be thought of as an automatic, unconscious process.

Outcomes

There are many outcomes of interest in sign communication. For the purposes of our conceptual framework, we can categorize these as cognitive, affective, and behavioral responses.

Cognitive responses are thoughts. They include perceptions, interpretations, recall and recognition – the identification of signs previously encountered, the formation of attitudes (toward the sign itself and toward the brand or organization represented by the sign), evaluations, impressions, beliefs, opinions, associations, aesthetic judgments, certain types of learning, persuasion (trusting a source and agreeing with a message), and so on. The common theme underlying these variables is thought. Cognitive responses are products of conscious thought, and the responses reside inside the heads of individuals.

Affective responses refer to emotions and feelings. Signs may elicit feelings of pleasure ("this sign makes me feel good") or arousal ("this sign makes me feel relaxed or excited"), or affective evaluations ("I like this sign"). A humorous sign may put viewers in a good mood. A controversial sign may arouse feelings of anger. A sign announcing a sad event may evoke feelings of sadness. Affective responses are important outcomes because along with cognitive responses they precede and determine ultimate behavioral responses.

Behavioral responses are concrete actions. They can range from simple approach/avoidance behaviors, such as patronizing or avoiding a business, to more complex behaviors such as compliance with instructions or telling other people about the information you encountered on a sign. Cian et al. (2015) demonstrate that relatively subtle differences in the design of a sign can affect behavioral responses. In the context of warning signs they show that features of static visuals that suggest motion ("dynamic iconography") tend to prepare viewers more effectively to take action. Whereas some behaviors are automatic or involuntary, performed mindlessly (e.g., blinking), others are intentional or voluntary, driven by conscious decisions and intentions. Signs may trigger both types of behaviors. The relevancy of a

behavioral response depends upon the goals of the sign; in any case, complex behaviors – such as making a shopping trip to a store that is running a sale and making a purchase – are generally mediated by cognitive evaluations.

Linking the model components together

Not far from our university there is a little hole-in-the-wall restaurant with a large sign in the window that reads "Get in here!" Consider for a moment how this piece of marketing communication does _not_ operate. It does not operate by people seeing the sign and mindlessly obeying the instruction. What is more likely is that people see the sign and have a number of intermediate responses. The sign may evoke a chuckle, which in turn may evoke positive affect and an immediate liking for the restaurant. Whereas the sign is slightly incongruous with normal expectations, it may incite some cognitive elaboration. People may infer the fun, casual character of the restaurant from the sign, or conclude that they are or are not in the restaurant's target market on the basis of the message's content or tone. People may use attributes of the cheaply made and carelessly worded sign as inferential cues to conclude that the restaurant is cheap, casual, or downscale. This inference will shape future behavioral responses. Or, people driving by may catch a quick glimpse of the sign in the periphery of their right visual field and form a favorable preconscious attitude that leads to a future stop at the restaurant for reasons unknown to the patron. What is most likely is that the sign's behavioral effects operate through all of these mechanisms, reaching different people through different, concurrently operating mechanisms.

The diagram that follows provides an overview of the basic linkages in the conceptual framework. The objective and subjective features of signs, contextual variables, and person traits are antecedents that combine interactively to evoke various conscious and unconscious processes, which lead to cognitive, affective, and ultimately behavioral outcomes. Behavioral outcomes are preceded and determined in part by cognitive and affective responses. This conceptual framework should be useful for organizing our thinking about signage research, for mapping published findings onto the "big picture," and for identifying missing pieces of the puzzle.

Conceptual Framework for Signage Communication

ANTECEDENTS　　　　　**PROCESSES**　　　　　**RESPONSES**

Design Characteristics of Signs

- Objective
- Subjective

Contextual Variables

- Placement
- Congruity

Person Traits

- Age
- Familiarity
- Internal States
- Motivation

Conscious Processes

- Attention
- Perception
- Evaluation

- - - - - - - -

Unconscious Processes

- Meta-cognition
- Conditioning
- Thin-slice judgement

Cognitive Responses

- Attitudes
- Beliefs
- Evaluations
- etc.

Affective Responses

- Pleasure
- Arousal
- Liking

Behavioral Responses

- Approach/ Avoidance
- Compliance
- Purchasing

RESEARCH PROPOSITIONS

Reviewing the literature of signage, which is widely scattered across many, diverse disciplines, reveals an opportunity to identify and prioritize future research needs, to build bridges between academe and industry, and to develop an objective, scientific basis for the design, use, and regulation of signage.

One research opportunity is to develop a comprehensive taxonomy of design characteristics that can be used to describe signage. As we have argued, this is a necessary first step to facilitate research showing how design features combine with each other, with viewing context, and with viewer traits to produce predictable and controllable outcomes. The objective and subjective design features listed in the conceptual framework are merely an initial attempt to identify potentially important variables. Further development of this portion of the framework is required.

A second research opportunity suggested by the literature review and conceptual framework is in the area of visual acuity, legibility, and meta-cognition. Given the growing body of evidence in marketing and psychology showing that people tend to use the experience of thinking as though it were information, it would seem important to assess the impact of legibility not only in terms of comprehension, but in terms of processing fluency as well. Again, if a sign can be read, but readers must exert ample effort to do so, effortful processing may cast

a dark cloud over the information such that it is less liked, trusted, believed, etc.; or the demands of effortful processing may de-motivate processing to the extent that the sign is simply ignored. The goal of research in meta-cognitive experience of signage processing would be to develop an objective basis for determining the size and other attributes of signage that facilitate both legibility and processing fluency.

Yet a third research opportunity suggested by the literature review and conceptual framework is in the area of context effects and congruity. It is clear that a visual stimulus can be interpreted differently depending upon the context in which it is viewed, its relationship to its surroundings, and the congruity of the stimulus with viewers' expectations. So, what does this imply for signage? Architects and planners must make expert judgments concerning the appropriateness of signage. One important criterion for appropriateness is the aesthetic congruity of a sign with its surroundings including architecture and community. What is the underlying basis for such judgments? Are there perceptual gaps between expert judgment and those of the public and/or business owners? What is congruity and what are the effects of incongruity? These are all questions that can be informed by empirical research (Jourdan et al., 2013).

The conceptual framework suggests many other possibilities for future research, including work on the conceptual framework itself. As new evidence is mapped onto the framework, the relative importance of various design features and intervening processes as determinants of consumer responses should come into sharper focus. Moreover, a secondary effect of signage research in marketing should be to "mainstream" this under-represented topic. As more parties get interested in the topic of signage and marketing communication, the knowledge base should grow.

CONCLUSION

At this point in the history of the cross-disciplinary field of signage, it is well established that on-premise signage plays a major role in driving customer traffic to bricks and mortar businesses, and in informing customers and prospective customers about commercial offerings. Moreover, it is widely understood that signage does so by attracting attention, identifying businesses, conveying general impressions and specific information. Further advancement of the field of signage-as-marketing requires investigation into how and why communication effects of signs obtain. Our model proposes that characteristics of signs and traits of viewers combine to effect communication outcomes via underlying cognitive and intuitive processes. We offer the conceptual model presented here as an initial step toward generating further research that can be applied to the strategic design and placement of signs to advance the interests of business and the communities they serve.

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TULSA, OKLAHOMA

RT

A STRING OF PEARLS

66

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The University of Oklahoma Urban Design Studio

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TULSA, OKLAHOMA

RT

A STRING OF PEARLS

66

ESTABLISHED 1926

INTRODUCTION

Tulsa is the birthplace of Route 66; however, many Tulsans today don't understand what Route 66 truly represents. It is no longer known as the Main Street of America, or the Mother Road, but as 11th Street. The String of Pearls project began as an idea presented to Professor Schaefer by Professor Kevin Anderson and Former State Representative Russ Roach to look for ways to bring about positive changes on 11th street. According to the Oklahoma Tourism & Recreation Department, Oklahoma is home to 400 miles of the historic highway. The environment and atmosphere changes many times throughout the state and even in the smaller Tulsa area. The corridor between Peoria Avenue and Yale Avenue was selected as the study area due to its high concentration of institutions, identified as the University Segment in the Route 66 Master Plan, and reasonable length of about 3.5 miles. The area was adopted as the subject for the Fall 2014-Spring 2015 Urban Design Studio course as a service learning project. The course sought to bring about changes in the Tulsa community while allowing students the opportunity to objectively study the area and make recommendations for improvements and redevelopments.

The mission of this project was to discover ways to change the perception of 11th Street, through interventions in the built environment, from a negative image to a positive one. Route 66 should promote tourism but at the same time, create a destination for the people of Tulsa. The key is to engage the community by creating an area for local business and public use. The project should create a connected, accessible environment where people can become involved in community activities as well as day-to-day functions. The development of Route 66 should honor the history of Tulsa while remaining sensitive to the current needs of Tulsans.

Route 66 needs to become more relevant today because it is an untapped resource for generating revenue, tourism and recognition for Tulsa. Many people still travel Route 66 and many have capitalized on the opportunity to draw people into their cities. Sadly, Tulsa falls short in this regard. Guide books and tourist information centers bypass Tulsa by sending tourists on the major interstates instead of along the historic highway. Tulsa has a great opportunity to put itself on the map as a must-see destination on Route 66.
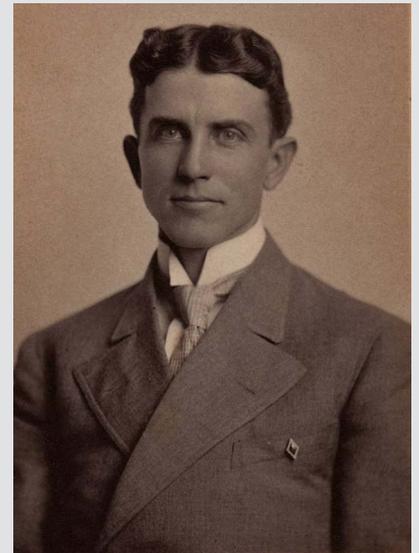
CYRUS STEVENS AVERY

Cyrus Avery (1871–1963) was known as the "Father of Route 66". He created the route while a member of the federal board appointed to create the Federal Highway System, then pushed for the establishment of the U.S. Highway 66 Association to pave and promote the highway.

METHODOLOGY

BUDGET AND SCHEDULE

The Route 66: A String of Pearls project began in August 2014. Monthly meetings (See Appendix 1) with the steering community helped direct the project and determine the dates and locations of community outreach events and the final exhibit. This project concluded with a grand total expenditure of $19,722.58. Funds were raised from several sources including the Signage Foundation, Inc., a TSET grant from INCOG, and gifts from various businesses and individuals involved and interested in the project. In-kind contributions from local community members and organizations totaled $13, 302 and were not included in the direct expenses. The full budget can be viewed in Appendix 2.

This project used several instruments for collection and analysis. Through community engagement, research, creative approaches, and budgeting of both time and money, a design competition was created that focused on the desires and needs of the community. In addition, we were able to create a set of tools that could assist with city street design in preliminary phases though the Complete Streets Workshop held in the Urban Design Studio on campus.

COMMUNITY ENGAGEMENT
Advisory Committee

From the beginning of the project it was clear that it would involve community input. The committee members were selected because of their ties to the community, expertise, and their interest in preserving and revitalizing Tulsa's Route 66.

Committee members included:
Sheila Curley - Principal of SixPR
Hon. Blake Ewing - Tulsa District 4 City Councilor and local business owner
Devon Hyde – Chief Operating Officer, Hillcrest Hospital
Hon. Susan Neal - Vice President, Public Affairs, Research and Economic Development, University of Tulsa
Hon. Roger Randle - Former Mayor of Tulsa and University of Oklahoma Professor of Human Relations
Hon. Russ Roach - Former State Legislator and Route 66 Consultant
Isaac Rocha – Community Relations and Development Officer, Bama Pie
Penni Shelton – Market Administrator, Tulsa Farmer's Market
Michael Wallis – Author Route 66: The Mother Road
Dawn Warrick - City of Tulsa Planning Director

COMMUNITY INPUT

Although the steering committee was a very diverse group and gave great input to the project, the community itself should have the opportunity to see the project and have a hand in its development. A large aerial view map of the study area was used to ask both the committee and community members for comments on the area. The community event was held at the Campbell Hotel in January. Attendees were asked to look at the Big Asset Map and make comments as to what the liked and disliked about the area as it currently exists. We also asked what they would like to see in the future.

The final community outreach event was the presentation of the completed redesign of 11th street. The event was held in the Lobeck Taylor Family Foundation's Numbered Car building in April. It was a great success with the number of guests estimated in the hundreds.

CAMPBELL HOTEL EVENT
Visitors interact with the aerial map and express the feelings about Tulsa's Historic Route 66.
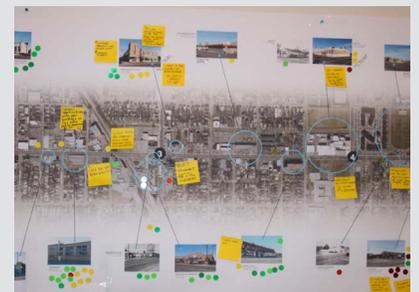
BIG AERIAL MAP
The map was used to gather information about the Tulsa Community's feelings over the state of 11th Street and Route 66.

COMMITTEE MEETING
The committee sees the aerial map for the first time as we present our observations of Route 66, better known to Tulsan's as 11th Street.

PRESENTATION
Student, Curtis Blevins, explains the criteria of the excercise at the Campbell Hotel.

MEADOW GOLD SIGN
11TH & Peoria

MONUMENT BUILDING
11TH & Utica

EL RANCHO GRANDE
11TH & Troost

TULSA SPEEDOMETER SERVICE CO.
11TH & Rockford

RESEARCH

Our research methods included direct observation by walking and photographing our focus area, historical research, a collection of existing plans and studies, mapping, and expert testimony from community members involved in the development of Route 66, historic preservation, and planning.

DIRECT OBSERVATION

At the beginning of this project the class sought to get a feel for Route 66 by walking and exploring the area. We took photos of the existing businesses, signage, landscape and the street itself. With this data we were able to evaluate the condition of the street and begin to develop a plan for what this project would become.

SIGNAGE
Remnants of signs line the 11th Street as a reminder of what the landscape once looked like. Signs, especially neon are one thing that many people travel Route 66 looking for.

HISTORICAL RESEARCH

To further understand the essence of Route 66 in Tulsa we relied on historical documents and photos. A large number of images were acquired from the Tulsa Historical Society. Sanborn maps of the area were retrieved from the University of Oklahoma's Bizzell Library. These maps showed what the street was like in earlier times and helped students understand how the areas surrounding Route 66 developed and why it developed the way it did.

MAPPING

Using ArcGIS, a geospatial mapping software, the area was mapped using data from The Indian Nation Council of Governments (INCOG), one of Oklahoma's regional planning organizations, and the US Census Bureau. The maps showed several types of data such as traffic counts and property values, and translated it into meaningful information that was used to direct the project. Traffic counts were plotted to give an idea of the amount of traffic in the area and where adjustments to the street might need to be made. Land values of properties that fronted 11th street showed the distribution of the most valuable properties. The dates the buildings were built varies along the street but the trend is that the buildings closer to downtown are older and as you travel east away from downtown, the buildings become more modern. Ownership of properties along the street are very diverse, ranging from large institutions such as the University of Tulsa and Hillcrest Hospital, to corporate chain stores, to mom and pop shops. Commercial businesses tend to be centered near the large institutions while the small mom and pop shops utilize the less valuable properties. The condition of properties closer to downtown have been through renovations to revitalize Route 66 corridor while the eastern side has developed into an area of national chain store locations. There are many properties that are in need of renovations and many others that are vacant and underutilized.

Ownership & Condition mapping on pages A-B

EXPERT TESTIMONY

Many speakers attended classes to give their impressions of 11th street and to contribute their expertise to the project.

Michael Wallis is a best-selling author, historian and biographer of the American West who also has gained international notoriety as a speaker and as the voice of the Sheriff in the Pixar film CARS. Steve Vogt from Dewberry Architects is the creator of the Route 66 gateways in Tulsa. Ed Sharrer, the Executive Director of the Kendall Whittier Main Street.

Amanda DeCort, a historical preservationist from the City of Tulsa and Scott Swearingen and Penni Shelton from the Tulsa Farmers' Market all gave great insight to the project.

PREVIOUS PLANS AND STUDIES

In order to understand the current vision for Route 66 the team reviewed many existing plans for the area including the Vision 2025 Route 66 Master Plan, 6th Street Infill Plan, Kendall Whittier, Utica Midtown Corridor SAP, Midtown Tulsa Redux, Fast Forward Transit Plan, GO Plan and the City of Tulsa Comprehensive Plan.
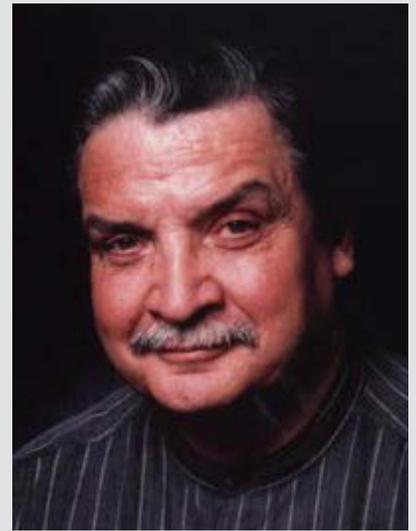
MICHAEL WALLIS

It has been said, "reading a Michael Wallis book is like dancing to a romantic ballad. He offers his hand and gently guides you across the floor, swaying to the song of the American West."

A best-selling author and award-winning reporter, Michael is a historian and biographer of the American West who also has gained international notoriety as a speaker and voice talent. In 2006 Michael's distinctive voice was heard in CARS, an animated feature film from Pixar Studios, also featuring Paul Newman, Bonnie Hunt, Owen Wilson, Michael Keaton, and George Carlin. Michael will be featured in CARS 2, a sequel to the original motion picture due for release in 2011.

Michael has been nominated three times for the Pulitzer Prize and was also a nominee for the National Book Award. He has won many other prestigious honors, such as the Will Rogers Spirit Award, the Western Heritage Award from the National Cowboy Hall & Western Heritage Museum, the Oklahoma Book Award from the Oklahoma Center for the Book, and the Best Western Non-fiction Award from the Western Writers of America.

Michael was inducted into the Writers Hall of Fame of America, the Oklahoma Professional Writer's Hall of Fame, the Oklahoma Historians Hall of Fame, the Tulsa Hall of Fame, and was the first inductee into the Oklahoma Route 66 Hall of Fame. He received the Arrell Gibson Lifetime Achievement Award from the Oklahoma Center for the Book as well as the Lynn Riggs Award and the first John Steinbeck Award.

Since 1982, Michael and his wife, Suzanne Fitzgerald Wallis, have made their home in Tulsa, Oklahoma.

TOTAL LAND VALUE

N

0.5   0.25   0   0.5 Miles

TRAFFIC COUNTS

N

0.5   0.25   0   0.5 Miles

YEAR BUILT

N

0.5   0.25   0   0.5 Miles
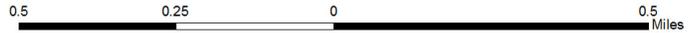
0.5
Miles

TOTAL LAND VALUE $0.00 - $0.07 $0.08 - $4.08 $4.09 - $5.38 $5.39 - $7.56 $7.57 - $13.81

0.5
Miles

TRAFFIC COUNTS   70 - 7400   7401 - 14800   14801 - 32200   32201 - 67092   67093 - 112400

0.5
Miles

YEAR BUILT   0 - 1900   1901 - 1941   1942 - 1964   1965 - 2010

DESIGN COMPETITION

The mission of the design competition was to harness the talents of 29 undergraduate architecture and 4 graduate landscape architecture students from Norman that would have help from for three weeks in the beginning of January. Professors Stephanie Pilat, Jay Yowell, and Scott Williams directed their students throughout the competition. The competition was designed to give the students guidelines for what their designs should yield. A list of criteria was compiled that outlined newly discovered needs and those already proposed by the city to help the students with their creative designs. Students needed to be informed on plans set in place by the city and what is already in place so they may design accordingly. They were to resolve divergent perceptions of Route 66 as a rundown Tulsa strip, create an authentic cultural experience, find ways to drive tourism, integrate disengaged institutions, and strengthen the intersections.

The competition focused on the 7 intersections along the 11th Street/Route 66 corridor between Peoria Avenue and Yale Avenue. These intersections are "weak nodes", meaning they are not the anchor points, providing life to the street, like one would expect. In order for the intersections to become more functional, they needed to draw activity. Students were divided into 7 different groups and randomly assigned an intersection. A competition brief (see Appendix 3) was provided, outlining the required design elements, photos, supplemental maps showing each intersection's population density, walking distance, topography and property lines, and submission requirements. A wordpress website allowed unlimited access to all documents pertaining to the competition.

Each team was required to incorporate a three-lane road diet for 11th street that included two driving lanes, bicycle accommodations referenced in the GO Plan and a center turn lane/historic streetcar railway referenced in the Fast Forward Plan. Vintage neon signs are an essential part of the culture of Route 66 and a common thread along the corridor. Groups were required to design at least one new sign for their assigned intersection. Teams were to create vision for the cultural experience of Tulsa's portion of Route 66 featuring kitsch, Americana, and pop art to engage the community and drive tourism. Each intersection has some kind of institutional presence that retracts from the street life rather than adding to it. The seven groups of students were to find ways to incorporate them into the community and contribute to the streetscape. Since it is in the interest of Route 66 enthusiasts to see authentic buildings and signs, students were also asked to look at the rehabilitation of existing assets and to highlight those that are already in good condition. A large portion of Tulsa's Route 66 is underutilized or simply vacant. Each competition group was assigned a site to propose an infill building that kept to the culture of the area while bringing in new life and vision. Since Tulsa has a thriving food culture and food trucks continue to grow in popularity, we asked that each infill include a semipermanent location for food trucks to park safely and serve patrons.

The brief was presented to the students in Norman before the start of the competition, giving them a little extra time to research and prepare for the project. They were brought to Tulsa to get a perspective of Tulsa's Route 66. The student's first stop on their Route 66 tour was at the Tulsa Historical Society. Here they were addressed by Michael Wallis, a Route 66 historian and author. He gave them a rundown on the history and the importance of Route 66. Students also had the unique opportunity to meet Cyrus Stevens Avery II, grandson of the founder of the mother road. Next, they were gathered on a Tulsa city bus and given a tour of 11th Street with Blake Ewing City Councilor and committee member acting as tour guide, describing the historical facts that relate to each intersection. As each group got off the bus they found themselves at the intersection they were going to redesign. Most of the students had only visited Tulsa a few times and were not at all familiar with the area. With cameras in hand, the students started on the initial process of envisioning how to transform the historical Route 66. As the fourth group departed a light rain started to fall making the experience exciting for our students. They were given about 30 minutes to do a visual survey and take as many photos as possible. Upon picking them up they were excited to get to work back in Norman. The teams gave out assignments and made recommendations as to what needed to be included in their designs.

Each team was required to construct a model of their intersection at the scale of 1"=20' on a 3' circular base. The models extend to a 500' radius from the center of the intersections. Along with their models, students also submitted two eye-level perspective drawings, one day and one night, a sign model and a designers' statement. The following are photos of each submission and a short excerpt from the team's designers' statement.

STUDENT VISIT
Michael Wallis addresses the group of 33 Architecture & Landscape Architecture students from the Norman Campus at the Tulsa Historical Society.
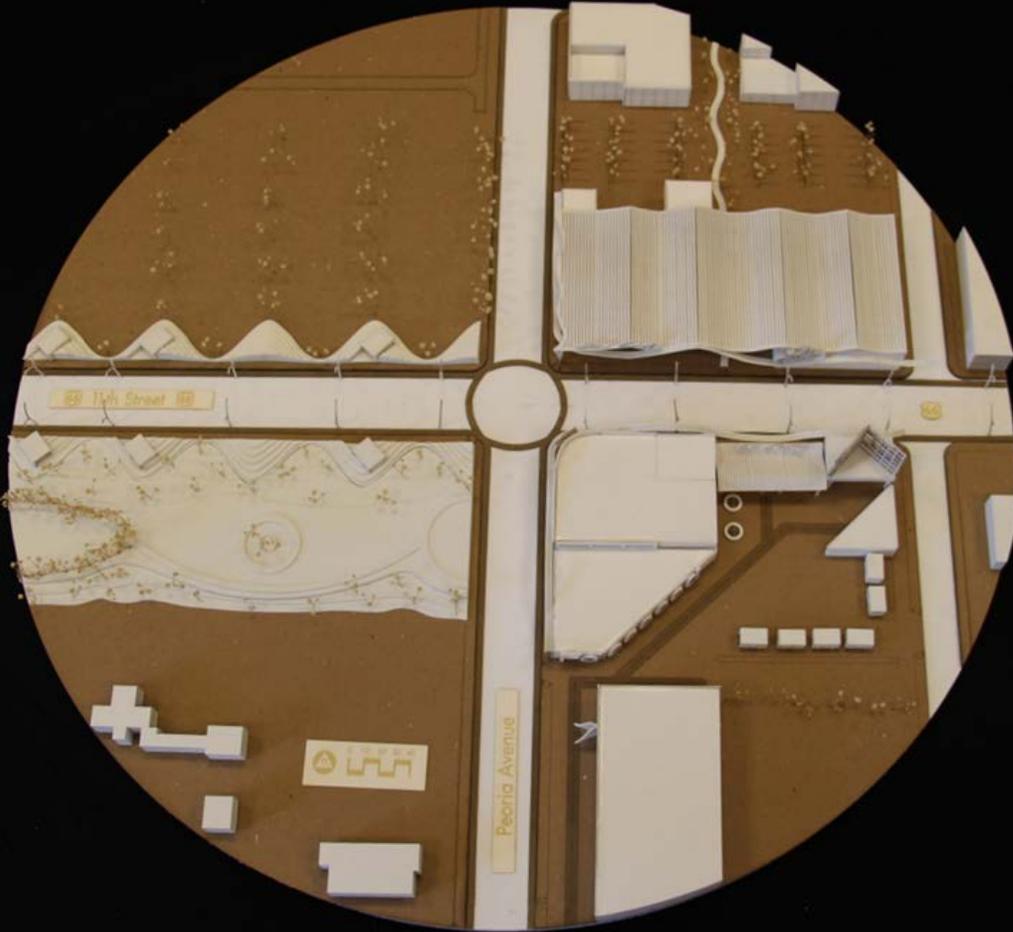
PEORIA

The intersection is designed for people to park their cars and explore the amenities in the intersection and beyond. The 11th Street streetscape encourages cycling and walking along the route. The adaptation of existing buildings and the addition of several infills allow for the creation of a strong node that clearly defines and represents the true American experience on Route 66.
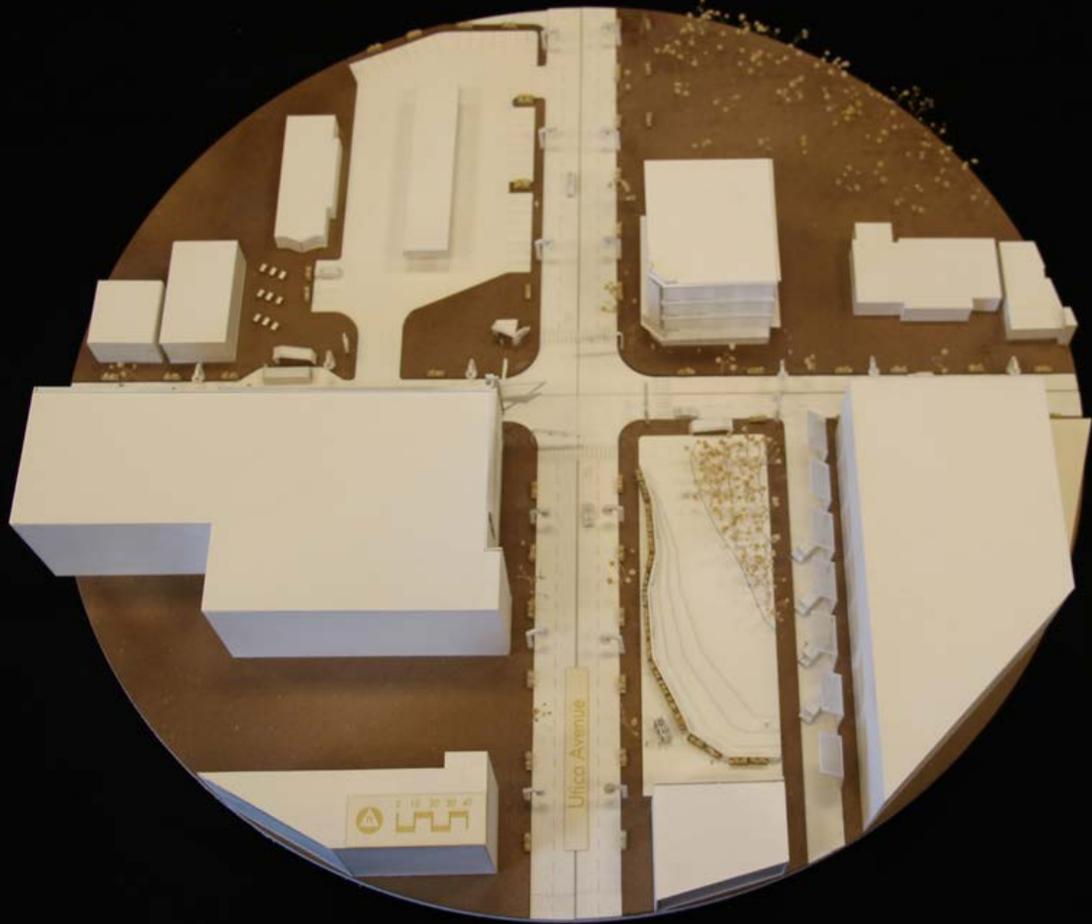
UTICA

Route 66 through Tulsa is in desperate need of a cultural rebirth; a reevaluation of the road, and of the journey. The age of the automobile is nearing its end. Young people's desire for convenient public transportation is on the rise and in this day and age walkable cities reign supreme. This plan seeks to liberate the Mother road from its car-centric urban fabric while still remaining connected to its historic regional identity.
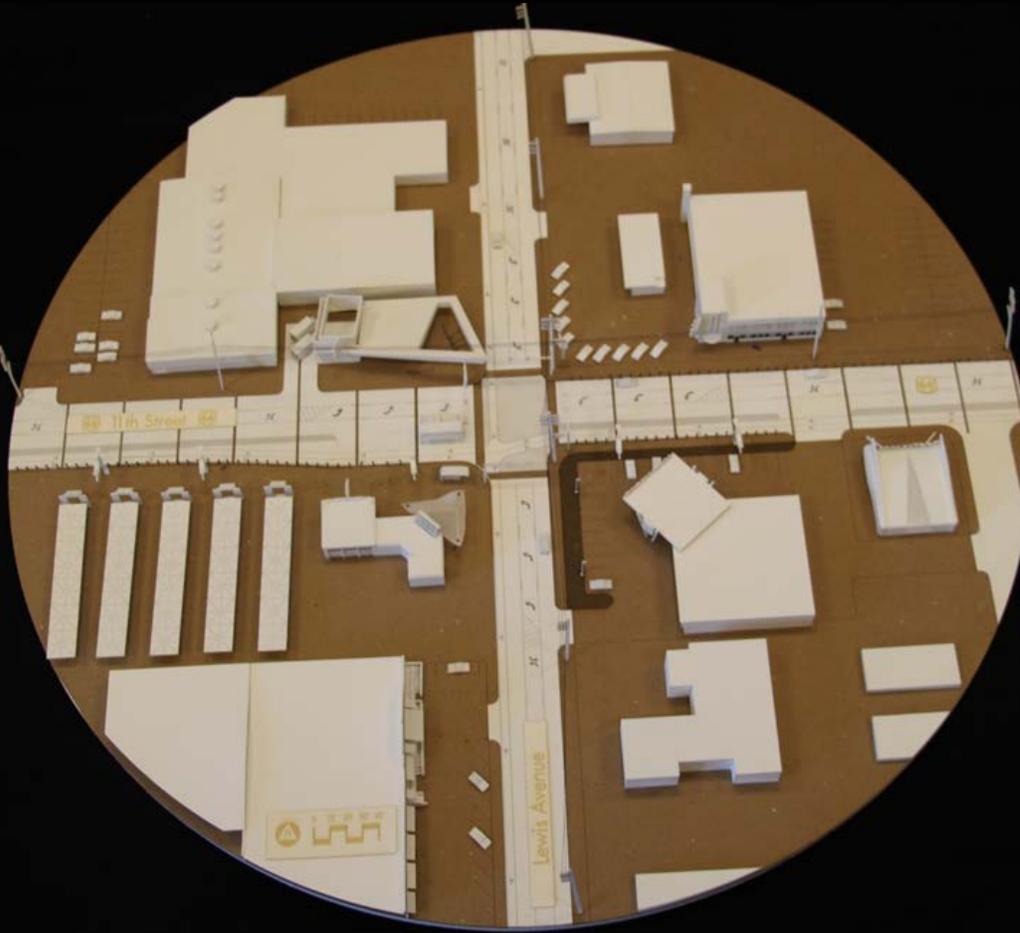
LEWIS

The goal for this submission is to bring the Open Road feeling back to this three and a half mile stretch of Route 66 in Tulsa. To do this, the design eliminates all curbs and fences, which divide the road and the surrounding businesses into separate entities. Creating this type of streetscaping brings the road, bike lanes, sidewalks, businesses, and dining facilities on to one level. Each building is as accessible as its neighbor, thus unifying both sides of the street.
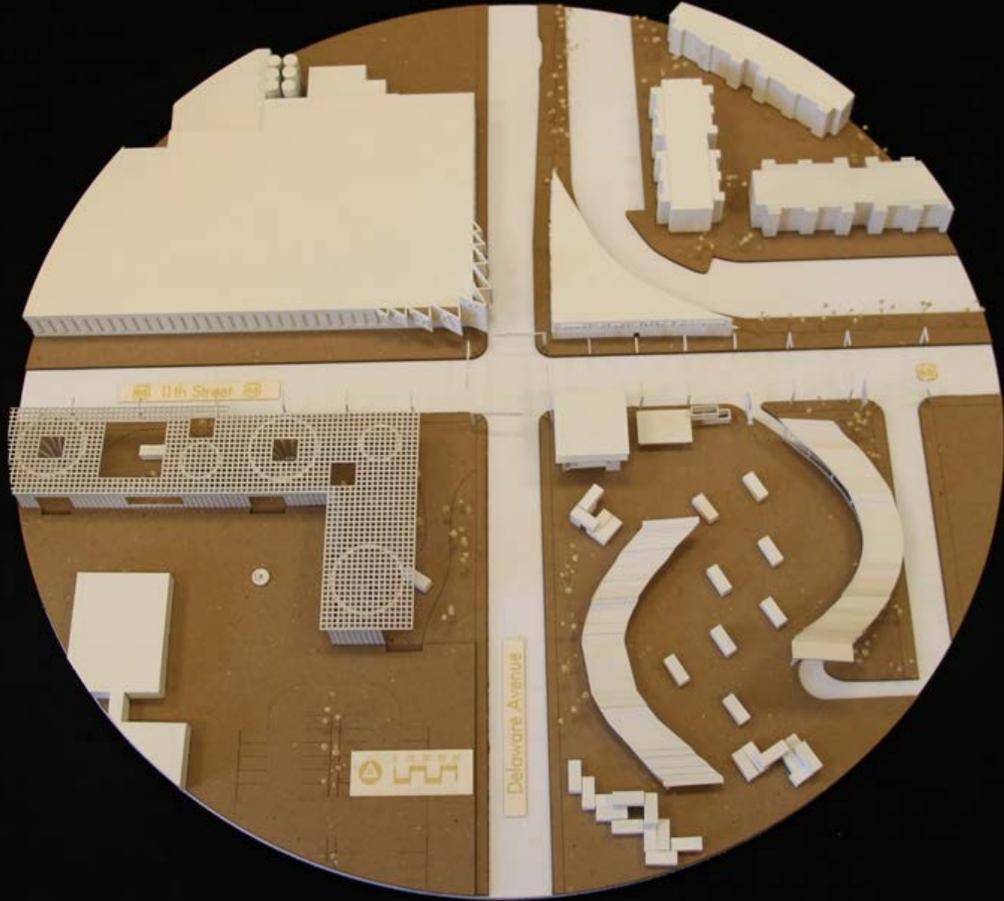
DELAWARE

Lined with parking lots, overpowering aggregate facades, and chain restaurants, the intersection of 11th and Delaware currently lacks both direction and a connection to the history of Route 66. In order to establish an interactive environment in which this history is both displayed and celebrated, the existing structures have been reimagined as components lending themselves to the overarching theme: The Rest Stop.
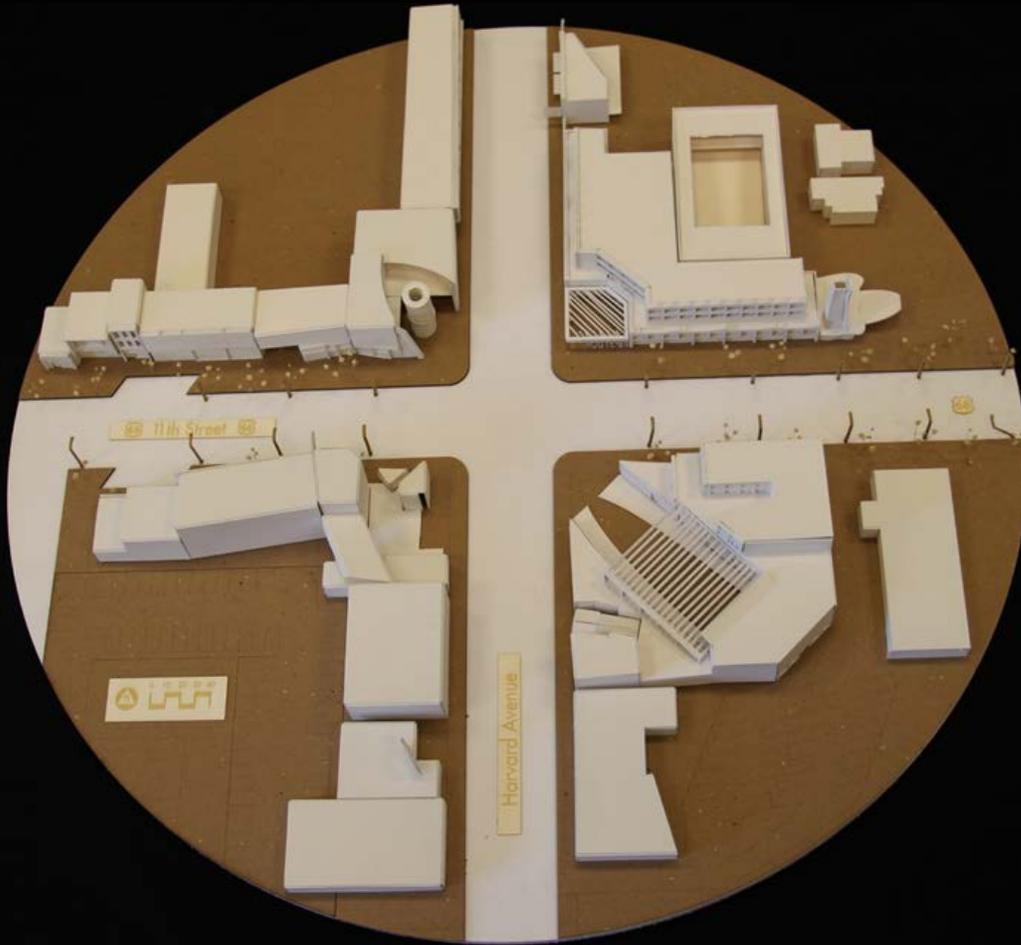
HARVARD

Reinventing the empty and forgotten stretch of 11th street will start with the addition of center medians as well as safe, bright, bike lanes, protected from traffic by a small barrier of low planter boxes. The sidewalks then begin to take on a comfortable size, encouraging pedestrian walkability and providing custom bench seating, each inspired by a state Route 66 touches for those who may choose to stop and rest outside of the many shops and eateries.
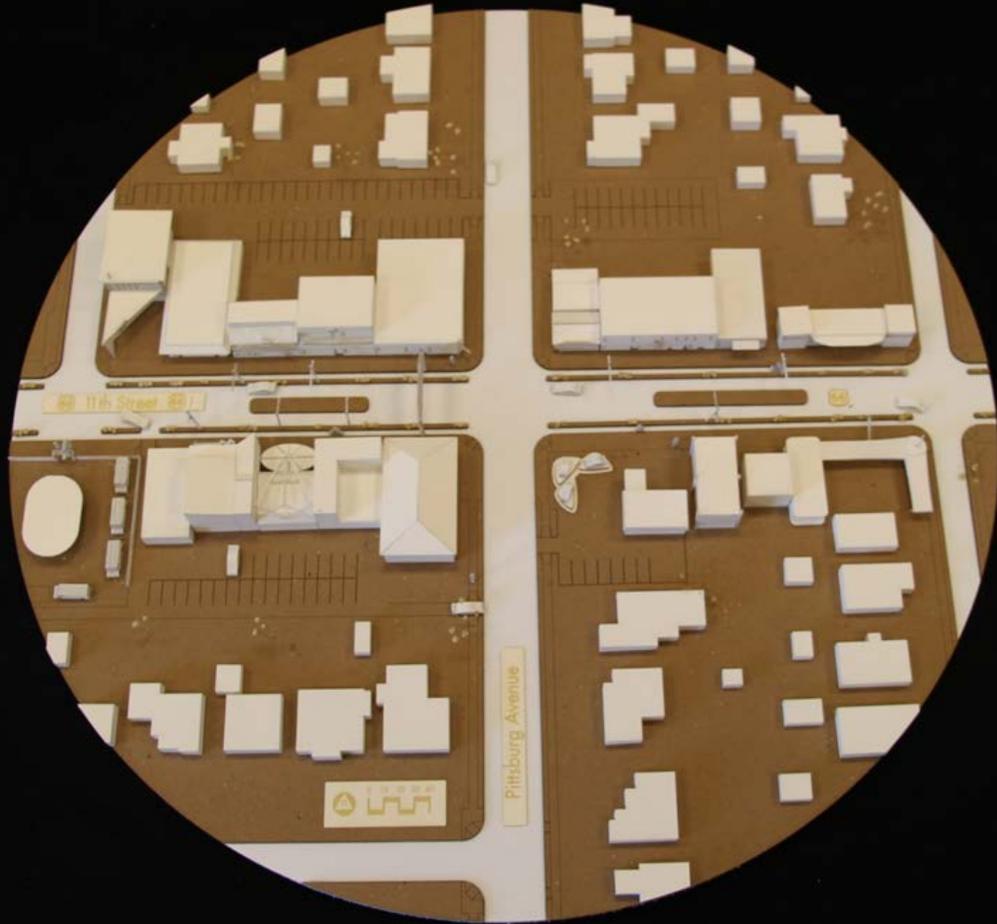
PITTSBURGH

A Retro Modern theme was used to rehabilitate a strip of Route 66. Will making 11th street look appear as part of Route 66 really going to draw locals and tourists alike? Applying an authentic Route 66 feel to 11th street was not enough. Eliminating seas of parking created by a car centric culture and accommodating a more pedestrian and bicycle culture instead deem necessary for the survival of Route 66. The attempt to accommodate a pedestrian and bicycle culture to Route 66 led to a more aesthetically pleasant, urbanized and functional street.
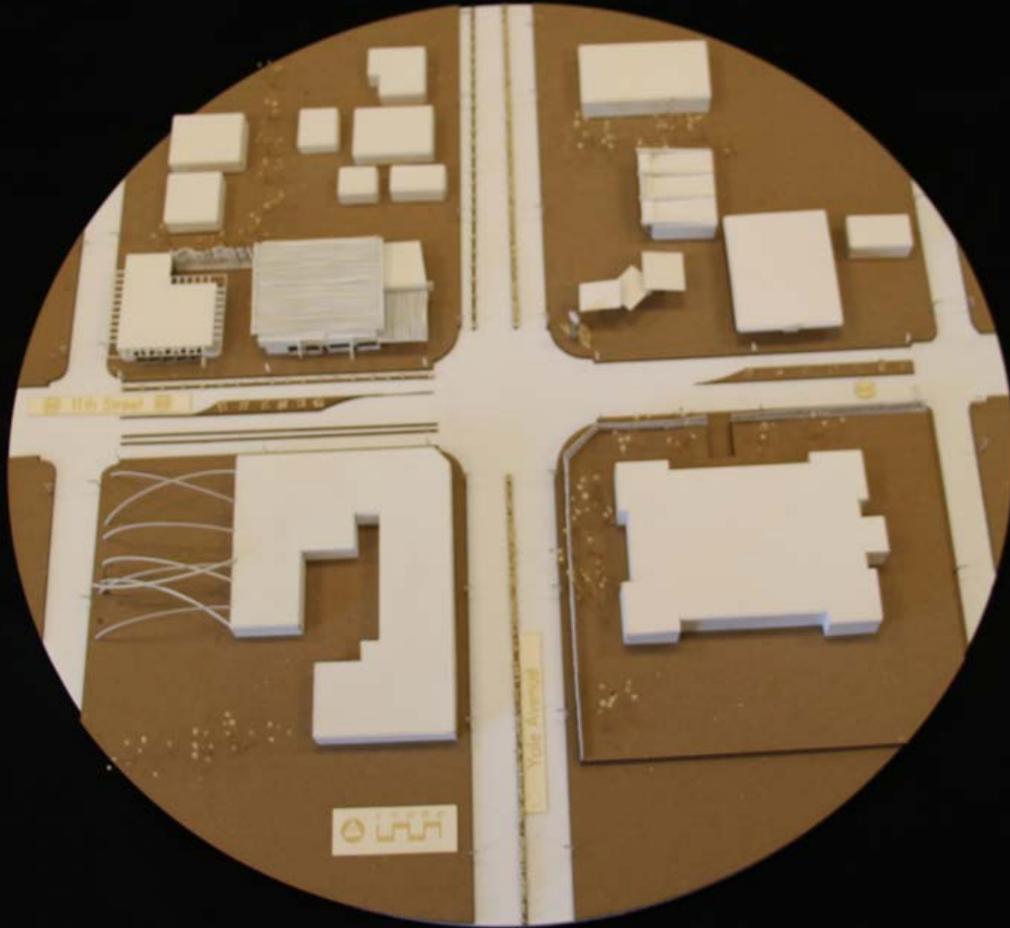
YALE

Route 66 is rooted in taking life slow and enjoying the journey. It runs through many cities, large and small, and connects them through pavement and gasoline. As time has passed, communities have grown along the mother road. At Yale and 11th St, the proposed renovation creates a family-oriented culture, centered on its community.

In order to select a winner a jury convened to make critical judgments on the body of work. The jury was selected for its geographic and professional diversity. Finding people willing to spend a day away from their busy schedules and who had some knowledge of design work was not easy. Finding varied expertise for the group was challenging. The final decisions were made and the invitations were sent to a select group.

ROUTE 66 TOUR
Students received tour from District 4 City Councilor & committee member Blake Ewing before working on their designs for the redevelopment of Route 66.

The jury was made up of five professionals

Karen Hayes-Thumann: Associate Professor of Visual Communications, University of Oklahoma

Deborah Richards: RAD Studio and adjunct Architecture Professor, University of Oklahoma

Russ Roach: Executive Director of Route 66 Development Group Inc.

Warren Ross: Ross Group Construction

Scott Swearingen: Tulsa Farmers' Market

Wade Swormstedt: Editor of Signs of the Times magazine

Steve Vogt: Dewberry Architects

The jury was then transported to Norman for the unveiling. After forty five minutes of calculated examination the jury sat down to make a decision. The jury discussed each model making notes on the pros and cons. After each project was discussed at length, the entrants were narrowed down. There was debate on two different models leading to a unanimous decision that the Lewis Avenue group was the winner. The jury was impressed with each intersection and each had good areas of design. The overriding

element that caused a favorite to be decided was the team that followed the design brief the closest. Other teams did not include certain elements that were required like bike lanes and a road diet. The jury found some good in every submission and was very proud of the students. Each member of the winning team received an $850 stipend to be used on their class trip to Chicago following the conclusion of the competition, as well as a hubcap plaque made by the Urban Design students in Tulsa.

NORMAN JURY
(Top) Jury members Steve Vogt, Debra Richards, Wade Swormstedt, Russ Roach, & Darren Ross giving critique of students work. (Bottom) Chair of Committee, Russ Roach, awards winning team.

COMPLETE STREETS WORKSHOP

The development of the Complete Streets Workshop was intended as an educational opportunity to introduce concepts such as shared space and complete streets. The concept of a "complete street" or "living street" defines a street that works well for its users and surrounding community, supporting all modes of transportation, but also appropriate adjacent land uses and activities, such as retailing, socializing, fun and recreation, education, activism or other activities that also define the streets context and make it complete. The workshop consisted of three parts.

Part one invited participants to conduct a walking assessment of 11th Street with invited workshop participants. The objective of the walking assessment is to familiarize participants with the current state of the design site: 11th Street / Route 66. Discover the conditions of the street for pedestrians and cyclists and explore how connected, safe, accessible and comfortable the walking environment is for walkers. Participants' also cataloged barriers and design deficiencies in the built environment.

Part two was a presentation by Mr. Gil Peñalosa at the OU-Tulsa Learning Center about 8 to 80 Cities. The objective of the talk was to introduce participants to the principles and practices of designing communities for people from age 8 to age 80. Examine the social justice issues involved in creating streets, parks and open spaces for everyone, not just motorists and discuss Complete Streets, Shared Space, and Context Sensitive Solutions for designing streets.

Part three was a design charrette for invited workshop participants in the Urban Design Studio facilitated by Mr. Peñalosa. The design workshop provided participants the opportunity to tactically design a street and apply the knowledge obtained in the walking assessment and the lecture, through the generation of sketches, notes and models. Planners, policy makers and design engineers worked in teams on a model simulation to explore different solutions and options according to the urban design findings on site and documents available online.

COMPLETE STREET WORKSHOP

(Top) Gil Penalosa talks about the condition of Tulsa's portion of Route 66. (Middle Left) Workshop attendees ride together down 11th Street. (Middle Right) Attendees work together to model a complete street. (Bottom) The model that the group of attendees produced during the workshop.

GIL PEÑALOSA

Gil Peñalosa is the founder and chair of "8-80 Cities", a non-profit organization based in Toronto, Canada, dedicated to contributing to the transformation of cities into places where people can walk, bike, access public transit and visit vibrant parks and public places.

His idea for the development of an 8-80 City follows that "If you create a city that's good for an 8 year old and good for an 80 year old, you will create a successful city for everyone"

In addition to this, Gil runs his own international consulting firm, Gil Peñalosa and Associates. He is an accomplished presenter and inspirational speaker and has worked over the past 8 years in more 180 cities across 6 continents.

He is the former commissioner of Parks, Sport and Recreation for Bogota, Colombia, and during the time he led the design of over 200 parks, a 121 km bicycle path and the transformation of public space and sustainable mobility.

EXHIBIT

The purpose of the Route 66: A String of Pearls exhibit was to showcase the work of the Urban Design and Architecture students in a way that drew attention to the need to revitalize 11th Street in Tulsa. The exhibit was displayed at the Lobeck Taylor Family Foundation's Numbered Car Building at 11th and Lewis Avenue, the future home of the Tulsa Farmers' Market and the subject of the winning teams design. The exhibit itself featured a reappearance of the 84' long "big asset map", used in the previous community outreach event at the Campbell Hotel, with the three dimensional models of each intersection lying on top. Above each section of the street, the eye-level images hung to give viewers a nice perspective of what each intersection could look like. The students design statements and sign models were also available to give viewers an idea of the vision for each intersection.

The event was a tremendous success. There were several notable people in attendance; Planners, Architects, Engineers, Contractors, Politicians and local citizens from the area, including City Counselors Blake Ewing, Jeannie Cue, and Anna America. There were television and newspaper reporters there to get the story. The atmosphere was festive and alive with live music and fresh foods from the Tulsa Farmers Market. The reports from the guests were all positive on the work that was done and the ideas that were brought. The concepts were studied and evaluated by everyone, with appreciation for the hard work that had been done.

The exhibition of this work was important because it brought together all of the elements used in the study. The Tulsa community was excited to see this new vision for 11th street and it prompted much discussion on what can be done to the area to increase tourism and revenue. Showcasing the designs of the Norman architecture and landscape architecture students has drawn much attention to Route 66 and will hopefully lead to further discussion and the implementation of new ideas.

STRING OF PEARLS EXHIBIT PHOTOS >>
(Top Four) Citizens view String of Pearls of Strings Exhibit at the Numbered Car Co. and interact with the complete street model.
(Bottom Four) Scott Swearigen, Professor Shawn Schaefer, Kathy Taylor, Elizabeth Frame-Ellison, Penni Shelton, and Katie Plohocky at the exhibit. City Councilor Blake Ewing and Elizabeth Frame-Ellison viewing one of the models at the exhibit.

TULSA WORLD SEPT.1, 2014 ROUTE 66 REVITALIZATION TO BE STUDIED BY GROUP OF 4 STUDENTS FROM OU-TULSA

"Route 66 is a powerful historical and cultural symbol for people all over this country and many far beyond our borders."

A ROUTE 66 COMPETITION: OKLAHOMA ARCHITECTURAL STUDENTS SUGGEST MAKEOVERS.
BY WADE SWORMSTEDT

As a board member of the Signage Foundation Inc. (SFI), I was invited to serve as a judge in a collegiate competition called the Route 66 String of Pearls Design Competition. Seven groups of architecture and landscape-architecture students from the Univ. of Oklahoma's College of Architecture were challenged to "resolve the divergent perception of Route 66, America's Main Street, with Tulsa's 11th Street, find ways to attract visitors to the city, integrate disengaged institutions into their urban-design schemes and strengthen the weak nodes of activity at the intersections." Signs were small part. Each group took an intersection along what formerly had been a part of Route 66.

TULSA WORLD EDITORIAL: A ROUTE 66 VISION FOR 11TH STREET- APRIL 14, 2015

We thank the OU students for their creativity and their public-spirited engagement. This sort of master planning for redeveloping the Route 66 potential would have cost tens of thousands of dollars from a consultant. We look forward to seeing those ideas blossom in the future.

NEWS ON 6, TULSA, OKLAHOMA - MAR.24, 2015

Route 66 may soon be getting a face-lift. Students with OU-Tulsa's Urban Design Studio met with an international planner and city leaders to talk about some ideas for the future of the famous highway.

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FINDINGS

Between Peoria Avenue and Yale Avenue there are a total of 236 frontage properties. Through observation we were four major categories were determined that classify the properties along the 11th Street Corridor.

1. Historic
- Territorial Era Buildings: Campbell Hotel, Ike's Chili, Tally's Cafe
- Art Deco: Monument Building, Page Warehouse, Tulsa Fixture
- Motel: Desert Inn, Western Hills

2. Auto Dominated
- Car Lots, Mechanics
- Fast Food Joints: Taco Bell Burger King
- Institutional Parking

3. Light Industrial
- Bama Pie
- Tulsa Welding School
- East RR Spur

4. Institutional
- University of Tulsa
- Center for Physically Challenged
- Hillcrest Hospital
- Schools (Mayo, Street School)
- 4 churches E. of Harvard

The properties along the corridor are adjacent to a number of major assets. Major business districts, parks, and strong neighborhoods make up the collection of properties in the immediate vicinity of 11th Street.

Cherry Street, the Pearl District, Kendall Whittier, and Downtown are all located in within the immediate area of the area this project has focused on. These districts have all become areas for entertainment and commercial activity. When comparing the 11th Street Corridor to the surrounding business districts, there is a shortfall of activity and new development. Given the historic nature of the road and the high levels of activity in the surrounding districts, this area is ideal for the promotion of development and attraction through new developments, rehabilitation of existing assets, and the promotion of the Route 66 brand.

In addition to the thriving business districts in the area, there are also a number of strong diverse neighborhoods and parks that create a strong sense of community. The neighborhoods consist of various income levels, densities, and demographics which are paramount to building thriving places. As development occurs along the 11th Street Corridor, the city must ensure that connectivity is provided in terms of pedestrian,

bicycle, and automotive infrastructure so that citizens can access all of the assets with ease and safety.

At this point in time, even native Tulsans do not view 11th Street as an attraction. When asked for thoughts about Route 66, people show no hesitation in citing exciting things such as classic cars, diners, music, and road trips; however, when asked about 11th Street in Tulsa the reactions are completely contrasting. 11th Street's dated reputation is that of used car lots, vacant property, abandoned buildings, and undesirable activity when in reality there have already been major strides by local business owners and concerned citizens to improve that reputation. There is minimal tourism along the stretch of road, but recent efforts have started to improve that. Antique shops and restaurants will all testify to meeting people from all over the world who still stop in regardless of the current reputation. This leaves room for nothing but improvement in the appeal of our piece of Route 66.

From an urban design standpoint, many mistakes have been made along the frontage of 11th Street as well as the design of the street itself, but they are not mistakes that cannot be fixed. The visual field on each side of the street is currently cluttered with utility poles and underutilized signage. With an average traffic count of 12,000 to 17,000 cars per a 24 hour period, the 4-lane cartway is over-designed for cars and lacking options for other modes of transportation such as walking and biking. The existing pedestrian infrastructure is in poor condition and in some areas not even functional. The current zoning ordinance has led to a juxtaposition of historic buildings with new development. These properties can be differentiated by the amount of surface parking and the depth of building setbacks. Historic buildings front the street and provide parking in the back and on the street; while post-1970 development has large building setbacks leading to valuable frontage being occupied by surface parking lots.

These findings were addressed by the student groups who participated in our design competition. The students proposed new and innovative ways for the city and private owners to cooperate on improving the overall streetscape for 11th Street. In addition to the design competition, we have created a set of recommendations for the future of Route 66.
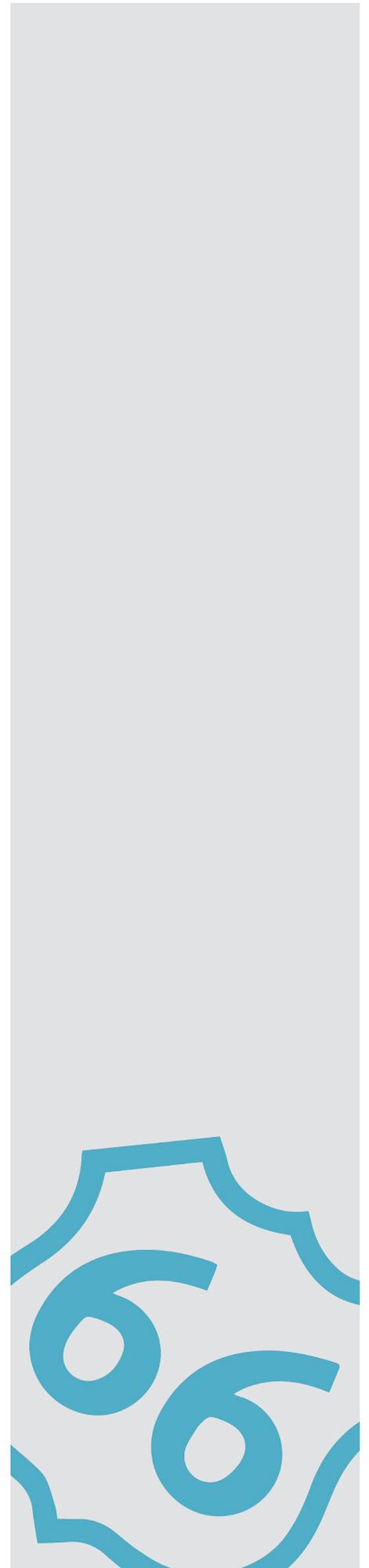
RECOMMENDATIONS

Through research 6 major recommendations for 11th Street were made. These recommendations could lead to major improvements along the corridor as well as attractive and sustainable development for Tulsa.

A CULTURAL EXPERIENCE – TULSA'S ROUTE 66 DRIVING MUSEUM

There are many attractions along Route 66. In order to attract tourists, Tulsa must do something unique while still reaching out to those enthusiasts traveling the road. Cars are a major piece of the history and continued interest in Route 66. Imagine having the ability to tour a museum of classic cars without ever leaving your vehicle.

Tulsa's Route 66 Driving Museum could assist with attracting tourists while also utilizing current properties that aren't very appealing. First requirement would be a collection of classic cars with owners willing to participate. The collection could belong to a sole foundation or entity. It could also belong to a group of sponsors or contributors. Given that cars are acquired, the next step would be the creation of secure and appealing cases to display the cars along the 11th Street frontage. A possible solution could be a collaboration between the foundation and other institutions along the road such as Tulsa Welding School and University of Tulsa. Students could design and build the displays and be featured for their work. In addition to the car displays, buildings and property owners could display authentic pieces of Route 66 history such as neon signage or add additional interior lighting to visually enhance their buildings. The collection of light, signs, and cars would draw new traffic to the corridor and serve as a unique installation to Tulsa.

DESIGN A COMPLETE STREET

The current street design is a hindrance to multi-modal transportation methods. The idea of a complete street involves designing city streets to serve every category of commuter as we illustrated with the Complete Streets Workshop. That means cyclists, pedestrians, transit-riders, and drivers. As improvements for the 11th Street corridor are scheduled, the city must follow the recommendations of the adopted Complete Streets Manual. This involves the creation of safe and secure sidewalks, bicycle lanes, and sensible lanes for automotive traffic. Utility poles need to be buried so they will not obstruct sidewalks or commercial frontage. This type of design encourages alternate modes of transportation which leads to decreased automotive traffic, increased physical activity, and overall healthier, happier communities.

UTILIZE EXISTING ASSETS THROUGH HISTORIC PRESERVATION

The current building stock throughout the project area has several historic assets that could qualify for historic preservation grants and funding. In addition, the historic buildings along the corridor illustrate the authentic character and architectural style that should be mimicked by any new development. To protect the existing historic character, the city should adopt a zoning overlay such as historic preservation or the newly proposed plan-based overlay from our zoning code update. This type of zoning regulation can ensure healthy and consistent development along the corridor so that the character of the frontage is protected from inconsistent new buildings and surface parking.

ROSSI BROTHERS
Rossi Brothers located at 11th & Jamestown is a n excellent example of Historic Preservation.

LOCAL ECONOMIC DEVELOPMENT – CREATE A ROUTE 66 BUSINESS IMPROVEMENT DISTRICT

Unfortunately, the improvements to the street and infrastructure will not pay for themselves. Major improvements mean major costs. A solution to these costs would be the creation of a business improvement district (BID) or community improvement district (CID). BID and CID areas are a defined boundary where businesses pay an additional tax which is dedicated to street improvements, trash cleanup, security, marketing, and other major public goods for the area. New taxes can be scary, but with the write communication to business owners and stakeholders, it could be readily welcomed. The city must play a part in vocalizing the importance of a defined improvement district by engaging the public in the discussion from the beginning and taking them through the process. The improvement district shouldn't be looked at as a burden to business owners, but instead as an investment.

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For immediate improvements, a grassroots organization could be created as a collaborative effort by business owners, institutions, and neighborhoods that are adjacent to the corridor. Community led trash cleanup, mowing, and promotion of Route 66 is an easy way to immediately improve the area.

Some things that could be improved immediately without any major expense would be highlighting existing historic signs with neon lights. This prevents new owners from undertaking the expense of completely rehabilitating the sign; however, it still illustrates the deep history of Route 66 and the authenticity of existing signage.
Signage, especially neon, has been a common thread in efforts to revitalize Route 66 throughout the U.S. It is important to preserve those that still exist.

ENGAGE THE MAJOR INSTITUTIONS

It is within everyone's interest to have an engaged and progressive community, even the major institutions along the road. Innovation occurs when ideas can be exchanged quickly among individuals from all backgrounds. The diverse neighborhoods, the university, and the diverse demographics of the surrounding neighborhoods provide the perfect ingredients for a newly devised concept called an "innovation district".

Innovation Districts require 3 major components. Currently, our project area has 2 of the 3 requirements. These components are Economic Assets (Hillcrest Hospital, Tulsa University, Tulsa Welding), Physical Assets (Parks, Historic Buildings, Institutional Campuses), and finally, the area 11th Street currently falls behind, Networking Assets. Networking Assets are channels between existing property owners, enthusiasts, and surrounding neighborhoods that encourage open communication and innovation. With the creation of an innovation district, networking channels can be added to the existing components to encourage local innovation and development.

PROMOTE INFILL AND REVITALIZATION OF EXISTING PROPERTY

Research showed a large amount of vacant lots, as well as surface parking lots and underutilized properties. With these spaces, infill development and repurposing must be encouraged and supported by the City of Tulsa. Current building codes along with the current zoning code prohibit some of the most sought after development through the enforcement of setbacks, parking, and additional regulation. The Vision 2025 plan for Route 66 indicates through visual preference surveys that building to the street, proper pedestrian infrastructure, and attractive streetscaping create the ideal place for citizens.

APPENDIX

Route 66 / 11th Street Urban Design Project
Updated May 2, 2015

Expense Summary	subtotal
Kick-off Event	$73.97
Student Visit to Tulsa	$702.15
Competition Expenses	$1,403.30
Competition Jury	$1,033.10
Scholarships for Competition Winners	$4,250.00
Complete Streets Workshop	$2,818.06
Route 66 Exhibit	$6,392.00
Salaries and Wages	$2,428.00
Indirect Costs to the University	$622.00
Total Direct Expenses	**$19,722.58**

Revenue Summary	
Gift from Signage Foundation Inc.	$10,000.00
TSET Grant through INCOG	$7,000.00
Gift from Lobeck-Taylor Foundation	$1,000.00
Gift from Bama Pie	$1,000.00
Gift from Tally's Café	$300.00
Gift from Tulsa Farmers' Market	$100.00
Gift from Karen Gray Ph.D.	$50.00
Gift from Michellle and David Beach	$50.00
Total Revenue	**$19,500.00**

Estimated In-kind Contributions not included above	
Campbell Hotel Renaissance Event Center Rental	$750.00
Blue Ox Catering	$100.00
Tallly's Café Catering	$100.00
Michael Wallis Speaker Fee	$3,000.00
Tulsa Historical Society Space Rental	$1,000.00
MTTA Bus Rental	$570.00
3M Corporation and Miratec Systems Printing Costs	$1,782.00
Lobeck-Taylor Foundation Space Rental	$2,500.00
Tulsa Farmers' Market and Penni Shelton Catering Staff	$1,000.00
Institute for Quality Communites - Gil Penalosa Speaker Fee	$2,500.00
Total In-kind Contributions	**$13,302.00**
Total Project Cost	**$33,024.58**

Revised February 5, 2015

ROUTE 66 REVITALIZATION
URBAN DESIGN STUDIO
The University of Oklahoma

PROJECT SCHEDULE

SEP
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY

inventory and analysis
sep 6

create competition brief
outline
rough draft
final draft
oct 18
nov 15
dec 6

steering committee meetings

holiday break

design competition
tulsa visit
submission deadline
jury and awards
jan 24
feb 13
feb 25

complete streets
professional workshop
public workshop
mar 24
apr 9

exhibit
norman opening
tulsa opening
mar 23
apr 9

spring break

feb 21

mar 28
rescheduled

project report
outline
rough draft
final draft
apr 18

may 2

TULSA, OKLAHOMA

RT

A STRING OF PEARLS

66

ESTABLISHED 1926

DESIGN COMPETITION
SPRING 2015

*TULSA IS THE BIRTHPLACE OF **ROUTE 66**; HOWEVER, MANY TULSANS TODAY DON'T UNDERSTAND WHAT ROUTE 66 TRULY REPRESENTS. THE HISTORIC ROUTE 66 CORRIDOR THROUGH TULSA IS MARKED ONLY WITH BATTERED SIGNAGE AND OBSCURE, FRACTURED CONCRETE PLANTERS. IT IS NO LONGER KNOWN AS THE MAIN STREET OF AMERICA, OR THE MOTHER ROAD, BUT AS 11TH STREET.*

"GREAT THINGS ARE NOT ACCOMPLISHED BY THOSE WHO YIELD TO TRENDS AND FADS AND POPULAR OPINION."

- JACK KEROUAC

MISSION STATEMENT

The mission of this project is to change the perception of 11th street from a negative image to a destination for Tulsans and tourists. Route 66 should promote tourism but at the same time, create a destination for the people of Tulsa. The key is to engage the community by creating an area for local business and public use. The project outcomes should create a connected, accessible environment where people can become involved in community activities as well as day to day functions. The development of Route 66 should honor the history of Tulsa while remaining sensitive to the current needs of Tulsans.

COMPETITION OBJECTIVES

1. Resolve the divergent perceptions of Route 66, America's Main Street, and 11th Street, a rundown Tulsa strip.
2. Create an authentic cultural experience, exhibiting a collection of Folk Art, kitsch, and Americana.
3. Find ways to prevent tourists from bypassing Tulsa.
4. Integrate disengaged institutions into urban design schemes.
5. Strengthen the weak nodes at the major intersections.

HISTORY

Route 66 in Oklahoma is a child of the Great Depression of the 1930's, when the financial disaster of the stock market crash and subsequent bank failures combined with the environmental calamity of the dust bowl resulted in one the nation's great migrations. Self- sufficient farmers and merchants from small towns, like the Joad family in Steinbeck's *The Grapes of Wrath*, fled foreclosure and drought looking for a new life in the promised land of California.

After World War II, the enormous economic rebound in the 1950's changed Route 66 from a path of desperation to a conduit of commerce and opportunity. Model A's where replaced by tailfins, and motor lodges replaced campgrounds, as the country prospered. Some people began to travel because they wanted to, not because they needed to, as the new era saw the first waves of popular tourism. The automobile tourist was not the only new kind of person along the highway. The hitchhiking hipster, characterized by Sal Paradise in Jack Kerouac's *On the Road*, soon became a symbol of the emerging counterculture man looking for hedonistic pleasure and an escape from or an alternative to the organizational society and its rigid conformity. Those peripatetic travels and experiences also brought together and mixed cultural influences that had existed in isolation before, including jazz music and avant-garde art from the big cities with rural influences such as country music and folk art typified by Oklahoman Woody Guthrie.

The hipster's aversion to conformity and his or her search for self-identity spread to and infected commercial industries, most importantly advertising, eventually leading to the creative revolution of the 1960's. The new emphasis on youth, rebellion and originality would soon be embraced by mainstream society. While the status quo of society was being challenged, one thing was not: the hegemony of corporations and their consolidation of the nation's economy.

The increasingly centralized and commoditized control needed for the consumer culture in the country required expanded and more reliable transportation. The construction of the interstate highway system, which largely eclipsed the nation's rail and road systems, was the death knell for Route 66. The new highways, designed for higher speeds, did not go anywhere; they just went past places, leaving the old routes with far lower traffic counts and far fewer visitors. By the late 1970's, the vibrant strips of economic activity began to die out, as new franchise hotels, restaurants, and stores opened around the interchanges, each looking just like all the other ones.

The ruins and fragments of Old Route 66 are what remain now, but there are still many people who have not forgotten its glory days and what it still symbolizes: the struggles to survive, the importance of people over institutions, and the need for freedom and self- determination. Visitors, many from overseas, come looking for history and inspiration as they search for wide open spaces and a way of living not driven by large organizations motivated by profit and institutions that dehumanize them. Most want an authentic experience, not another themed environment created by Walt Disney, a tall order given that Route 66 attractions were often kitschy and superficial in their own right. A key distinction is that they were created and existed individually. The goal of this project is to look for a way to create such an experience on Tulsa's Route 66, a new type of cultural museum.

URBAN DESIGN – RESEARCH FINDINGS

In the course of preparing this brief, students from the University of Oklahoma Urban Design Studio have conducted extensive research to infrom the challenges posed to competittors. This segment of 11th Street is part of over 23 miles of old Route 66 running through the City of Tulsa. This 3.5 mile long stretch is identified as the university segment in the 2005 Route 66 Master Plan and was designated Route 66 from 1932 until the route was decommissioned in 1978. The area of the city adjacent to the segment was subdivided and developed chiefly between 1910 and 1940. Much of the area bordering 11th Street is fine grained residential subdivisions with 50' x 150' rectangular lots assembled into 16 to 24 lot blocks. Blocks generally run north-south except on the north side of 11th Street in the Kendall Tennants subdivison between Lewis Avenue and Delaware Avenue. Two other exceptions are the curvilinear, picturesque plats in White City and in the northwest corner of Fair Heights. Several large megablocks also break the pattern and are evident as aggregate areas for institutions such as the University of Tulsa and the Tulsa County Fairgrounds. The railroad produces irregular lots as it slashes through the adjacent grids.

The topography along 11th Street undulates gently from a low point of 680' above Mean Sea Level near the Inner Dispersal Loop on the west to 780' above Mean Sea Level at Yale Avenue. The highest point of 784' MSL occurs on a ridge that bisects the University Tulsa Campus near Chapman Stadium and runs to the southeast near the Tulsa County Fairgrounds. Areas to the West and South of this ridge drain to Elm Creek, a trubutary of the Arkansas River, while areas to the North and East drain into Coal Creek, a tributary of Bird Creek. Both creeks have beeen burried and routed through underground conduits as part of the City of Tulsa stormwater management system. While this area is relatively flat and drains well, several intersections are prone to urban street flooding during heavy rains, especially the Harvard Avenue intersection.

According to the 2010 U.S. Census, the area within one mile of 11th Street from Peoria Avenue to Yale Avenue has a total population of 29,479 people. The population density is 3,216 persons per square mile which is almost twice the City of Tulsa average of 1,969 persons per square mile. Duue to the presence of apartment buildings, the blocks with the highest densities occur on the north side of 11th Street in the Kendall Neighborhood ranging from 11,000 to close to 26,000 persons per square mile. Other concentrations of higher densities occur on the University of Tulsa Campus and in the Forest Orchard Neighborhood adjacent to Hillcrest Hospital. The population is ethnically diverse with some notable sub-populations. Recent immigration has seen significant increases in Hispanic population in the northwestern quandrant of the area and over 3,000 university students live on and near the University of Tulsa campus. The neighborhoods north of 11th Street are considerably poorer with lower educational attainment than the ones south of the street.

With close to 10,000 people living within in 1/4 mile walking distance and up to 20,000 more within its one mile service area, this stretch of Route 66 has the potential to be an important Main Street in Tulsa. Major attractions within a twenty minute walk include Hillcrest Medical Center, the entire University of Tulsa Campus, the Tulsa County Fairgrounds, Cherry Street, the Pearl District, Tracy Park, Braden Park, Kendall-Whittier School, Will Rogers High School and seven places of worship. Nearby businesses within walking distance include groceries, drug stores, hardware stores, restaurants and banks. The Midland Valley Trail crosses at the west end of the street leading to the extensive trail system along the Arkansas River. The street is well-served by the city's current bus system, with Route 111 running east-west down 11th Street. Several north-south routes cross 11th Street, namely Route 105 at Peoria Avenue, Route 222 at Utica Avenue, Route 112 at Lewis Avenue, and Route 210 at Harvard Avenue. These crossing routes are biased to providing service to the south side of the city, since all of them proceed to the downtown transfer station and do not cross Interstate 244; consequently, riders going north must transfer buses.

Two hundred and thirty-six properties front this segment of 11th Street with a wide variety of buildings and uses. A number of properties have historic significance. Territorial Era Commercial Architecture is fairly common with prominent examples being the Campbell Hotel, Ike's Chili House, El Rancho Grande Rrestaurant, and Tally's Cafe. Art Deco is also well represented by the Monument Building, Tulsa Fixture Company, and the Pace Moving and Storage Warehouse. Nationally significant Art Deco architecture can also be found close-by at Will Rogers High School and the Tulsa County Fairgounds Pavillion. Several Mid-Century structures remain with the most significant being the Western Hills Motel, an excellent example of the motor courts found along Route 66. Several large instititutions border the street, including the University of Tulsa with its distinctive Tennessee Limestone architectural palette; Hillcrest Medical Center, an example of Beton Brut precast concrete construction; the Center for the Physically Challenged Campus, and two Tulsa Public School sites: the Mayo Demonstration Academy and the Margaret Hudson Program. Several churches border the street as well, with all of them being east of Harvard Avenue. Light industrial properties exist near the railroad right-of-ways, including Tulsa Welding School, Tulsa Fixture and Bama Pie Company, where they bake all of the pies for McDonalds and many other restaurants. Finally, Route 66 was always autocentric and 11th Street has many auto-oriented business including mechanics' shops, used car lots, and fast food joints.

In summary, 11th Street is a palimpsest of styles and eras that have accreted over time with no dominant theme. The intensity of use tends to decrease from west to east. Many of the large institutions along the street have turned their backs on an environment some see as neglected by building fences, walls and landscaping barriers. Parking lots are another

significant land use lining the street. The streetscape presents a cluttered visual field with a proliferation of utility poles and signs. The four-lane street is overdesigned for the traffic volume which never exceeds 18,000 vehicles per day at any location and the walking infrastructure is poorly designed and minimally maintained. Perhaps the most striking finding is that the major arterial intersections are weak nodes of activity, just the opposite one might expect. The purpose of this design challenge is to transform these weak nodes into a String of Pearls along Route 66 and restore 11th Street to a major main street in Tulsa.

STRENGTHENING THE WEAK NODES

This competition focuses on the seven intersections along the 11th Street/Route 66 corridor between Peoria Avenue and Yale Avenue. These intersections are what are called "weak nodes", meaning that they should contribute more to the function, appeal, or usefulness of the street. For these intersections to become more functional they need to draw activity.   Each design team will be able to downlaod materials specific to their site that includes maps, photos, and specific insructions to be incorporated in their design: http://route66stringofpearls.wordpress.com. It is important to remember that while each team is working on one intersection, they are all connected together, Teams should consult with each other, especially with adjacent intersections, and coordinate where possible. This is especially important for streetscaping and roadway configurations. The following section briefly describes each of the intersections and some of their most important features.

Peoria Avenue

11th Street and Peoria Avenue

Tracy Park and the Oaklawn Cemetery make up the institutional presence near this intersection. It is unique to have green space on both sides of the street as a gateway to downtown. The Ada Robinson Studio is a historic, Bruce Goff designed house behind Tracy Park which might also be considered. The Lazar Import Care Specialists aka Honda Auto Repair on the South East corner of 11th and Quaker and The Wrench are auto oriented locations. They may also be good locations to display a vintage car. Create signage for a business in this area. Possible locations are the Corner Café or Lazar Import Care Specialists. Infill area is available under the Meadow Gold sign at the Southeast corner of 11th and Quaker and the storage facility on the Southeast side of Peoria Ave. This is a great location for an ice cream shop.

Utica Avenue

11th Street and Utica Avenue

The Hillcrest Hospital Parking garages on the Southwest and Southeast corner of Utica Avenue and the Center for the Physically Limited make up the institutional presence near this intersection. Consider pedestrian infrastructure leading to 11th Street from these areas as part of the streetscape. QuikTrip is a good location to consider a vintage car display and signage. Historic buildings in this area are the Tulsa Monument Building and Rancho Grande Restaurant. Utilize the vacant lot on the Northeast corner of Utica Avenue for an infill site.

Lewis Avenue

11th Street and Lewis Avenue

This intersection is currently home to Tulsa Welding School and will soon be the new location of the Tulsa Farmer's Market. The Lobeck-Taylor Foundation owns the property on the Southwest corner of the intersection and it will be the future home the Tulsa Farmer's Market. Address the crossing from Tulsa Welding School to the new market location on the Southwest corner as the Welding School and Farmer's Market will share parking. Create signage for the market. The Store Fixtures of Tulsa Building is a historic site that should be considered for rehab in the design. Advanced Auto Parts and the Farmer's Market are good locations for a vintage car display. Infill opportunities exist in the Farmer's Market are and in the vacant, Northeast corner lot by Tulsa Fixtures.

Delaware Avenue

The Mayo Demonstration School, University of Tulsa, and Bama Pie make up the institutional presence near this intersection. The Mayo School is also a historic building and is a good place to look at an infill opportunity in the parking lot on the South West corner. Infill opportunities also exist across the street from this lot on the Southeast side. This is a possible site for incubator business site for the school and the University of Tulsa to create an innovation district. The Northeast corner of the intersection should be considered as an area for improved streetscape and pedestrian access. Places for signage include Bama Pie and Taco Bueno. Taco Bueno is also a good location for a vintage car display.

11th Street and Delaware Avenue

Harvard Avenue

The Northwest corner of the intersection is occupied by the University of Tulsa (TU). Look at the streetscape while considering street crossings for football and basketball games. This corner could also be used as a location for a car display. The Check Casher building is a historic building and needs signage. Indianapolis Avenue cannot be closed. A car oriented location is the Burger King, which also has the potential for a car display. Infill opportunities are available in the North East corner of the intersection.

11th Street and Harvard Avenue

Pittsburg Avenue

The intersection at 11th and Pittsburgh acts as a gateway to Will Rogers High School to the North and the Tulsa County Fairgrounds to the South. Will Rogers High School is a historic building and way-finding signage could be created for it and the Fairgrounds. Signage should also be created for Taco Don Francisco, a popular eatery in the neighborhood. Streetscape and pedestrian infrastructure are needed due to the larger number of neighborhoods in this area. Auto oriented locations are the RL Fix Automotive Shop on the Northwest corner and the Fiesta Mart on the Southwest side of the street; these locations could house a car display. Infill area is available in the vacant lot East of the Fiesta Mart.

11th Street and Pittsburg Avenue

Yale Avenue

The Margaret Hudson Program facility on the Southeast corner is the historical and institutional presence at this intersection. The program provides pregnant and parenting teen mothers an opportunity to continue their academic education with the support of child care, social and health services. Streetscape and signage could be considered at this location and at Tally's Café. The auto oriented location is the Shell Gas Station on the Northeast corner. This location should be used as a place for a vintage car display. An infill opportunity exists on the Northwest corner next to the Java Stop.

11th Street and Yale Avenue

REQUIRED DESIGN ELEMENTS

All design teams must address the following elements:

Streetscape

As it appears now, the streetscape of Route 66 is cluttered and not very appealing. Aesthetic appeal is needed in conjunction with considerations for traffic, pedestrian, lighting, and parking issues. Each design should explore ways to transform 11th Street into a Complete Street with shared space for three lanes of automobile traffic, enhanced sidewalks for pedestrians, accommodations for a trolley proposed in the Fast Forward Transit Plan, a cycletrack or bike lanes as proposed in the GO Plan, street trees, traffic devices, street furniture and if space permits areas of on-street parking. Since many buildings are built to the property line, competitors are no allowed to widen the right-of-way.

Signage and Lighting Strategy

Vintage neon and tin signs are an essential part of the culture on Route 66. A common thread along the corridor is the preservation and restoration of classic signs to create an authentic experience. Each design will propose a new sign or signs for a business or institution at their assigned intersection and create a scale model to llustrate their proposal. These signs should consider the importance of corporate branding in their use of color, logos and patterns. Designers should also consider the illumination of existing signs and architecture. Artists, James Turrell and Tony Paiva, use field effects using colored light to produce ambient glow that might be used for inspiation.

Each team will also consider the lighting of the street and sidewalk. The street ighting strategy should promote responsible outdoor lighting for nighttime enjoyment, safety, and security while minimizing degradation of the night sky. Prevent light trespass and sky glow by incorporating full cut-off fixture design and reducing uplighting.

Cultural Experience

Every design should seek to capture the essence of Route 66 in Tulsa. Travelers should come to Tulsa seeking an experience that integrates the old and new. Simply recreating what once part of the roadway will not do justice to the current culture of Tulsa. The goal is to create a cultural experience, a museum that you move through. As artist Claes Oldenburg would put it, "*an art that is political-erotical-mystical, that does something other than sit on its ass in a museum.*" Designers should provide exterior and interior locations for the display and conservation of vintage cars, architectural artifacts and public art. Designs should also appeal to the residents of the neighborhoods surrounding this area. Route 66 is not specifically a tourist attraction but a place where everyday people live and work.

Institutional Presence

The institutions along this stretch of Route 66 tend to retreat from the street life rather than add to it. Part of this project will be to reimagine their presence on the street in ways that will incorporate them into the community and contribute to the streetscape. Designers should demonstrate how fences, unwanted landscape buffers and blank walls can be mitigated.

Rehabilitation of Existing Assets

There are many existing assets along this corridor. Some are in need of redesign and repurposing while some are doing well on their own. Design teams should come up with creative ways to rehabilitate buildings and businesses that are in need and highlight those that are currently in good condition. Historic structures and landscapes should follow the best practices of historic preservation.

Infill Development

Many lots within the intersection areas are underutilized or simply vacant. Each competition group should propose an infill building at their intersection. Infill projects should propose new uses, perhaps assocation with the new cultural experience, bringing in commerce and street life. Tulsa is the home to a number of food trucks looking for a place to go. The thriving culture of food trucks creates an amazing urban design opportunity. Each infill concept should include a semi-permanent location for a food truck(s) where vendors can safely park and serve patrons.

RECOMMENDED READINGS AND REFERENCES

Route 66: The Mother Road, pages 101-107, Michael Wallis

The Art of Cars - Michael Wallis and Suzanne Fitzgerald Wallis

Great Streets — Allen B. Jacobs

Lost America: The Abandoned Roadside West — Troy Paiva

Tulsa GO Plan (http://tulsatrc.org/goplan/)

*Fast Forward Plan Executive Summary (*http://www.fastforwardplan.org/Portals/0/Documents/102011RTSP/Exec_Summ_FINAL_10-13-2011.pdf

Route 66 Master Plan (http://vision2025.info/index.php/archives/2479)

City of Tulsa Complete Streets Manual (https://www.cityoftulsa.org/media/353633/CompleteStreetsProceduralManual_11-26-13.pdf)

Route 66: OU Urban Design Studio Blog: (http://rt66ouuds.wordpress.com/)

CONDITIONS OF THE COMPETITION

Groups of four or five students will be randomly selected and assigned one of the seven intersections along the project corridor to develop their design concepts The design teams must register on the competition website by January 19, 2015 at: http://route66stringofpearls.wordpress.com. Any questions abouut this brief or the competition should be submitted through the form provided on the website no later than 5:00 pm on January 23, 2015. All questions will be answered and posted on the competition website by January 26, 2015.

Schedule

- January 12th — First day of class

- January 14th — Norman students visit Tulsa

- January 23rd — Last Day to submit questions

- February 13th — Final deadline for all submission materials

- TBA— Notification of competition winners

- TBA — Exhibits presented in Norman

- TBA — Exhibits presented in Tulsa

SUBMISSION REQUIREMENTS

Each group will be required to submit the following items. All submissions must be anonymous without the name of the design team or the competitors on any portion of the submission.

Models

- 1"=20' scale model of intersection
    - 3' diameter circular base (gatorboard provided must be used.)
    - Differentiate between proposed and existing structures
    - Constructed from museum board and chipboard
- 1/4"=1'-0" scale model of proposed building sign

Two Eye-Level Perspective Drawings

- D-Size - Landscape orientation
- 300dpi resolution
- One rendering showing daytime view and one showing nighttime view.
- At least one view must be looking down 11th Street.
- Mounted on Foam Board
- Also Submitted as PDF

Competitors are encouraged to submit drawings that include graphics inspired by the movie *Cars:* (http://www.pixar.com/features_films/CARS#)

Written Statement

- 500 word designer's statement
    - Futura Font
    - 24 point title
    - 16 point body
    - Mounted on 22 x 11 foam board
    - Left-justified, ragged right

AWARDS

Each member of the winning competition team will receive an $850 scholarship for the Chicago trip slated for later in the semester. The stipend will be good for travel, hotel, and registration fees. The jury at its discretion may also select a submission to honor for the best delineation. This honor does not have a monetary award.

EVALUATION

This project will be judged by a jury of practicing professionals and interested community members in February 2015. Members of the jury to be announced. The jury has full discretion to evaluatethe project as they see fit, but will be provided the following suggested rubric for their use:

Evaluation Rubric

Total :   /70

Streetscape   Total   /10

Is the proposed streetscape appealing for both residents and travelers?

    1   2   3   4   5

Did this group look beyond the given criteria to observe and account for other areas for improvement?

    1   2   3   4   5

Signage and Lighting Strategy   Total   /10

How well does the design incorporate signage and lighting?

    1   2   3   4   5

Does the proposed design feel authentic to Route 66 and the project objectives?

    1   2   3   4   5

Cultural Experience   Total   /10

Does the proposed design enrich the current culture of Tulsa?

    1   2   3   4   5

Will this design appeal to the current residents living/working in the area while attracting travelers?

    1   2   3   4   5

Reimagined Institutional Presence   Total   /10

How well does this design bring the institutional presence into the street life?

    1   2   3   4   5

Will these ideas contribute to the promotion of Route 66?

    1   2   3   4   5

Rehabilitation of Existing Assets   Total   /10

How well will the rehabilitated sites contribute to the community?

    1   2   3   4   5

Do the sites add interest or function to the corridor?

    1   2   3   4   5

Infill Building   Total   /10

Does the infill utilize the entire empty or underutilized space?

    1   2   3   4   5

Does the infill add interest or function to the space?

    1   2   3   4   5

Presentation   Total   /10

Does the presentation effectively illustrate the design concept and is easy to understand?

    1   2   3   4   5

Are the graphics of high quality and the models well-crafted?

    1   2   3   4   5

ACKNOWLEDGMENTS

COMPLETE STREET DESIGN WORKSHOP

The University of Oklahoma Urban Design Studio

March 24th, 2015

COMPLETE STREET DESIGN WORKSHOP PROGRAM

CONTENT

1. **INTRODUCTION**

2. **MAIN OBJECTIVE**

3. **AGENDA**

4. **INFORMATION AND BACKGROUND ON THE PROJECT**

5. **INSTRUCTIONS FOR THE WORKSHOP**

6. **GLOSSARY AND USEFUL LINKS**

7. **DIRECTIONS TO THE STUDIO**

COMPLETE STREET DESIGN WORKSHOP PROGRAM

1. INTRODUCTION

The University of Oklahoma Urban Design Studio (OUUDS) has been developing the "Route 66 - String of Pearls" project since last August, along with students from our Graduate Program, undergraduate students of the Architecture Program at the University of Oklahoma in Norman and an Advisor Committee that was put together with members of the community in Tulsa.

The intention of this project is to revitalize 11th Street from Peoria Avenue to Yale Avenue, in order to attract visitors interested in the historic Route 66, benefit local businesses and enhance the quality of life of adjacent neighborhoods and the city itself. Part of this effort includes the redesign of the street configuration and streetscaping of the corridor using Complete Streets or Shared Space design principles.

2. MAIN OBJECTIVE

Led by internationally recognized urbanist, Gil Peñalosa, the objective of this exercise is to conduct a walking assessment, receive training and participate in hands-on exercises as part of the initiative "Route 66 - String of Pearls" project, which is being currently developed by the OUUDS. 11th street is an especially interesting case study in this regard with a right-of-way ranging from 52' to 100', three different designations in the Major Street and Highway Plan, and a wide range of land uses and development types along its frontage. It is also identified in the Fast Forward Transit Plan as a route for an historic trolley line and in the GO Plan for bicycle and pedestrians as a route for a cycle track.

We will explore design scenarios with implications for municipal policies and street standards, following Gil's "8-80 Cities" Model, which intends to engage and inspire to transform cities into healthy communities for everyone, regardless of social, economic or ethnic background, through the design and contribution of access to public transit, development of spaces where people can walk, bike (sustainable mobility) or engage in open doors and physical activities, such as public parks and vibrant streets.

COMPLETE STREET DESIGN WORKSHOP PROGRAM

3.   AGENDA

10:00 am – 12:00 pm: Walking Assessment of 11th Street with invited workshop participants.

Objective: Familiarize participants with the current state of the design site: 11th Street / Route 66. Discover the conditions of the street for pedestrians and cyclists. Explore how connected, safe, accessible and comfortable the walking environment is for walkers. Catalog barriers and design deficiencies in the built environment.

12:30 pm – 2:00 pm: Presentation by Mr. Peñalosa at OU-Tulsa about 8 to 80 Cities.

Objective: Introduce participants to the principles and practices of designing communities for people from age 8 to age 80. Examine the social justice issues involved in creating streets, parks and open spaces for everyone, not just motorists. Discussion of Complete Streets, Shared Space, and Context Sensitive Solutions for designing streets.

2:00 pm – 4:00 pm: Design Charrette for invited workshop participants in the Urban Design Studio facilitated by Mr. Peñalosa.

Objective: Provide participants the challenging opportunity to tactically design a street and apply the knowledge obtained in the walking assessment and the lecture, through the generation of sketches, notes and models.

COMPLETE STREET DESIGN WORKSHOP PROGRAM

4.   INFORMATION AND BACKGROUND ON THE PROJECT

Who is Gil Peñalosa?

Gil Peñalosa is the founder and chair of "8-80 Cities", a non-profit organization based in Toronto, Canada, dedicated to contributing to the transformation of cities into places where people can walk, bike, access public transit and visit vibrant parks and public places.

His idea for the development of an 8-80 City follows that "**If you create a city that's good for an 8 year old and good for an 80 year old, you will create a successful city for everyone**"

Source: **http://www.8-80cities.org/**

In addition to this, Gil runs his own international consulting firm, Gil Peñalosa and Associates**.** He is an accomplished presenter and inspirational speaker and has worked over the past 8 years in more 180 cities across 6 continents.

He is the former commissioner of Parks, Sport and Recreation for Bogota, Colombia, and during the time he led the design of over 200 parks, a 121 km bicycle path and the transformation of public space and sustainable mobility.

Source: **http://www.8-80cities.org/**

Other of his accomplishments and credentials include:

- Member of Board of Director of City Park Alliance USA
- Urban expert on Mobility and Citizen Engagement for Danish firm Gehl Architects.
- Senior Advisor to StreetFilms in NYC, American Trails and America Walks
- Holds an MBA from UCLA and chosen one of "100 most inspirational alumni"
- In 2013 was named one of the "Top 10 most influential Hispanic Canadian"
- In 2014 received a Doctorate Honoris Causa from the Faculty of Landscape Architecture and Urban Planning of the SLU Sweedish University.
- Has contributed chapter to 3 books: Enabling Cycling Cities: Ingredients for Success - Civitas Europe, Facilities for Cyclists (Copenhagen Denmark) and Resilent Sustainable Cities (Melbourne Australia)

On more information on Gil Peñalosa and 8-80 Cities, please visit http://www.8-80cities.org/

COMPLETE STREET DESIGN WORKSHOP PROGRAM

Why Route 66?

String of Pearls is an urban design project to explore ideas to improve a portion of 11th Street, formerly Route 66, in Tulsa, by creating a unique cultural experience focusing on Folk Art, Kitsch, and Americana. The project is conducted as a service learning opportunity for two groups of students from the University of Oklahoma, College of Architecture. Last fall, graduate students from the Urban Design Studio at OU-Tulsa conducted research and engaged the local community to gather knowledge for a design competition brief to be used by third-year Architecture and graduate Landscape Architecture students in Norman this spring. Interdisciplinary design teams of four or five students will each focus on the redesign of one of seven major intersections: the pearls along the string. Their work will be shared with the public during exhibits in Norman and Tulsa.

In addition to creating an authentic cultural experience based on Route 66's past, the project has several other objectives the students must address. They will be asked to resolve the divergent perception of Route 66, America's Main Street, with Tulsa's 11th Street, find ways to attract visitors to the city, integrate disengaged institutions into their urban design schemes and strengthen the weak nodes of activity at the intersections. The students are guided by faculty members, Shawn Schaefer, Kevin Anderson, Stephanie Pilat, Dawn Jourdan, Scott Williams and Jay Yowell, assisted by a twelve person professional steering committee representing businesses, institutions and local government. The project is sponsored by the Sign Foundation, Inc., Bama Pie Company, Cherry Street Farmers' Market, Lobeck-Taylor Foundation, Tally's Cafe and and Karen Gray, Ph.D.

History

Route 66 in Oklahoma is a child of the Great Depression of the 1930's, when the financial disaster of the stock market crash and subsequent bank failures combined with the environmental calamity of the dust bowl resulted in one the nation's great migrations. Self- sufficient farmers and merchants from small towns, like the Joad family in Steinbeck's The Grapes of Wrath, fled foreclosure and drought looking for a new life in the promised land of California.
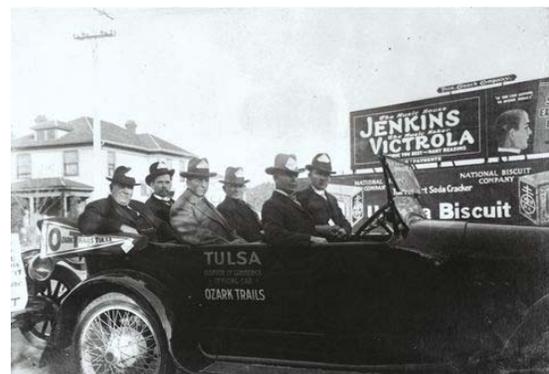
COMPLETE STREET DESIGN WORKSHOP PROGRAM

After World War II, the enormous economic rebound in the 1950's changed Route 66 from a path of desperation to a conduit of commerce and opportunity. Model A's where replaced by tailfins, and motor lodges replaced campgrounds, as the country prospered. Some people began to travel because they wanted to, not because they needed to, as the new era saw the first waves of popular tourism. The automobile tourist was not the only new kind of person along the highway. The hitchhiking hipster, characterized by Sal Paradise in Jack Kerouac's On the Road, soon became a symbol of the emerging counterculture man looking for hedonistic pleasure and an escape from or an alternative to the organizational society and its rigid conformity. Those peripatetic travels and experiences also brought together and mixed cultural influences that had existed in isolation before, including jazz music and avant-garde art from the big cities with rural influences such as country music and folk art typified by Oklahoman Woody Guthrie.

The hipster's aversion to conformity and his or her search for self-identity spread to and infected commercial industries, most importantly advertising, eventually leading to the creative revolution of the 1960's. The new emphasis on youth, rebellion and originality would soon be embraced by mainstream society. While the status quo of society was being challenged, one thing was not: the hegemony of corporations and their consolidation of the nation's economy.

The increasingly centralized and commoditized control needed for the consumer culture in the country required expanded and more reliable transportation. The construction of the interstate highway system, which largely eclipsed the nation's rail and road systems, was the death knell for Route 66. The new highways, designed for higher speeds, did not go anywhere; they just went past places, leaving the old routes with far lower traffic counts and far fewer visitors. By the late 1970's, the vibrant strips of economic activity began to die out, as new franchise hotels, restaurants, and stores opened around the interchanges, each looking just like all the other ones.

The ruins and fragments of Old Route 66 are what remain now, but there are still many people who have not forgotten its glory days and what it still symbolizes: the struggles to survive, the importance of people over institutions, and the need for freedom and self- determination. Visitors, many from

COMPLETE STREET DESIGN WORKSHOP PROGRAM

overseas, come looking for history and inspiration as they search for wide open spaces and a way of living not driven by large organizations motivated by profit and institutions that dehumanize them. Most want an authentic experience, not another themed environment created by Walt Disney, a tall order given that Route 66 attractions were often kitschy and superficial in their own right. A key distinction is that they were created and existed individually. The goal of this project is to look for a way to create such an experience on Tulsa's Route 66, a new type of cultural museum.

Recommended Readings & References:

Route 66: The Mother Road – Michael Wallis (Committee Member)

Great Streets – Allen B. Jacobs

Lost America: The Abandoned Roadside West – Troy Paiva

City of Tulsa Complete Streets Manual

Route 66: OU Urban Design Studio Blog (http://rt66ouuds.wordpress.com/)

COMPLETE STREET DESIGN WORKSHOP PROGRAM

What is a Complete Street?

A Complete Street is a road that is designed to be safe for drivers; bicyclists; transit vehicles and users; and pedestrians of all ages and abilities. The Complete Streets concept focuses not just on individual roads but on changing the decision-making and design process so that all users are routinely considered during the planning, designing, building and operating of all road ways. It is about policy and institutional change.

– from "Complete Streets: We Can Get There from Here," by John LaPlante, P.E., and Barbara McCann

The concept of a "complete street" or "living street" defines a street that works well for its users and surrounding community, supporting all modes of transportation, but also appropriate adjacent land uses and activities, such as retailing, socializing, fun and recreation, education, activism or other activities that also define the streets context and make it complete. Context Sensitive Solutions offers strategies and tools for understanding a street's or road's context, which can assist in the process of completing the street.

Source: http://www.ca-city.com/Images/CS_Fundamentals.jpg

Reference:

Context Sensitive Solutions (http://contextsensitivesolutions.org/content/topics/what_is_css/changing-society-communities/complete-streets/)

COMPLETE STREET DESIGN WORKSHOP PROGRAM

5. INSTRUCTIONS FOR THE WORKSHOP

The development of this workshop is intended as an educational opportunity to introduce concepts such as shared street and complete street, along with the use of alternative means of transportation like multimodal transit, cycling programs and pedestrian improvements.

With this workshop, we intend to develop street design schemes through the analysis of the existent and visualization using model simulations; we are looking forward to inspire teamwork with the collaboration of participants from different backgrounds, in order to come up with solutions that may be applied to the route 66 case in particular or others in the future.

Part 1. Walking Assessment of 11th Street with invited workshop participants.

From 10:00 am to 12:00 pm:

The objective of the walking assessment is to familiarize participants with the current state of the design site: 11th Street / Route 66. Discover the conditions of the street for pedestrians and cyclists and explore how connected, safe, accessible and comfortable the walking environment is for walkers. We will also catalog barriers and design deficiencies in the built environment.

Nowadays, 11th street is considered one of the most varied streets in the city. According to the Tulsa Metropolitan Area Major Street and Highway Plan, it has three classification standards for Trafficway Right-of-Way (Source: INCOG): From **Peoria to Lewis it is an Urban Arterial, Multi Modal Street; from Lewis to Harvard it is an Urban Arterial, Main Street and from Harvard to Yale it is a Secondary Arterial Multi Modal Street.** This street is one of the most special cases we have in Tulsa, which makes us question, why is all this variability necessary?

COMPLETE STREET DESIGN WORKSHOP PROGRAM
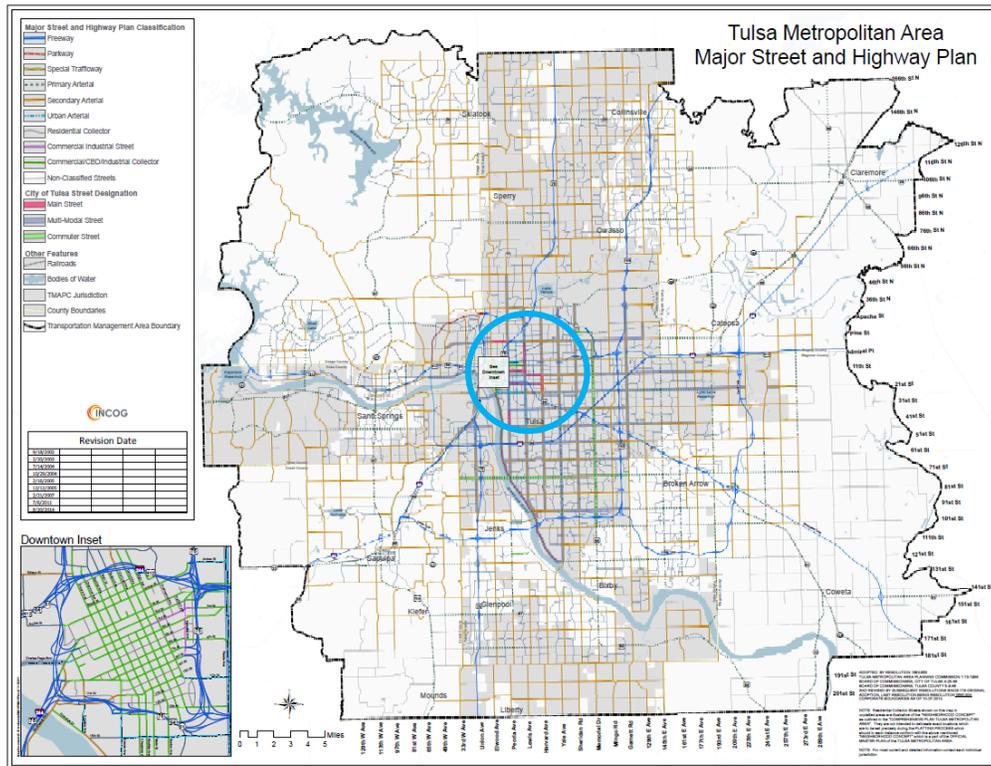
Source: **INCOG**

Source: **INCOG**

11th Street / Route 66

1. **Peoria to Lewis** (Urban Arterial, Multi Modal Street)
2. **Lewis to Harvard** (Urban Arterial, Main Street)
3. **Harvard to Yale** (Secondary Arterial Multi Modal Street)

COMPLETE STREET DESIGN WORKSHOP PROGRAM

Source: **INCOG**

During the assessment, we will make three stops, to analyze the three different Trafficway Right-of-Way standards expected to be present on 11th Street. These stops will follow the mentioned sections on the street.

1st Stop. Peoria to Lewis Section / UTICA INTERSECTION

2nd Stop. Lewis to Harvard Section / DELAWARE INTERSECTION

3rd Stop. Harvard to Yale Section / YALE INTERSECTION

COMPLETE STREET DESIGN WORKSHOP PROGRAM

Urban Arterial - Multi-Modal Street
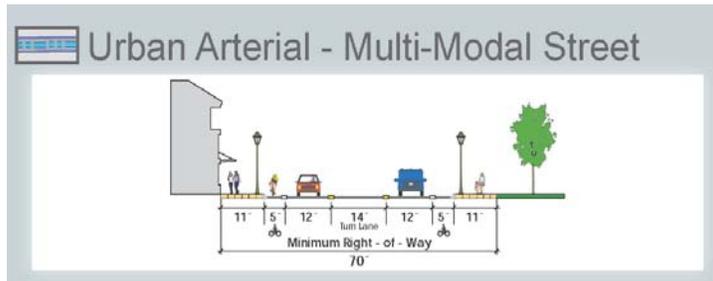
1st Stop. UTICA INTERSECTION (Expectation)

Urban Arterial - Main Street

2nd Stop. DELAWARE INTERSECTION (Expectation)

Secondary Arterial - Multi-Modal Street

Secondary Arterial Alt. - Multi-Modal Street
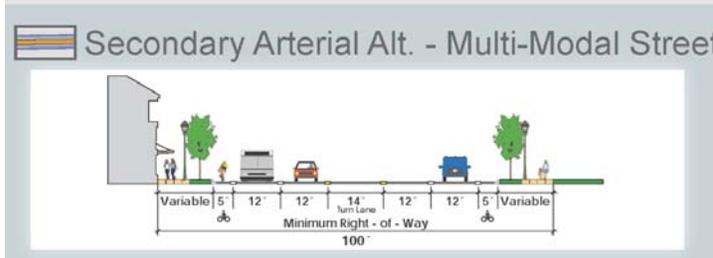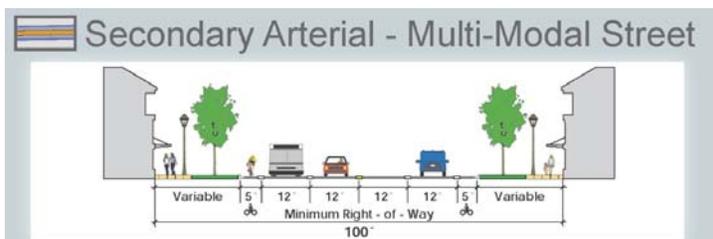
3rd Stop. YALE INTERSECTION (Expectation)

Source: **INCOG**

COMPLETE STREET DESIGN WORKSHOP PROGRAM

11th Street and Utica Avenue

1st Stop. Peoria to Lewis Section / UTICA INTERSECTION

Recommended Minimum Width: 70.0'

Measured Minimum Width: 53.1'
Measured Maximum Width: 101.4' (132.7' in small utility easement)
Average Measured Width: 65.7'

COMPLETE STREET DESIGN WORKSHOP PROGRAM

11th Street and Delaware Avenue

2nd Stop. Lewis to Harvard Section / DELAWARE INTERSECTION

Recommended Minimum Width: 70.0'

Measured Minimum Width: 54.6'
Measured Maximum Width: 73.0'
Average Measured Width: 64.6'

COMPLETE STREET DESIGN WORKSHOP PROGRAM

11th Street and Yale Avenue

**3rd Stop. Harvard to Yale Section / YALE INTERSECTION**

Recommended Minimum Width: 100.0'

Measured Minimum Width: 69.5'

**Measured Maximum Width:** 108.3'

Average Measured Width: 71.6'

COMPLETE STREET DESIGN WORKSHOP PROGRAM
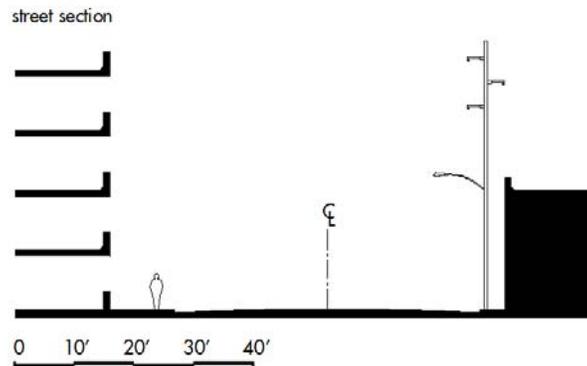
1st Stop. Peoria to Lewis Section / UTICA INTERSECTION (Reality)
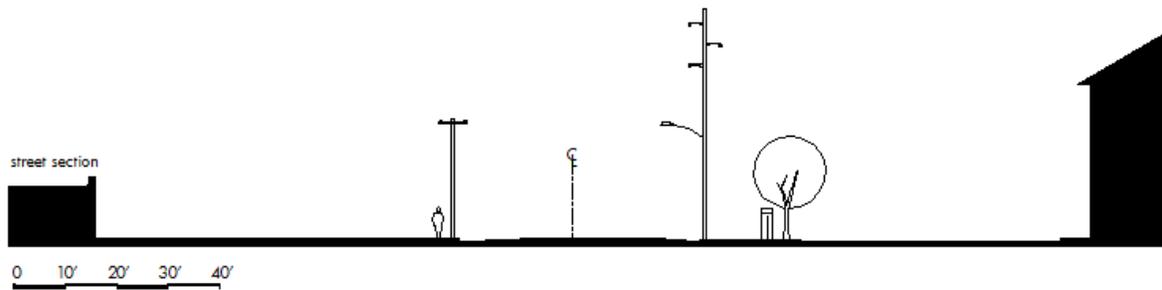
2nd Stop. Lewis to Harvard Section / DELAWARE INTERSECTION (Reality)
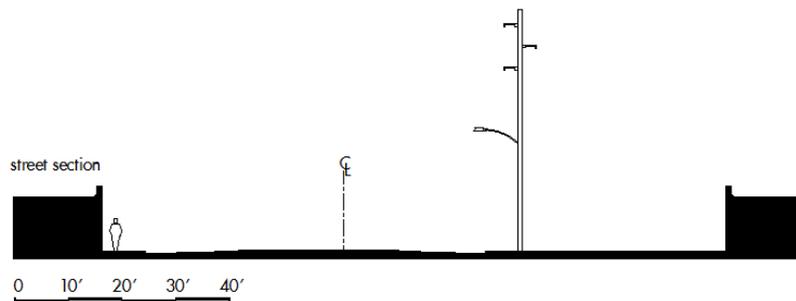
3rd Stop. Harvard to Yale Section / YALE INTERSECTION (Reality)

COMPLETE STREET DESIGN WORKSHOP PROGRAM

Part 2. Presentation by Mr. Peñalosa at OU-Tulsa about 8 to 80 Cities at the Learning Center

From 12:30 pm to 2:00 pm:

The objective of the talk is to introduce participants to the principles and practices of designing communities for people from age 8 to age 80. Examine the social justice issues involved in creating streets, parks and open spaces for everyone, not just motorists. Discussion of Complete Streets, Shared Space, and Context Sensitive Solutions for designing streets.

Part 3. Design Charrette for invited workshop participants in the Urban Design Studio facilitated by Mr. Peñalosa.

From 2:00 pm to 4:00 pm:

The objective of the design workshop is to provide participants the opportunity to tactically design a street and apply the knowledge obtained in the walking assessment and the lecture, through the generation of sketches, notes and models. Planners, policy makers and designers will work in teams on a model simulation to explore different solutions and options according to the urban design findings on site and documents available online and at the studio.

COMPLETE STREET DESIGN WORKSHOP PROGRAM

6.   **GLOSSARY AND USEFUL LINKS**

a)   **GLOSSARY OF TERMS**

Bike Lane: a part of a road marked off or separated for the use of bicyclists; it is usually marked only with paint.

Cycle Track: exclusive bicycle facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. It may be marked with a median or curb and may come both ways.

Complete Street: streets designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. They are also designed for recreation, commerce, socializing, education and other activities.

Main Street: Usually refers to the primary retail street of a town, traditionally the site of shops, banks, and other businesses.

Shared Space: Its an urban design approach which seeks to avoid divisions between vehicle traffic and pedestrians, by removing features such as curbs, road surface markings, traffic signs, and regulations.

Urban Arterial Main Street: Trafficway Right-of-Way standard that includes 2 lanes (one per way, 12' each), a turn lane (14'), 2 sidewalks (11' each) and 2 bike lanes (5' each). The Minimum Right of-Way is 70'.

Urban Arterial Multi Modal Street: Trafficway Right-of-Way standard that includes 2 lanes (one per way, 13' each), 2 lanes for parking (one per way, 10' each) and 2 sidewalks (12' each). The Minimum Right of-Way is 70'.

Secondary Arterial Multi Modal Street: Trafficway Right-of-Way standard that includes 4 lanes (2 per way, 12' each), 2 sidewalks (variable dimensions) and 2 bike lanes (5' each). The Minimum Right of-Way is 100'.

Secondary Arterial Alt. Multi Modal Street: Trafficway Right-of-Way standard that includes 4 lanes (2 per way, 12' each), a turn lane (14'), 2 sidewalks (variable dimensions) and 2 bike lanes (5' each). The Minimum Right of-Way is 100'.

COMPLETE STREET DESIGN WORKSHOP PROGRAM

b) **USEFUL LINKS**

- Indian Nations Council of Government (INCOG)

http://www.incog.org/

- City of Tulsa Comprehensive Plan

www.planitulsa.org/files/Searchable-070910%20pdf.pdf

http://www.planitulsa.org/plan

- Tulsa Metropolitan Area Major Street and Highway Plan

http://www.incog.org/Mapping_GIS_Resources/Documents/Major%20Street%20&%20Highway%20Plan%20Map.pdf

- Go Plan - Tulsa Regional Bicycle and Pedestrian Master Plan

http://tulsatrc.org/goplan/

- Tulsa Regional Trail System

http://www.incog.org/Transportation/trailguide/trailsmap7-19-13.pdf

- Fast Forward Regional Transit Plan

http://www.fastforwardplan.org/

- City of Tulsa Complete Street Procedural Manual

https://www.cityoftulsa.org/media/353633/CompleteStreetsProceduralManual_11-26-13.pdf

COMPLETE STREET DESIGN WORKSHOP PROGRAM

7.   DIRECTIONS TO THE STUDIO

The University of Oklahoma Urban Design Studio is located on the Southwest Side of Campus following the loop. We recommend you to park in the Parking Structure.

OU – Tulsa, Schusterman Center

4502 E. 41st Street

Tulsa, OK 74135

Parking Structure

Urban Design Studio
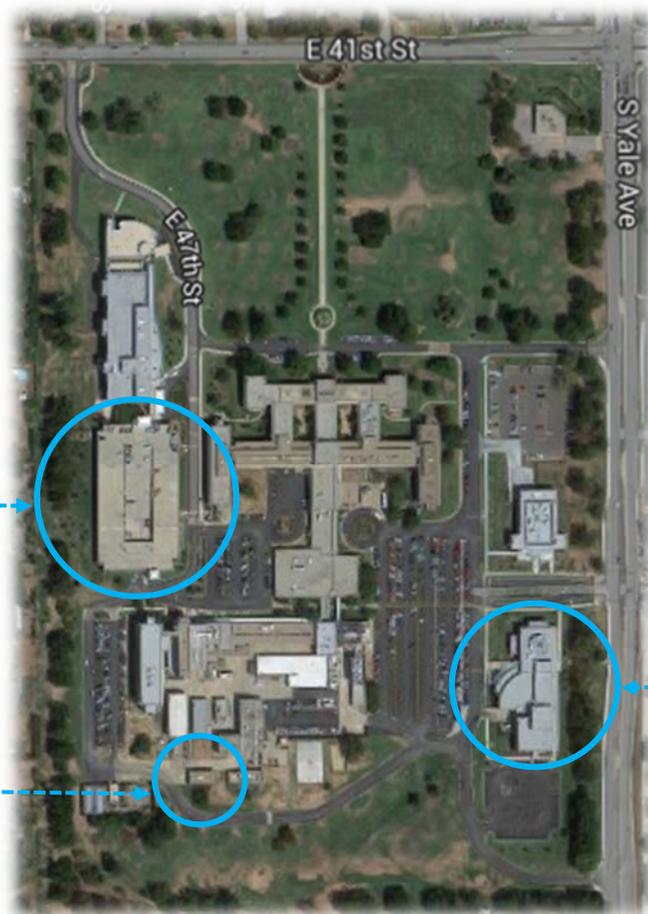
Learning Center

Source: **Google Maps**

Title: Pathways to Better Community Wayfinding
Authors: Hunter, R., Potts, S., Belza, B., Byerle, R., Marquez, D., Friedman, D., Stollof, E., Bryant, L., Lee, C. Duncan, R., and Vandenberg, A.
Publisher: AARP
Available at: http://www.aarp.org/content/dam/aarp/livable-communities/documents-2014/Pathways%20to%20Better%20Community%20Wayfinding-AARP.pdf

There have been a number of books written on Wayfinding in the last three decades since Romedi Passini wrote his seminal book *Wayfinding in Architecture* in 1992 with subjects ranging from the academic to the design oriented. This book tries to accomplish the largest feat, by enveloping the entirety of the field. In attempting to accomplish this task the authors have brought a series of accomplished academics and writers. The selection of writers has resulted in impressive areas and deep flaws that prevent this book from achieving the goal of creating a blueprint for architects, planners, designers and policy makers improve public health through better understanding of communicating mobility in the community.

The first 100 pages of the book are the strongest and will be of greatest value. These pages establish the cognitive framework that shapes are current communities. The first chapters wisely walk through the achievement of the last 60 years beginning with Lynches *Image of the City* and culminating with Legible London, the most comprehensive urban wayfinding study and project ever developed. These chapters cover the leading research and thinkers that largely define the state of the field today, particularly in cognitive and legibility research. This culminates in the work of Per Mollerup who applies his theories of wayshowing which distills cognitive study into a series of observations and recommendations for improvements to public environments. Any person who has not deeply studied the field of wayfinding will be engaged and provided ample resources for further study.

The next section of the book focuses on the tools and technology that supports wayfinding. While the section contains deep research on the relative success of mapping and technological tools in supporting cognition, it represents a deep separation in tone and scope from the one proceeding it. While discussing low tech navigation strategies, this section does not embrace the full value of low tech navigation, focusing primarily on technology interventions.

The section focused on practice policy attempts to circle back to the public health importance of wayfinding. The section begins with a chapter about pedestrian wayfinding and all the tools and initiatives that support and enhance it. This section provides a larger context for recommendations that can improve public health through more pedestrian mobility. The final section focused on advocacy is also commendable but could delve further into the topic of how communities have developed policy structures to improve on the goals highlighted in the book.

The book ends promisingly with an integrative approach to linking wayfinding and the broader physical experience of wayfaring. This book should have great value to academics and specialists involved with wayfinding to enhance their understanding of the field and its tools.