University of Cincinnati

Date: 3/15/2016

I, Alistair K. Probst, hereby submit this original work as part of the requirements for the degree of Master of Community Planning in Community Planning.

It is entitled:
Environmental Visual Pollution and its Relationship to Signage Technology: A Case Study in Thailand

Student’s name: Alistair K. Probst

This work and its defense approved by:

Committee chair: David Edelman, Ph.D.
Committee member: Christopher Auffrey, Ph.D.
Environmental Visual Pollution and its Relationship to Signage Technology:
A Case Study in Thailand

A thesis submitted to the Graduate School of the University of Cincinnati in partial fulfillment of the requirements for the degree of Master of Community Planning in the School of Planning at the College of Design, Architecture, Art and Planning University of Cincinnati

by
Alistair K. Probst
BUP University of Cincinnati 2012
March 2016

Committee:
David Edelman, Ph.D., Chair
Christopher Auffrey, Ph.D.
Abstract

This research investigates signage advertising within the public realm and its affect on the environment throughout time. The thesis addresses signage as a contributor to visual pollution, and seeks to understand the factors and trends that cause signage to be a polluter. The intent is to analyze the contribution of sign types to visual pollution, providing a foundation for professionals to utilize when grappling with an over-abundance of signage and emerging technologies.

Field work has been conducted in Thailand because a multitude of sign types with varying attributes coexist in the public landscape. This makes Thai cities ideal to observe because different sign types can be rated for their pollution levels and viewed for comparison within the same context. Additionally, because regulations are lax or not enforced, emerging sign technologies are permitted to dominate the landscape with little hesitation. The researcher studied three cities of differing scales, focusing on the Central Business Districts, and in turn was able to cross-analyze information to discover trends. This allowed more general conclusions to be drawn about Thailand as a whole.

Advertisers seek new signage technologies to compete with existing sign types and messages. These technologies have increasing amounts of stimuli and use more resources, which together create visual pollution. Furthermore, regulations for new signage technology have not been integrated to work cohesively with existing policies and practices. They are not updated when new technology emerges, and, due to the lack of incentives or disincentives for cities, new technology is often managed with policies for old sign types. This causes irrelevant and often redundant infrastructure to remain in or be introduced to the environment.

Despite, there are opportunities to harness new innovations to benefit both advertisers and viewers. If intelligently planned for and utilized, signage could enhance the experience of place. It can create identity, target consumers to make marketing more effective and bring life to public spaces. New sign types should not be abolished or limited because of negative qualities or mismanagement, rather, they should be better handled when introduced into cities.

Lastly, recommendations were made for urban planners and other professionals to consider as they deal with the ever-evolving public domain. Through quantifying and creating more literature about visual signage pollution caused by emerging technologies, cities around the world may be compelled to take visual pollution seriously as a threat to the urban landscape.
Acknowledgments

To my friends and loved ones: Lisa, Mom, Dad, David, Aey and Adisak.
**Table of Contents**

1. **Introduction** .................................................................................................................. 1
   1.1 Problem Statement ........................................................................................................ 7
   1.2 Research Questions and Objectives ............................................................................ 8
   1.3 Structure of Thesis ....................................................................................................... 9

2. **Literature Review** ........................................................................................................... 10
   2.1 Understanding the Reality of Visual Pollution ............................................................. 10
   2.2 Relationship of Advertising and Technology over Time ............................................. 13
   2.3 Signage Advertising as a Contributor to Visual Pollution ........................................... 19
   2.4 Electronic Messaging in the Digital Age ...................................................................... 23
   2.5 Conclusion to Literature Review ................................................................................ 30

3. **Methodology** .................................................................................................................. 31
   3.1 Intro to Methodology .................................................................................................... 32
   3.2 Research Timeline ....................................................................................................... 33
   3.3 Research Approaches and Selection of Methodology .................................................. 36
   3.4 Application of Methodology Research ........................................................................ 38
   3.5 Case Study Design Chart ............................................................................................ 39
   3.6 Conclusion to Methodology ........................................................................................ 40
4. Analysis .................................................................................................................. 41
  4.1 Implementation .................................................................................................. 41
  4.2 Characterizing the Cities .................................................................................. 42
  4.3 Defining the Sign Types .................................................................................... 46
  4.4 Quantity of Signage Per Sign Types Per City ................................................. 59
  4.5 Rating System for Visual Sign Pollution ......................................................... 71
  4.6 Equation for Finding the Contribution of Visual Pollution to the Environment ................. 73
  4.7 Contribution of Sign Type to Visual Pollution in each Central Business District ......... 74
  4.8 Comparison of the Quantity of Sign Type vs.
      Contribution of Sign Type to Visual Pollution .................................................. 82
  4.9 Total Index Numbers for each Quantity and Total Contribution Rating .............. 91

5. Conclusion ............................................................................................................. 95
  5.1 Cross-Analysis of Cities and Conclusions ....................................................... 95
  5.2 The Surge of Digital Signage .......................................................................... 101

6. Recommendations for Further Research ............................................................. 105

Bibliography ............................................................................................................. 108
1. Introduction

Environmental visual communication is a relevant part of cultural heritage, both in functional and aesthetic terms—it impacts urban streetscapes, public spaces, office buildings, museums, convention centers, hospitals, airports, public parks, institutions, businesses, shopping malls and entertainment centers directly. It reflects a relationship to artistic, technological and cultural movements, past, current and future. Since the beginning of humankind, forms of visual communication, either as the written word, symbols or present day signage have impacted the quality of daily human life. Places meaningful to people are marked by the animal drawings at Lascaux Caves in France (see fig. 1.1), the cuneiform markings in the early writing of Mesopotamia, and the hieroglyphs on Egyptian pyramids. These markings record the human desire to tell stories with beauty and permanence and the need to trade, warn, advise, encourage and guide through the natural and built environment.

Prior to industrialization, society often used landmarks like religious dwellings or certain street pathways to guide the public. Engineers and scientists introduced bridges and streetlights. The printing press and its evolving offspring enabled the distribution of new media to communicate visual messages. People learned to read, write and interpret symbol systems. City populations and consumerism grew, and so did the need for directional, identifying and persuasive signage.

Products and services are advertised by businesses in a variety of ways. Traditionally,
these include newspapers, magazines, billboards, the telephone and television. Over time, messaging became increasingly complex and abundant. A plethora of typography, image, symbol, scale, illumination and building material technology has emerged revealing many artistic, social and cultural influences, as well as developments in manufacturing. In recent years, the use of digital technology, has become prevalent. In the book Unleashing the Power of Digital Signage: Content Strategies for the 5th Screen, the author categorized digital technologies into five different areas to explain its evolution:

First screen: Motion pictures, the first in the historic progression of communication screens, Second screen: Television, the second in the historic progression of communications screens, Third screen: Computers, especially in combination with the World Wide Web, Fourth screen: Mobile hand-held devices, such as cellular telephones, and Fifth screen: Digital Signage and other digital out of home displays. (Kelson 2010, 229)

Means of communications, which in this study include both low- and high-tech sign types in the form of Vinyl Banners, Sidewalk Advertisements, Advertisements on Sign Posts, Billboards, Billboards on Buildings and Electronic Messaging Boards, can create extremes of visual pollution in many global locations. Large, medium and small metropolitan areas are visually and physically challenging with regards to their infrastructure fabric.

Individuals and groups constantly try to fight various types of pollution such as lead in the water, smog in the atmosphere, toxic waste in landfills, harmful noise levels, unhealthy lighting, etc., but little attention is paid to the visual pollution caused by negligent environmental visual communication (see fig. 1.2). Visual pollution is a type of environmental pollution, an ugliness that can cause depression and encourage neglect, resulting in the defiling of landscapes. The type referred to here revolves around signage of many forms and the regulation thereof.
Progressive steps toward a cleaner, uncluttered, more organized and pleasant environment demand attention. Within the context of the city, the professional and responsible urban planner should be a vital part of this necessary task. However, such a role is frequently overlooked or ignored. A lack of comprehensible, well-designed signage systems and regulations in modern day cities has arisen. The existing rules, regulations and systems governing the cities, especially those cities that are growing through population and development, need to continuously evolve in order to generate effective and cohesive standards of visual communication. This will create maximum navigational efficiency, which people so heavily rely on to interpret all the messages encountered in shared spaces. The amount of directives, promotions and information processed and consumed on a daily basis is tremendous. There are stoplights, street signs, shop signs, vinyl banners, sidewalk advertisements, advertisements on sign posts, billboards, billboards on buildings and electronic messaging boards, etc. all begging and competing for attention. The public is constantly bombarded with visual stimuli, often in a confusing and even misleading way due to bad design choices, dysfunctional infrastructure or the lack or ignorance of regulation. As a result, there is too much, an absence of or obscured messaging and little regard for beauty and culture in the everyday urban experience. While emerging technologies provide

Figure 1.2 Environmental visual pollution. Photograph by Alistair Probst 2015
opportunities to address these issues, they have also contributed to the increase of visual pollution.

Some municipalities and states take aggressive approaches to signage regulation. They consider scale, set-back, height, legibility, color-coding, etc., but most places are difficult to navigate in an organized and efficient manner due to lack of relevant regulation. The signage offers few visual aesthetics that add to the sensory appreciation and enjoyment of one’s surroundings. They also may be physically inhibiting, forcing one to find an alternate route when their way is hindered by signage (see fig. 1.3).

Figure 1.3 Signage that inhibits mobility. Photograph by Alistair Probst 2015

Transportation plays a huge role here. Those who live outside the dense city center commute via car or public transit to access jobs, services and activities. This includes on-ground, above and underground journeys. Signage is relevant for bus, tram, train, high-speed rail, subway systems, airports, automobile operators, motorbike riders, pedestrians and cyclists alike. With the advent of digital interfacing, the Internet and cellular devices, new modes of technology have completely changed how we perceive travel and space. There is more connectivity and movement between countries, cities, suburbs and rural areas than ever before. Today, the in- and out-flux of people traveling either for business, education, work, health or pleasure, etc. is immense. Along these journeys, commuters not only encounter
signage that helps them navigate to their destination but they are also visually accosted with advertising along the way.

Electronic Message Boards are presently a popular way for businesses to promote consumables, services and destinations. Across the globe, the electronic messaging phenomenon has taken root, especially in the large, economically advantaged cities of the world. This form of signage makes sense in the correct setting, but how does signage with electronic technologies affect society when insensitively placed, is overabundant or inadequately planned for (see fig. 1.4)?

Light pollution from this type of signage not only affects human sleep cycles, hormone levels, metabolism and increases levels of stress (Stephens 2015), but there is a body of research that indicates light pollution can also affect the behavior of animals that coexist within urban environments. An article in National Geographic by Sharon Guynup (2003) writes about light pollution taking a toll on wildlife. “Light pollution—the ... glow that halos cities and suburbs—that threatens wildlife by disrupting biological rhythms and otherwise interfering with the behavior of nocturnal animals.” Electronic Message Boards and other high-tech types of signage that use light to enhance communication are the latest contributors to this glow, present in cities since the introduction of the light bulb during industrialization, affecting
humans and animals negatively.

Even though some signage types are known to have negative impacts on the environment, the goal of this research is not to propose the abolishment of signage types, but to recognize and reflect on their use and implementation as technologically innovative versions surface. As problem solvers, urban designers, architects and planners must cohesively prioritize signage considerations when designing for cities.
1.1 Problem Statement

This research seeks to assist in the transformation of traditional environmental signage practices. The objective is to contribute the information towards updating communication systems and to reduce visual pollution. Particular attention will be paid to emerging trends in contemporary technology. This problem is overtly acute in emerging countries, which generally have little or no control over signage. This research intends to analyze the character of three cities of differing scales in Thailand.
1.2 Research Questions and Objectives

1. What is the nature of visual pollution in Thailand?
2. How does the quantity of signage versus the quality of the signage technology impact visual pollution?
3. How do traditional signage advertising methods compare to emerging digital signage technology?
1.3 Structure of Thesis

After the (1.) Introduction to the topic of the thesis, the following chapters include:

(2.) a literature review covering publications found on visual pollution to support the argument,
(3.) methodology, explaining the case study method used for the field research,
(4.) the fieldwork and analysis of visual pollution in Thailand and
(5.) cross-analysis of cities and conclusions.
(6.) Lastly, recommendations for further research dealing with combating issues of visual pollution will be discussed.
2. Literature Review

2.1 Understanding the Reality of Visual Pollution

In a broad sense, there are many forms of pollution in the increasingly urbanized, global world. These include air pollution, water pollution, soil pollution, thermal pollution, waste pollution, odor pollution, noise pollution, light pollution and the less common but equally threatening visual pollution. Most forms of pollution can be measured using tangible, quantifiable results. This helps to defend and support that these kinds of pollution are in fact problematic. Szabina Kerényi from Urban Pollution: Cultural Meanings, Social Practices explains, “In cities, pollution is usually visible and measurable in very concrete ways, as it is evident in the quality of air, or its physical presence can simply be observed. Urban pollution is also a concept that is often shared publicly, as it tends to affect public space and thus applies to everyone” (Dürr and Rivke 2010, 144). However, it is much harder to prove that visual pollution affects humans within the built environmental landscape either in a mental or physical way because the data is difficult to quantify. If tangible forms of urban pollution are a concern, so should visual pollution. Signage and advertising scattered all over cities in public spaces equally contribute to the overall pollution of the city.

Visual pollution can be anything visible within the built environment that is overdone or poorly thought out. Therefore, visual pollution comes in many forms. It could be an overabundance of utility poles or power lines, crumbling sidewalks, garbage, unmaintained vegetation, architecture that is discordant or out of scale etc., but the focus of the following research will be the cluttered, disordered, overabundant, non-cohesive signage and advertising that whispers and screams in cities and landscapes all over the world (see fig. 2.1.1).
Visual sign pollution has caught the attention of scholars, urban designers, architects, urban planners, lawyers, anthropologists and psychologists. Pat Brown points out, “When a man throws an empty cigarette package from an automobile, he is liable to a fine of $50.00. When a man throws a billboard across a view, he is richly rewarded” (McMahon 2011). Although initially apparent as subjective, many researchers in these subject areas have studied how people (referred to as users) react to signage advertising. “Studies already identified that user satisfaction with commercial streets can increase through reduction of variation of some physical characteristics of commercial signs (Portella, 2007, 2003, Nasar and Hong, 1999, Scenic America, 1999, Ashihara, 1983)” (Portella 2014, 26). Because of research like the aforementioned, cities around the globe have taken extensive action to reduce the amount of sign advertisements by creating local rules, regulations and policies. They have applied established standards or have introduced standards through grass roots city efforts.

There is a relatively small body of literature that covers the subject of visual pollution specifically, and much of the attention is directed towards billboards. Coverage of how emerging signage technology is regulated by cities is minimal. Furthermore, the literature yields little discussion on how emerging technologies will change existing signage infrastructure. Technology could be a factor that contributes to visual pollution or possibly reduces visual pollution depending on its qualities and uses. Technology can allow for
differences in legibility, lighting, motion, placement, and scale.

Consequently, in order to better understand how developing technologies will impact the existing signage landscape, a broader review of literature relating to this theme is needed. This is the purpose of the next chapter.
2.2 Relationship of Advertising and Technology Over Time

Humans are a species of communication and curiosity; therefore, they have the urge to gather information, display it to grab attention and send messages to others when unable to be physically present. Throughout history, this has traditionally been done visually (i.e. smoke signals) or audibly (i.e. drum beats), but today we can communicate in a great number of sophisticated ways due to technological advancements, especially because of the Internet and cellular devices.

Much technological advancement developed when industrialization occurred during the eighteenth and nineteenth centuries. As industrialization began, so did consumerism within cultures around the world. Toward the end of the nineteenth century, mass production began; goods could be produced at an efficient rate and affordable price. Competition, in turn, led to advertising as a means of showcasing and displaying products to the public to boost a new standard of consumerism. For example, “According to British author Terense Nevett (1982), in the Great Britain context, during the first half of the eighteenth century, wall-posting began to develop into an effective means of mass communication; in this period the history of advertising was mainly concentrated in London” (Portella 2014, 51). Cities with a global economy, such as London’s, set international trends as a poster child for other cities.

According to urban historian Eric E. Lampard, “a new interest in mass-produced goods and standardized consumption thereof at the end of the nineteenth century in the United States” was identified (Portella 2014, 51). Lampard believed:

The concept of ‘consumer culture’ did not exist before 1900; this began in 1920 through changes in production, distribution, and consumption style. In public spaces, the art of commercial sign display underwent a change between 1900 and the end of the twenties.
The cultural, social, and economic transformations, which had started with the industrial revolution, contributed to increasing consumer desires and changes in the appearance of city centers. Shop fronts, advertisements, and billboards had begun to promote commercial images of products and shops. The strategies in advertising changed the appearance of cities as a whole, and encouraged consumers to see products as desired objects. (Taylor, 1991). (Portella 2014, 51)

After 1895, with regard to European and American cities, Adriana Portella continues to explain that city centers started to alter rapidly due to new technologies in illumination. These advancements included artificial color, window and plate glass and the invention of incandescent electrical lights. These sign types developed into their own unique style of signage, made for the purpose of selling commercial goods and services. They are early examples of how lighting technology was implemented to be more visible in the urban landscape, and are a product of the advertiser reacting to the modes of transportation that existed at the time. These were primarily on-ground transportation, which included but was not limited to foot traffic, horse-and-buggy, bicycles and streetcars.

Around the turn of the twentieth century, the neon light was invented, changing the streetscapes of cities around the world (Portella 2014, 51). “In the United States in 1920, Oscar J. Gude, an American entrepreneur described by Taylor (1991) as the ‘Napoleon of Publicity’, invented the permanent signboard for painted advertising rather than for paper printing. Electrical signs and painted billboards became common features in commercial streetscapes in many countries after this year” (Portella 2014, 53).

During the cultural climate of the 1950’s and 1960’s, there was a great preoccupation with the acquisition of consumer goods. This obsession led to the implementation of powerful, new strategies and the rise of the advertising industry. The result was an immense, sudden increase in existing signage infrastructure, in addition to innovation in signage technology. Today, there is much literature that focuses on the topic of billboards and how they are visually polluting. Many studies support billboards while other studies oppose them. This
on-going discussion appears in courts, books and articles debating the topic as early as the mid-twentieth century. Signage became a large issue due in part to the automobile, which forced the landscape to transform into roads and highway systems where millions of people could travel at high speeds around the clock. Therefore, the sign and advertisement industry targeted areas along road networks with the intention of selling products and services to consumers, causing the eruption of signage infrastructure along roadways. The on-going discussions surrounding billboards show that there have been constantly evolving attitudes about the function and presence of these signs throughout the last century. Billboards have been in the spot-light because of their pervasiveness in the landscape, but few research efforts are paid to emerging signage technologies. These have become increasingly present since the turn of the twenty-first century.

The culture of promotion, advertisement and enticement influenced the perception and evaluation of visual quality in public spaces (Portella 2014, 53). Portella introduces again the work of Gude, who defended himself by explaining that illuminated signage advertising was created as a means to fuse art and business. “According to his idea, electrical adverts help to lift the ‘aesthetic pleasure’ of people more than any other media does” (Portella 2014, 53). His sentiment may have been true during that specific time in history, but:

According to Taylor’s study (1991, pg. 236), there are negative effects … on user perception and evaluation of city centers: Electrical signboard advertising literally forces its announcement on the vision of the uninterested as well as the interested passerby (…) Signboards are so placed that everybody must read them, and absorb them, and absorb the advertisers’ lesson willingly or unwillingly. The constant reading of ‘Buy Blank’s Biscuits’ (…) makes the name part of one’s subconscious knowledge.” (Portella 2014, 53)

Gude’s idea about signage is partially defunct today, as there is little commitment by businesses to include artistic considerations in their advertising. Mass-produced options are
often less expensive and more accessible due to technological advancements in production and communication. Signage with artistic direction can often be cost prohibitive because a unique sign would not have readily available artwork or construction specifications. These would take extra time and resources to create, making the mass-produced option more appealing.

Even if a business were to pursue a sign with design principles in mind, an option which has become more readily available due to the rise of the graphic design industry, the existing regulations of a municipality or state may not have provisions that would allow artistic expression in signage. Regulations can be impractical or irrelevant to the physical and cultural characteristics of the landscape in question. It is therefore the role of the urban planner to a) better manage the placement of the messages, b) better coordinate the quantity of signs that are installed in a given space and c) review and regulate the qualities of the signage technology used. These actions would allow people experiencing the urban landscape to have more control over the messages they choose to intake and reduce the amount of competition between messages. They could also be sensitive to the culture and identity of the space.

Businesses no longer need worry about advertising themselves, as they now have a support network provided by other businesses to develop communication pieces for them. They have an abundance of advertising options, which means that the quantity and quality of signs competing for advertising space has become a major contributing factor to visual pollution. Portella’s work identifies the present state of the functions of media. She found authors such as Coelho (2001), Hollis (2000), Moles (1987) have identified two signage functions in today’s city center: “(i) the identification of commercial establishments, and (ii) the persuasion of potential consumers to purchase products and go to places with this purpose” (Portella 2014, 53). Portella identifies that function (i) usually applies to commercial city centers and shop fronts, while function (ii) applies to window displays and promotional signs painted on facades (Portella 2014, 53).

Advancements in technology have directly impacted advertising, whether the technology be invented specifically for signage or its function re-purposed in a creative way to
enhance signage.

Today, the newest sign technology is Electronic Message Boards that are replacing the traditional, two-dimensional, flat-faced printed billboard so often discussed by researchers. Advertising companies are now able to send multiple messages on one sign at any time of the day, thus resulting in twenty-four hours of continuous messaging whether the user likes it or not. Large, television-like screens are now in backyards, within streetscapes and on highways. Signage has become “... increasingly digital and mobile. Digital Signage solutions use Digital Technologies such as GPS-based mapping apps, LED, and other electrical lighting screens [which] are becoming popular with the advent of smart phones and mobile computing devices” (“Signage” 2016). There is now signage that can interact further with the intended user by beaming messages to cell phones, creating a higher level of interaction that has become increasingly unavoidable. The choice of looking at what is being advertised is no longer present because now you will have messages available at all times and sent directly to your person.

The Internet and cellular devices are not specifically focused upon by Portella, however, they provide a massive range of space to advertise messages. Online advertising have the ability to track and target user habits. As a result, companies such as Google, Inc., now under the umbrella of Alphabet, Inc., are able to direct more relative information to the intended user creating an advertising environment that is more effective and efficient. The appeal of advertising through online media is proven by the staggering revenues made by search engine companies. Google, for example, made $19.08 billion in the fourth quarter of 2015 alone in online advertising revenue, and 31% of this was made through paid clicks (Peterson 2016). This highlights the marketing power of systems that can target specific audiences to market products and services.

Currently, a flood of information flows from multiple communication platforms, culminating in a redundant onslaught of messages. People are bombarded due to the growing presence of digital media, which has caused signage and its stationary infrastructure to become less relevant, thus creating visual clutter and pollution in cities. People are no
longer receptive to the large, exaggerated scale of signage because it contributes to sensory overload. Signage and advertisements used to add to the human experience, as defended by Gude almost one hundred years ago, but are now widely believed to be an affront to the senses rather than a connection to the space in which the sign and the viewer exist.
2.3 Signage Advertising as a Contributor to Visual Pollution

All forms of signage can produce visual pollution. They do this at varying degrees based on their physical character and pervasiveness within a given setting. As Claus and Claus of Visual Environment: Sight, Sign and By-law stated in 1971:

There is currently a great and growing concern with the visual pollution of our environment, part of a larger trend toward public sensitivity to environmental pollution in general ... Visual pollution is one type of environmental deterioration that has been deplored by concerned members of the visual communication industry. However, the long-standing efforts of businessmen to develop policies which would control or eradicate such visual pollution have been greatly hindered by governmental decision-makers who have little understanding of the intricacies of visual communication and the causes of environmental pollution. (Claus and Claus 1971, 60–61)

Although this statement originated in 1971, very little, if anything, has changed from the perspective of the present day. Statements like these suggest that there remains disconnect between the government, signage and advertising industries, or, in contrast, maybe they are interwoven thus influencing one another in a detrimental way. Claus and Claus further explain:

Most of the visual pollution one witnesses today can be directly traced to regulatory policies of the municipal government. For example, numerous outmoded sign displays are still in use because there are no provisions for updating or removing them. Restrictive by-laws often inhibit the creativity of the visual communications industry and yet fail to require optimum standards for displays. (Claus and Claus 1971, 61).

The interdependency of commerce, regulation and dismal aesthetics manifests as misleading guidance and perpetual poor taste.
Awareness of visual pollution as a problem has been around for over a quarter of a century. Once again, Claus and Claus’s perceptions are still relevant in the present day. They stated back in 1971:

Attitudes toward visual displays of the past, many of which still dot the landscape, are conditioned by changing tastes regarding what is visually pleasurable. As Marshall McLuhan has pointed out, the technology of our electronic age has created a totally new environment. ‘Each new technology creates an environment that is itself regarded as corrupt and degrading. Yet the new one turns its predecessor into an art form’ (Bosselman, 1969, p. 102). Much of what is considered visual pollution today is yesterday’s communication. Our senses have been dulled to the visual disorder around us, encouraging rigidity of perception of visual communication devices such as signs. The result is that we are so unaccustomed to seeing signs that are considered unattractive today that we tend to react to all signs as unattractive, irrespective of their function, their placement, or when they were erected. (Claus and Claus 1971, 61)

The reality they describe has compounded itself with the introduction of even newer signage technologies since 1971. When a new signage technology is introduced, it does not necessarily replace an outdated technology, but adds additional stress to the existing visual environment and creates additional infrastructure. The cost of fabricating and installing a new sign is often less than refurbishing or replacing existing signage infrastructure. This means that many outdated sign types that are no longer in use or no longer relevant remain within the urban landscape (see fig. 2.3.1). Redundancy of signage further contributes to visual pollution.
Daniel R. Mandelker and William R. Ewald envisioned the evolution of signage technology in the late 1980s at the dawn of the digital, Internet and cellular era. “Imagine the change in the view of America if signs and billboards spoke to us separately instead of screaming at us en masse” (Mandelker and Ewald 1988, 2). They imagined the future of the American urban landscape as a more personal experience without redundancy, but unfortunately, now there are more than just billboards screaming en masse. One must navigate electronic message boards, cellular devices and computers constantly shouting messages from public and private environments. Mandelker and Ewald describe the chaotic experience:

Street graphic overload occurs when the viewer is confronted with more items than his eye can readily see or his mind can readily process. Driving speed, traffic conditions, stress, time of day, weather, legibility, the placement and number of graphics, and the design of the graphics can further complicate this communication overload. To ignore this circumstance would seem folly. (Mandelker and Ewald 1988, 31–32)

They foresaw the layers upon layer of signage technologies accumulated from different eras that bombard the landscape. Mandelker and Ewald longed for messaging that could be consumed at ones’ own volition rather than encountering messaging that was blurted out into

Figure 2.3.1 Irrelevant, vacant signage. Photograph by Alistair Probst 2015
the environment with the hopes of being heard, as one regularly experiences with modern signage today.
2.4 Electronic Messaging in the Digital Age

Electronic Message Boards are entering the environment alongside traditional signage at a rapid pace. From the flat printed sign on the building to the billboard on the highway to the sign at the subway station, new electronic signs are being introduced with the intent of attracting the attention of consumers.

It is noted that electronic and digital technologies can be integrated into architecture, and in some cities this has already happened. In those cities, which promote and support the concept of becoming a global attraction, humans react by showcasing innovative technologies and testing engineering capabilities:

But just as environmental graphic designers come closer to really honing their skills, new environments made possible by virtual reality, cyberspace, and smart materials have been introduced to the mix. Architecture of the future will undoubtedly be engineered with an increasing emphasis on electronic and digital technologies—the new Times Square and Las Vegas being cases in point. (Berger 2005, 18)

As a result, one can come to the conclusion that signage technology is a creator of space as opposed to a destroyer of space. New signage technologies in certain instances can promote a culture of innovation and awe when concentrated in a specific public environment. They can create a theme park-like setting within a city and therefore become an appealing attraction (see fig. 2.4.1). It is when new signage technologies are distributed haphazardly throughout a city with no sense of cohesion or consideration for context that the signage becomes problematic. This is when the issue of visual pollution needs to be addressed by the urban planner.
Designer Deborah Sussman is optimistic that society will adapt to take the physical environment into consideration when implementing new sign technologies:

… the digital revolution in a certain way has isolated people: even though you can reach the world on the Internet, you’re still in a room all by yourself, with no other fantasy than what’s on your screen. But there’s a sense that gathering places will become even more important because people will need to be with people again. The need for physical, tactile presence may be increased by those deprived of hands-on experience. This would suggest that environmental graphics might have an even more vital role in the next century as shapers of all types of environments, whether fabricated or programmed. (Berger 2005, 19)

The predictions of Mandelker, Ewald and Sussman are manifesting in modern technological advancements and are becoming trends in environmental graphic design. As they suggested, public environments are beginning to interact with the user instead of the user simply just observing the environment. In real-time, signage is beginning to react to users’ instruction and also cater to those with disabilities who may have difficulty receiving a message from a traditional sign that caters only to the sense of vision. Companies are testing
out sophisticated types of technologies that engage multiple human senses such as touch, movement and noise (see fig. 2.4.2).

![Figure 2.4.2 Examples of interactive signage.](image)

*Sources: Above left, (Moye 2013); Above right, (Kolle Rebbe 2016)*

Signs are also able to tap into trends and information collected via cellular devices and social media. They are beginning to target specific audiences by displaying advertisements that are relevant to a person simply by that person’s proximity to the sign. Digital technologies also allow advertisers to transmit coupons and other means of advertising to an individual’s cellular device, simultaneously with the sign message that was displayed. The smart sign has entered the built environment.

In *The Tuning of Place*, Richard Coyne writes about Lewis Mumford’s observation in his book *Technics and Civilization*, published in 1934. Coyne explains:

... the routines of medieval monasteries and the subsequent technologies of timetables and clocks promoted the diurnal rhythms that ‘helped to give human enterprise the regular collective beat and rhythm of the machine; for the clock is not merely a means of keeping track of the hours, but of synchronizing the actions of men.’ Clocks and timetables help people coordinate their activities. Presumably, pervasive digital media and communication devices continue this trajectory of coordinating and synchronizing
people’s activities to one another, a phenomenon described in the context of mobile phone usage by Castells et al. as ‘micro-coordination.’ Thinking of digital devices in this way, as mechanisms people use to synchronize their relationships and interactions, provides a way to discuss how digital devices affect people’s lives and the places they inhabit. (Coyne 2010, xiii)

The cellular device has replaced the mechanical clock mentioned by Mumford and has changed the rhythm of people in both indoor and outside spaces. Technology has encouraged new rhythms in a variety of aspects, such as social, economic, political, media, etc. People are still adjusting to this new communication tool and therefore are still adjusting their rhythms.

Communication technologies like the cellular device connect people to information 24/7. This creates an environment where information constantly competes for attention whether in public or private settings. Now that humans have access to a world of information on a screen in either their pocket or purse, what is the role of digital signage screens within the built environment? How will they be woven into the rhythm of society? As stated in Pervasive Displays Understanding the Future of Digital Signage:

No one can have failed to notice the increasing proliferation of digital signage. As hardware costs have decreased, the prevalence of digital displays in public spaces has grown considerably; displays of varying sizes, shapes and forms are now commonly seen in everyday spaces. Displays are also becoming prevalent in public spaces such as city squares and the workplace—replacing traditional notice boards and signage. (Davies, Clinch and Alt 2014, 1)

Referred to as either digital signage, LED signage, Digital Out of Home Signage, 5th screen, pervasive signage, or whatever the nomenclature, Electronic Message Boards are becoming more and more invasive. Existing sign types now have a younger, larger and more powerful adversary with which to compete. Advertisements can now be seen in public spaces at
any time of the day, polluting the landscape by constantly bouncing light off opposing surroundings and visually accosting people with changing content (see fig. 2.4.3).

Figure 2.4.3 Electronic message board casting light on environment.
Photograph by Alistair Probst 2015

Despite its qualities, digital signage is being woven into cityscapes at a rapid pace due to its wide range of capabilities as well as flexibility to appeal to the user. “As compared to many other communications media, digital signage has a number of interesting characteristics that makes it extremely popular, especially with advertisers: Push-based distribution, Context-specific content, Multimedia content and Easy to update and efficient use of physical space” (Davies, Clinch and Alt 2014, 1–2). Even though digital signage has these powerful capabilities that should create a higher rate of visibility to consumers, “… it is hard to understand how many people actually see any given digital sign (and hence supporting business models based around the number of impressions or views of a piece of content is difficult) … this makes encouraging and, more specifically, tracking user actions extremely challenging in the signage world” (Davies, Clinch and Alt 2014, 3). In other words, it is difficult to gauge the number of users for any sign, be it analog or digital, and is therefore challenging to prove the actual success rates that make them so popular with advertisers.

Digital signage may be a more effective way to communicate but to whom and why? When do cities limit the amount of digital signage allowed in a space or on a building? For
instance, there may be a private building with a large digital sign on it displaying message after message to the public. Viewers will be subjected to seeing the message whether they like it or not. Yes, now signage can be changed in a dynamic way displaying current and relevant information to the viewer, but what is the threshold of too much information? In the book *Visual Pollution: Advertising, Signage and Environmental Quality*, Portella states that “visual overload has a negative impact on the visual quality of city centres. This overload is promoted by excessive numbers of shop fronts and advertisements with different physical characteristics such as size, colours, and lettering style” (Portella 2014, 75). She explains that it is the excessive quantity of signage in the shop fronts and city centers in addition to the quality of the signage technology used that is the core of the visual pollution issue.

In the early 1980’s, Brazilian researcher Joao Carlos Cauduro defined what he described as “perceptual stress” caused by “visual overload” (Portella 2014, 75). The writing of Moles (1987) further supports his theories by suggesting, “that commercial signage functions can be harmed by excessive number of shop fronts and advertisements. There is a limit in the quantity of signs that can be perceived by users in a single vision. If this limit is exceeded, the user’s capacity to read and understand commercial messages decrease.” (Portella 2014, 76) Other literature contradicts this thinking and theorizes that digital signage will actually improve public space:

Digital displays offer the potential to enhance our public spaces. Digital signage improves over traditional notices by facilitating frequent, timely updates, increasing accuracy and enabling provision of highly dynamic information that would not otherwise have been made available. Such displays also offer new possibilities for improving the aesthetics of a space by allowing the presentation of digital artwork, video or other media. Furthermore, the introduction of personalized, interactive content on public displays has the potential to promote viewer engagement with the space and to encourage social interaction within the space. (Davies, Clinch and Alt 2014, 2)
This ideology focuses on the new opportunities designers have to bring artistic expression and up-to-date information to public spaces. They believe that because cities are dynamic spaces, digital signage would have the capability to change its messages at pace with the evolving state of the city. This point of view is important for the urban planner to consider as regulations are developed for digital signage. Regulations for electronic messaging need to keep in mind the dynamism of cities in order to create opportunities to enhance experiences in the public space.

While there are some amazing new platform technologies that incorporate communication and interaction within the built environment, there is a gap in research discussing the potential negative impacts it could have. Designers, public employees, urban planners, architects and politicians should be aware of and educated on the latest communication platforms and address how communication should be displayed and relayed.

Placed in the right context, digital signage could be extremely useful for the organization of messages, directions, advertisements and other information. “It is up to the designers of future pervasive display networks to harness the opportunities presented by new technologies to innovate in this space and deliver true value to viewers” (Davies, Clinch and Alt 2014, 93). Current trends show there will eventually be small and large digital screens filling the urban landscape on both public and private properties, competing for and targeting users who are passing by. What will be the affect of pervasive display networks increasing throughout our cities? Will light pollution become an issue in addition to visual pollution? What will the levels of noise pollution become? How much energy will be consumed? The qualities of electronic messaging systems need to be taken into account when planning and designing for cities in order to prevent the pervasive from becoming the invasive.
2.5 Conclusion to Literature Review

Visual communication in public space has been a part of human society throughout history, it can either enhance quality of life by conveying relevant information or degrade the quality of life by visually polluting it due to repetitive, outdated, overabundant and irrelevant kinds of information. Visual pollution has been empowered due to the rise of technologies and consumerism. This rise has in turn generated massive amounts of information and competing levels of technology infrastructure throughout the built landscape.

Currently, in advertising, there is no longer a linear way to advertise; people are constantly switching how they communicate and consume. Conventional printing is diminishing while digital technology, fueled by demand, is rapidly increasing. Advertising has become more complex, but more efficient in terms of a target audience. This is more intelligent advertising in the sense that one is able to advertise multiple messages on one screen and allowing the advertiser to update the messages on command.

Due to digital technological advancements, the traditional, flat, two-dimensional advertisement sign or billboard has become redundant and less significant within the built environment. Through having the ability to produce multiple messages on one screen, this means that the advertiser can take up less physical area resulting in more revenue and messages generated in a space. However, it is now possible to advertise to specific target audiences through cellular devices. These devices are much smaller, able to fit into one’s purse or pocket and are checked by the user multiple times a day.

Depending on how rapidly evolving digital communication technology is applied to the environment, effects could be pleasant and aesthetically pleasing, but could also be overwhelming and annoying, potentially dangerous to health and well-being. Imagine if all non-digital message boards were replaced with digital message boards. This would increase the amount of advertisement messages drastically. The management of advertising depends on responsible and wise decision-making by relevant professionals such as urban planners, developers, designers, architects, politicians, advertisement companies and lawmakers.
3. Methodology

This methodology research chapter explains the process and design of the study. Information gathered for this research includes a variety of resources, such as articles, books, meetings, personal observations, photo documentation and field work at three cities of varying scale in Thailand. The framework for the study involves:

- Literature review in the United States
- Field work in Thailand for three months with research conducted through personal observations and photo/video documentation
- Visits to signage expositions
  1. International Signage Expo 2015 (Las Vegas, USA)
  2. LED Expo 2015 (Bangkok, Thailand)
- Meetings
  1. Government Officials | Local Leaders
  2. Universities
  3. Interest Groups | Organizations | Local Magazine
- Case Studies of three cities of varying scale in Thailand
  1. Bangkok
  2. Chiang Mai
  3. Maha Sarakham
3.1 Intro to Methodology

The methodology of this study begins with a library and Internet literature review of books and academic articles on signage and technology in the US and Thailand. Since the author has the opportunity to spend three months in Thailand to do fieldwork, this review will expand to include a local magazine and meetings with professionals who deal with signage to provide context from the Thai perspective. These include government officials, local leaders, planners, professors and lecturers as well as representatives of interest groups and non-governmental organizations. Once it becomes evident that three cities of different scales will be visited to answer the research questions, it will become necessary to develop a case study approach to accommodate the author’s personal observations and photo documentation. The researcher then must determine which type of case study to follow in order to carry out pertinent research.
3.2 Research Timeline

The research began when the Faculty of Architecture, Urban Design and Creative Arts from Maha Sarakham University in Thailand offered an internship for the summer semester of 2015 to Master of Community Planning students via the College of Design, Architecture, Art, and Planning at the University of Cincinnati, Ohio. An application was sent in November of 2014, and an acceptance letter was received in March 2015 along with a contract explaining the internship would involve research activities under the guidance of faculty from Maha Sarakham University.

Spring semester, prior to traveling to Thailand, involved an independent study course to prepare a research thesis proposal. The topic of signage was chosen because the author wanted to expand upon his previous signage research in Thailand that was conducted as part of his undergraduate degree.

During the spring semester, the author traveled to Las Vegas to attend the 2015 International Sign Expo (see fig. 3.2.1) in order to gain insight surrounding the current trends and technologies of the signage industry. The event brings national and international sign companies together to network, build relationships, and display the latest products and services.

![Image of the Las Vegas Signage Expo 2015](image)

Figure 3.2.1 Las Vegas Signage Expo 2015.

*Photograph by Alistair Probst 2015*
Upon arrival to Thailand, the author attended the 2015 LED Signage Expo in Bangkok (see fig. 3.2.2) to gain knowledge of the trends happening in Asia with regard to LED signage technology. While there, he networked and asked questions about electronic messaging systems.

![LED Expo Thailand 2015](image)

**Figure 3.2.2** LED Expo Thailand 2015.
*Photograph by Alistair Probst 2015*

In Thailand, there are three cities of varying scale. The sizes and populations of multiple Thai cities were researched and documented prior to visiting to determine the three that would be studied. The three cities, Bangkok, Chiang Mai, and Maha Sarakham, were visited according to an itinerary created to organize timing, interviews and the research. Cities of different scales allow the researcher to make comparisons on how signage is regarded and the actual status quo thereof. How does each city deal with signage? Does a city’s treatment of signage change with size? Spending one week or more in each of the cities researching everything that signage has to offer from an internal and external perspective as well as public and private is inherent to the methodology. Meeting with planning departments, designers, universities and organizations is beneficial to this type of research, as is exploring signage related materials in each city.

In preparation for whom to meet with, a uniform set of questions was developed for
professionals in each of the cities. The author or faculty at the University of Maha Sarakham will contact the interviewees and aid in translation to English. Using the same questions for each of the cities allows the researcher to compare and contrast information. The researcher will determine whether there is a national uniformity with regards to how signage is or is not dealt with. Is signage pollution even considered in small-scale cities? Do only the large cities and tourist cities acknowledge signage in their city systems?

Another component of the visits to the cities is the planned documentation of personal observations by taking photos of the various types and technologies of signage encountered. It is important that there are observations of the current signage within these cities to learn if personal observations of the physical environment aligns with the information received by Thai representatives. This allows the researcher to analyze the strengths and weaknesses of the cities. How does signage compare to a large city versus a small city? Are they the same? Is there uniformity on a national scale? Or is it specific to a province? What is the urban and rural correlation? Photo and video documentation records support the research. The author records video of each of the streets being studied in both the day and night time via car. This allows him to gain perspectives of signage from an automobile driver’s point of view and, additionally, understand the visual impact of the signage in Thailand as one travels down its streets.
3.3 Research Approaches and Selection of Methodology

Case study research forms an important part of the research methodology used in this study. To determine what is proper here, Robert Yin is consulted. Research according to author Yin, who writes about case study research, is defined as follows, "A case study is an empirical inquiry that investigates a contemporary phenomenon within its real life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used". (Yin 1984, 23)

According to Yin, there are four types of basic case study design approaches that can be utilized for conducting and organizing research. These are Single Case Study, Single Case Study (embedded), Multiple Case Study and Multiple Case Study (embedded). This research consists of studying three cities of varying scale in Thailand, therefore, the research design method that proves most suitable for this type of research is the Multiple Case Study design (see fig. 3.3.1). The same study criteria in Bangkok, Chiang Mai and Maha Sarakham, Thailand, are being conducted. Yin explains that case study research is a way of investigating an empirical topic by following a set of pre-specified procedures such as the framework Yin created for the type of research design that is followed.
Figure 3.3.1 Types of Designs for Case Studies.

Source: Diagram from (Yin 2009, 46). Recreated by Alistair Probst, 2015
3.4 Application of Methodology to Research

Yin “considers single and multiple case designs to be variants within the same methodological framework—and no broad distinction is made between the so-called classic (that is, single) case study and multiple-case studies. The choice is considered one of research design, with both being included under the case study method”. (Yin 2009, 53)

The same study may contain more than a single case. In this study, each city is the subject of an individual case study, but the study as a whole covers three cities and in this way uses a multiple-case study design (see fig. 3.5.1).

Many scholars think that the evidence from the Multiple Case Study approach provides for a better outcome than other approaches, although it is harder to achieve due to the amount of research that is involved. Since a critical component of the study is to determine if one case study matters relative to other studies with regard to the type and variety of signage, the Multiple Case Study approach is the best alternative.
3.5 Case Study Design Chart

Case Study Design

Figure 3.5.1 Case Study Design.

Source: Diagram from (Yin 2009, 57). Recreated by Alistair Probst, 2015
3.6 Conclusion to Methodology

By the end of this research, a hypothesis is made about the amount of signage and its relative affect on the visual environment in Thailand. One can also infer a trend as to how Thailand implements signage technology. Innovative possibilities could lead the researcher to answer whether Thailand as an emerging country could leapfrog, bypassing some signage infrastructure established countries have with the use of cellular devices and other new innovative technologies (smart phones, GPS, etc.). If new technologies are utilized effectively, this would allow for the built environment to be cleaner from a physical standpoint as well as an aesthetic one. The resources and energy used for the current system could be allocated elsewhere to more efficiently serve the population. The right approach could serve as a model for understanding signage and its contribution to visual pollution on a global scale.

In the end, a well-documented representation of signage in Thailand will be produced. This is relevant because at the moment not much information or research on this particular topic exists about Thailand. The research on Thai signage will produce aspects that have not yet been covered from an urban planning perspective or an anthropological view.
4. Analysis

4.1 Implementation

This section covers field work done while in Thailand. The researcher spent three months in the summer of 2015 traveling to three different cities, which were Bangkok, Chiang Mai and Maha Sarakham, in Thailand to conduct observations about signage. While in each of the cities, the researcher chose to focus on the main street of the central business district for study. This was decided based on research findings and interviews with people from that city. The following sections will present the findings examined in each of the cities that were selected. The cities were documented by photography, videography, and a signage count. Additionally, off-the-record meetings with professionals were conducted to gain insight on the current state of signage within each city along with personal observations recorded. The researcher will then cross analyze the three cities. In turn, the researcher will draw conclusions from the findings and make recommendations for further research with regards to this topic.
4.2 Characterizing the Cities

Thailand is a country with an overwhelming deal of hustle and bustle, narrow corridors, a significant building density, many people walking out on the street, and a lot of motorcycles, scooters, tuk-tuks, rickshaws and cars running from destination to destination. In short, there is a lot of movement in Thailand, all of which have different purposes. One encounters bright colors, reflective gold temples (Wat) and an abundance of noise and smells, for better or worse. The human senses are constantly being stimulated, thus creating an exciting experience that is unique to the identity of Thailand (see fig. 4.2.1).

Figure 4.2.1 Thai flag flying over Bangkok. Photograph by Alistair Probst 2015

Three cities in Thailand were selected to capture a snapshot of Thai business districts (see fig. 4.2.2). The three cities selected were determined per their differences in population, size, function, and geographic location. As a whole, all cities shared similarities, like having a prominent central business district that was inclusive of malls and educational institutions within close proximity. Historically, central business districts (CBDs) have been a reflection of cities’ industrial and economic success, displaying innovative architecture, affluence and modernity. One could consider the CBD to be the visual articulation of a city’s accomplishment.

Today, CBDs still strive for this glamour. They include, but are not limited to, a range
of elements such as social, political and economically driven activities. Generally, in the high-density cores of cities, the CBD typically includes uses such as retail, entertainment, office space and civic spaces. Lower density areas surround the CBD to include more service oriented uses like medical services, educational facilities, hotels, specialized shops, industries etc. In short, CBDs welcome everyone in a community to engage in its uses, and often aim to attract visiting tourists.

Thailand is a hot tropical climate, which often makes the outdoor experience unpleasant. As a reaction to the harsh climate, Thais have adopted a mall culture in order to escape the hot, hectic, and polluted environment that consumes the outdoor sidewalk and market spaces. Perhaps, one may also come to the conclusion that malls were adopted to highlight the developing Thai consumer economy. Either way, malls are prevalent in Thailand and can be seen as extensions of the public streetscape. They blur the lines between indoor and outdoor space by extending markets into an interior space and by planting advertisements in the streets surrounding them. Malls must attract consumers from the outdoor environment into that of an air-conditioned interior that focuses on luxury goods, products which people may not necessarily need. This results in a high density of advertising signage surrounding malls. There is much competition for attracting consumers, and thus lots of advertising.

Bangkok is Thailand’s capital and is the primary economic center of the country. Geographically located in the central part of the country, Bangkok supports a massive population of around 8,305,218 people in the city and 84,356 within the Pathum Wan District (location of prominent CBD studied) (Thailand, National Statistical Office 2010). Bangkok caters to a huge tourist industry, as it is accessible to visitors from all around the world via its international airport. Tourists come to Bangkok to explore Thailand’s exotic foods, visit sacred Wat, enjoy the friendly culture and gain knowledge of Thai history.

Bangkok is considered to be a primate city, “A country’s leading city as evidenced by measures of its primacy including its significantly larger population compared to other cities and by other characteristics reflecting the primate city’s national importance and influence, such as economic and political activity and power” (Knox and McCarthy 2005, 572). Bangkok
is historically Thailand’s greatest center of trade, whether by sea or by air. It continues to be the country’s hub for international business, and is frequented by visitors from around the world due to this. It is filled with many educational and religious establishments. Additionally, it houses the centers of the country’s government, and is the home of the King and Queen (Grand Palace).

Chiang Mai is geographically located in northern Thailand. It is filled with arts, culture, monuments, interesting architecture and Wat and is surrounded by lush picturesque mountains and nature. Many Thai either move to Chiang Mai or vacation to the city for the seemingly fresh mountain air and cooler climate. In likeness to Bangkok, Chiang Mai has a very large tourist industry. The population is around 1,737,041 and 235,589 within Mueang Chiang Mai district (location of prominent CBD studied) (Thailand, National Statistical Office 2010). There are several universities in Chiang Mai, thus there is a high number of educated and affluent within the city. The intermediate sized city of Chiang Mai would be considered to be a second order city, meaning that the city is much smaller in scale and economic function to the primate city of Bangkok. In contrast, Chiang Mai is larger than most other Thai cities, along with having a strong economic and political function in relation to the rest of the country.

The Maha Sarakham province is located in the northeast, close to the Laos border. The city of Maha Sarakham has a population of around 827,639 and 96,431 within the Talat District (location of prominent CBD studied) (Thailand, National Statistical Office 2010). Historically, the region has been a working class agrarian society with most of its economy based around rice fields. This is still a significant aspect of the province’s economy and culture, but today, it is also becoming known as a regional educational center. Half a dozen colleges serve the province, and the student body has become integrated into its economic welfare and affluence. Yet, Maha Sarakham still holds onto and celebrates its rural culture and tradition. The city of Maha Sarakham is considered to be a third order city, meaning that it functions physically and economically at a much smaller scale in comparison to the primate and second order cities of Bangkok and Chiang Mai.
Figure 4.2.2 Map of Thai cities studied. Source: Alistair Probst, 2015
4.3 Defining the Sign Types

Signage ranges in attributes with different materials, varying costs, provisions, direction towards different types of users, legibility, lighting, motion, placement, scale and includes varying manufacturing technologies. Digital technology within the advertising display themselves have also become a element. The following six sign types were chosen to represent a range of signage manufacturing and computer technologies that are used most frequently in Thailand. The six signage types include: Vinyl Banner (see fig. 4.3.1), Sidewalk Advertisements (see fig. 4.3.2), Advertisements on Posts (see fig. 4.3.3), Billboards (see fig. 4.3.4), Billboards on Buildings (see fig. 4.3.5) and Electronic Message Boards (see fig. 4.3.6).
**Vinyl Banner**

**Material:**
- Printed on varying sizes of synthetics from a digital file

**Cost:**
- Relatively inexpensive to produce
- Self-installable

**Provisional:**
- Considered to be semi-temporary

**Intended User:**
- Both pedestrians and vehicles

**Legibility:**
- Few messages able to be shown at a single time
- Vinyl degrades due to sun exposure and environmental elements, causing the printed message(s) to become illegible over time

**Lighting:**
- None

**Motion:**
- None

**Placement:**
- Hung from awnings, building facades, bridges, poles, sidewalk stalls, or in windows. Slightly obstructive to movement of pedestrians
- Visually obstructs places

**Scale:**
- Small in size
Figure 4.3.1 Example of Vinyl Banners. Photograph by Alistair Probst 2015
Sidewalk Advertisement

**Material:**
- Wooden, plastic, or metal with a small message board

**Cost:**
- Relatively inexpensive to produce
- Can be homemade or mass manufactured, and easily relocated because it is not fixed in place

**Provisional:**
- Easy to move
- Considered to be temporary signage

**Intended User:**
- Directed at pedestrians

**Legibility:**
- Low to ground, often obstructed by objects and people competing for space on sidewalks
- Easily read when closely viewed, but more difficult to read from a distance
- Few messages
- Easily damaged due to exposure to foot traffic and environmental elements

**Lighting:**
- Minimal lighting. Sometimes lit, but usually not

**Motion:**
- None

**Placement:**
- Placed in pedestrian right of way.
- Excessively obstructive to pedestrian movement
- Placement determined by business owner

**Scale:**
- Small in size
Sidewalk Advertisement

Figure 4.3.2 Example of Sidewalk Advertisements. Photograph by Alistair Probst
**Advertisement on Post**

**Material:**
- A freestanding metal pole with either metal, plastic, or wooden signage

**Cost:**
- Range in cost
- Usually installed and maintained by signage company, but can also be constructed by business owners

**Provisional:**
- A permanent, metal pole fixture bolted to the sidewalk or installed into the sidewalk with poured concrete

**Intended User:**
- Both pedestrians and vehicles

**Legibility:**
- Sign elevated above height of pedestrians
- Seldom obstructed by other objects.
- Lighting can allow signs to be read in dark settings
- Can be read from a distance or in close proximity
- Often carries multiple messages
- Permanent materials last longer in environmental elements

**Lighting:**
- Usually lit but not always
- Moderate lighting when lit

**Motion:**
- None

**Placement:**
- Moderately obstructive to pedestrians due to irregular placement
- A moderate visual obstruction due to scale and elevation of message

**Scale:**
- Small in size
Advertisement on Post

Figure 4.3.3 Example of Advertisement on Post. Photograph by Alistair Probst 2015
**Billboards**

**Material:**
- Freestanding metal pole(s) with large surface and/or frame that holds messaging
- Messaging often printed and material is attached to fixture

**Cost:**
- Medium to high in cost to fabricate and install
- Usually installed and maintained by signage company

**Provisional:**
- A permanent, freestanding advertising structure

**Intended User:**
- Both pedestrians and vehicles

**Legibility:**
- Easily read from varying distances due to large scale.
- Multiple messages.
- Lighting allows signs to be read in dark settings
- Permanent materials last longer in environmental elements

**Lighting:**
- Produces moderate amounts of light

**Motion:**
- A single sign can sometimes include multiple advertisements via a rotating mechanism

**Placement:**
- Moderately obstructive due to large-scale and irregular placement

**Scale:**
- Can range from medium to over-sized
Billboards

Figure 4.3.4 Example of Billboard. Photograph by Alistair Probst 2015
Billboards on Building

**Material:**
- Either a large surface and/or frame that hold messaging affixed to an existing structure, or a large, printed message that hangs directly from an existing structure

**Cost:**
- Medium to high in cost to fabricate and install
- Usually installed and maintained by signage company

**Provisional:**
- Permanent advertising structure affixed to a building

**Intended User:**
- Both pedestrians and vehicles

**Legibility:**
- Easily read from varying distances due to large scale
- Multiple messages
- Lighting allows signs to be read in dark settings
- Often difficult to read due to height and angle of placement in relation to pedestrian or vehicular movement.
- Permanent materials last longer in environmental elements

**Lighting:**
- Produces moderate amounts of light

**Motion:**
- None

**Placement:**
- Excessively obstructive visually to existing architectural infrastructure, large scale, and irregular placement

**Scale:**
- Can range from medium to over-sized
Billboards on Building

Figure 4.3.5 Example of Billboards on Building. Photograph by Alistair Probst 2015
Electronic Message Boards

Material:
- A digital screen.
- Current prevalent technology includes LED and pixel screens

Cost:
- High in cost to fabricate and install, but easily update-able / programmable
- Usually installed and maintained by signage company

Provisional:
- Permanently affixed either to a pole, building facade or on top of building structures

Intended User:
- Both pedestrians and vehicles

Legibility:
- Easily read from varying distances due to large scale
- Quick movement that can make the multiple messages displayed difficult to understand
- Lighting allows signs to be read in dark settings, but can be difficult to read in direct sunlight or blinding if light values of color are used
- Often difficult to read due to height and angle of placement in relation to pedestrian or vehicular movement
- Permanent materials last longer in environmental elements, but often needs mechanical maintenance due to technology

Lighting:
- Produces excessive amounts of light

Motion:
- Produces excessive amounts of motion

Placement:
- Excessively obstructive visually to existing architectural infrastructure, large scale, and irregular placement

Scale:
- Large but can range in size
Electronic Message Boards

Figure 4.3.6 Example of Electronic Message Board. Photograph by Alistair Probst 2015
4.4 Quantity of Signage Per Sign Types Per City

This section displays the raw sign count for each of the CBD roads researched: Bangkok, Rama 1 Road (see fig. 4.4.3); Chiang Mai, Nimmanahaeminda Road (see fig. 4.4.6); and Maha Sarakham, Burapha Uthit Road (see fig. 4.4.9). The sign count was conducted via foot in the summer of 2015, July. The sign types were observed and counted using a pen, paper, and clipboard to record the quantity findings. The count is a best estimate that summarizes the conditions of the streets that the researcher encountered upon visiting the CBDs, and is subject to change because of the fast-paced, ever-evolving nature of Thai streets.

The researcher chose to conduct the signage count in each city on the CBDs’ main road (see figs. 4.4.2, 4.4.5, 4.4.8). Defined starting and stopping points were established. The length of each road studied was roughly the same. Starting and stopping points were determined by the intersections that best reflected a likeness in distance and highlighted where the highest amount of economic activity and advertising was represented. It is important to note that the entire district was not counted but only the chosen road with defined starting and stopping points. This was done for the sake of consistency, time limitations, and to create a sample that could be more easily compared to other cities. (See see figs. 4.4.1, 4.4.4, 4.4.7)
Bangkok, Pathum Wan District, Rama 1 Road

**Figure 4.4.1** Diagram of Rama 1 Road and cross-streets. Source: Alistair Probst, 2015

**Figure 4.4.2** Rama 1 Road. Photograph by Alistair Probst 2015
The highest (1.) to lowest (6.) quantity of signage per type on Rama 1 Road is (see fig. 4.4.3):

1. Advertisements on Posts
2. Billboards
3. Sidewalk Advertisement
4. Vinyl Banners
5. Billboards on Buildings
6. Electronic Message Boards
Figure 4.4.3 Quantity of Signage per Sign Type, Bangkok.

Source: Alistair Probst, 2015
Figure 4.4.4 Diagram of Nimmanahaeminda Road and cross-streets. Source: Alistair Probst, 2015

Figure 4.4.5 Nimmanahaeminda Road. Photograph by Alistair Probst 2015
The highest (1.) to lowest (6.) quantity of signage per type on Nimmanahaeminda Road is (see fig. 4.4.6): 

1. Sidewalk Advertisements
2. Advertisements on Posts
3. Vinyl Banners
4. Billboards on Buildings
5. Billboards
6. Electronic Message Boards
Figure 4.4.6 Quantity of Signage per Sign Type, Chiang Mai.

Source: Alistair Probst, 2015
Maha Sarakham Province, Talat district, Burapha Uthit Road

Figure 4.4.7 Diagram of Burapha Uthit Road and cross-streets. Source: Alistair Probst, 2015

Figure 4.4.8 Burapha Uthit Road. Photograph by Alistair Probst 2015
The highest (1.) to lowest (6.) quantity of signage per type on Burapha Uthit Road is (see fig. 4.4.9):

1. Vinyl Banners
2. Billboards on Buildings
3. Sidewalk Advertisements
4. Advertisements on Posts
5. Billboards
6. Electronic Message Boards
Figure 4.4.9 Quantity of Signage per Sign Type, Maha Sarakham.

Source: Alistair Probst, 2015
The quantity of signage per type on average in all of the cities from highest (1.) to lowest (6.)
(see fig. 4.4.10):

1. Sidewalk Advertisements
2. Advertisements on Posts
3. Vinyl Banners
4. Billboards on Buildings
5. Billboards
6. Electronic Message Boards
Figure 4.4.10 Average Quantity of Signage per Sign Type, Thailand.

Source: Alistair Probst, 2015
4.5 Rating System for Visual Sign Pollution

The author has created a rating system to determine the visual pollution level for each of the sign type. Each of the six sign types was rated from lowest (0) to highest (3) in the following categories: Legibility, Lighting, Motion, Placement, and Scale. The author selected these categories based on personal observations, insights from his literature review and research in Thailand. After each attribute was rated, the author added the ratings together for each sign type to find its overall visual pollution rating (see fig. 4.5.1).

After rating each sign type with the five attributes, the author noticed that there is a correlation between how much pollution a sign type creates in the visual environment and its level of technology. If a sign type has more complexity and more components, otherwise described as a higher level of technology, then it will contribute more to the visual pollution within the built environment. If a sign type has a lower level of technology, being simpler to design, fabricate and install, then it will contribute less to visual pollution within the built environment.
Figure 4.5.1 Rating System for Visual Pollution Level of Each Sign Type

Source: Alistair Probst, 2015
4.6 Equation for Finding the Contribution of Visual Pollution to the Environment

The author has created an equation to estimate visual pollution in each city. The equation uses the rating system for visual pollution per sign type and the quantity of signs to find the contribution of visual pollution per sign type. Once the quantity of each sign type in all three cities was counted, the findings were then multiplied by the assigned sign type rating. Every time the compounding affect of the five polluting factors are encountered, the viewer experiences an increased difficulty in receiving the messages. The more difficult the messages are to receive, the more visual pollution is created because the signs are no longer functioning to their intended purpose.

The calculation of Quantity of Signage per Sign Type (number of signs from researcher’s sign count) Multiplied by the Rating System for Visual Pollution Level of Each Sign Type (total rating of physical attributes) Equals Contribution of Sign Type to Visual Pollution.

Quantity of Signage X Visual Pollution Level = Contribution to Visual Pollution

Example:

23 (Quantity of Electronic Message Boards) X 13 (Visual Pollution Rating Level of Electronic Message Boards) = 299 (Total Contribution to Visual Pollution)
4.7 Contribution of Sign Type to Visual Pollution in Each Central Business District

Bangkok, Pathum Wan District

The highest (1.) to lowest (6.) contribution of sign type to visual pollution on Rama 1 Road is (see fig. 4.7.1):

1. Billboards
2. Advertisements on Sign Posts
3. Electronic Message Boards
4. Billboards on Buildings
5. Sidewalk Advertisements
6. Vinyl Banners
Figure 4.7.1 Contribution of Sign Type to Visual Pollution, Bangkok.

Source: Alistair Probst, 2015
The highest (1.) to lowest (6.) contribution of sign type to visual pollution on Nimmanahaeminda Road is (see fig. 4.7.2):

1. Advertisements on Posts
2. Sidewalk Advertisements
3. Billboards on Buildings
4. Vinyl Banners
5. Billboards
6. Electronic Message Boards
Figure 4.7.2 Contribution of Sign Type to Visual Pollution, Chiang Mai.

Source: Alistair Probst, 2015
Maha Sarakham Province, Talat district

The highest (1.) to lowest (6.) contribution of sign type to visual pollution on Burapha Uthit Road is (see fig. 4.7.3):

1. Billboards on Buildings
2. Vinyl Banners
3. Advertisements on Posts
4. Sidewalk Advertisements
5. Billboards
6. Electronic Message Boards
Figure 4.7.3 Contribution of Sign Type to Visual Pollution, Maha Sarakham.

Source: Alistair Probst, 2015
The highest (1.) to lowest (6.) average of contribution of sign type to visual pollution in all three city CBDs (see fig. 4.7.4):

1. Advertisements on Sign Post
2. Sidewalk Advertisements
3. Billboards on Buildings
4. Billboards
5. Vinyl Banners
6. Electronic Message Boards
Figure 4.7.4 Average Contribution of Sign Type to Visual Pollution, Thailand.

Source: Alistair Probst, 2015
4.8 Comparison of the Quantity of Sign Type vs.
Contribution of Sign Type to Visual Pollution

The intent of the following comparisons of quantity to the contribution of visual pollution is to determine how the quantity of signage versus the quality of the sign type contributes to the overall pollution level (see figs. 4.8.1, 4.8.2, 4.8.3, 4.8.4, 4.8.5, 4.8.6).

The highest average quantity of signs in all three cities is Sidewalk Advertisements and the highest average contribution of visual pollution is Advertisements on Posts (see fig. 4.8.7, 4.8.8).
Figure 4.8.1 Comparison of the Quantity of Sign Type vs. Contribution of Sign Type to Visual Pollution, Bangkok. Source: Alistair Probst, 2015
Figure 4.8.2 Comparing the Quantity of Sign Type vs. Contribution of Sign Type to Visual Pollution, Bangkok. Source: Alistair Probst, 2015
Comparison of the Quantity of Sign Type vs. Contribution of Sign Type to Visual Pollution

CHIANG MAI • Nimmanahaeminda Road 2 Chiang Rai Road to Huaykaew Road

Figure 4.8.3 Comparison of the Quantity of Sign Type vs. Contribution of Sign Type to Visual Pollution, Chiang Mai. Source: Alistair Probst, 2015
Figure 4.8.4 Comparing the Quantity of Sign Type vs. Contribution of Sign Type to Visual Pollution, Bangkok. Source: Alistair Probst, 2015
Figure 4.8.5 Comparison of the Quantity of Sign Type vs. Contribution of Sign Type to Visual Pollution, Maha Sarakham. Source: Alistair Probst, 2015
Comparing the Quantity of Sign Type vs. Contribution of Sign Type to Visual Pollution

MAHA SARAKHAM • Burapha Uthit Road  Chaeng Sanit Road to Rim Klong Somtawin 6 Road

Figure 4.8.6 Comparing the Quantity of Sign Type vs. Contribution of Sign Type to Visual Pollution, Maha Sarakham. Source: Alistair Probst, 2015

88
Comparison of the Average Quantity of Sign Type vs. Average Contribution of Sign Type to Visual Pollution

THAILAND • Central Business Districts

**Figure 4.8.7** Comparison of the Average Quantity of Sign Type vs. Average Contribution of Sign Type to Visual Pollution, Thailand. *Source: Alistair Probst, 2015*
Figure 4.8.8 Comparing the Average Quantity of Sign Type vs. Average Contribution of Sign Type to Visual Pollution, Thailand. Source: Alistair Probst, 2015
The highest quantity type of signage was Sidewalk Advertisements and the lowest was Electronic Message Boards (see fig. 4.9.1).

Chiang Mai is the highest contributor to visual pollution when compared to Bangkok and Maha Sarakham (see fig. 4.9.2).

Bangkok has less signs than Chiang Mai and Maha Sarakham but a greater contribution to visual pollution than Maha Sarakham. Chiang Mai has the highest number of signs and also the highest total contribution to visual pollution. Maha Sarakham has more signs than Bangkok but contributes less to visual pollution (see fig. 4.9.3).
Figure 4.9.1 Total Quantity of Signage per Sign Type, Thailand.

Source: Alistair Probst, 2015
Comparison of the Total Quantity of Sign Type vs. Total Contribution of Sign Type to Visual Pollution

THAILAND • Central Business Districts

Figure 4.9.2 Comparison of the Total Quantity of Sign Type vs. Total Contribution of Sign Type to Visual Pollution, Thailand. Source: Alistair Probst, 2015
Figure 4.9.3 Comparison of the Total Quantity of Sign Type vs. Average Contribution of Sign Type to Visual Pollution, Thailand. Source: Alistair Probst, 2015
5. Conclusion

5.1 Cross-Analysis of Cities and Conclusions

Of the three cities, Chiang Mai’s Nimmanahaeminda Road had the highest sign count at 48% along with being the most visually polluted at 42% (see fig. 4.9.2). The highest quantity of signs on Nimmanahaeminda Road is Sidewalk Advertisements at 45% and the highest contributor to visual pollution is Advertisements on Posts at 42% (see fig. 4.8.3).

The second most polluted city is Bangkok’s Rama 1 Road with an overall sign count of 26% and 30% visually polluted (see fig. 4.9.2). The highest quantity of signs on Rama 1 is Advertisements on Posts at 32% and the highest contributor to visual pollution is Billboards at 31% (see fig. 4.8.1).

Lastly, Maha Sarakham’s Burapha Uthit Road has the lowest percentage rate for contribution to visual pollution with an overall sign count of 27% and is 28% visually polluted (see fig. 4.9.2). The highest quantity of signs on Burapha Uthit Road is Vinyl Banners at 31% and the highest contributor to visual pollution is Billboards on Buildings at 44% (see fig. 4.8.5).

These results suggest that even if there is a higher number of a certain type of signage, it does not necessarily mean that it will have a higher contribution to visual pollution relative to the other signage studied. The assigned attribute rating of a sign could cause a sign type of a lower quantity to have a greater affect on the environment. When comparing Bangkok, Chiang Mai and Maha Sarakham, results indicate that higher sign counts tend to have an overall higher contribution to visual pollution. However, when the rating of a sign type is higher, a relatively low sign count may still have a greater impact to visual pollution when compared to a sign with a lower rating and similar or greater sign count.

The results are surprising because initial assumptions by the researcher were that Bangkok’s CBD Rama 1’s Road would have the highest sign count and therefore have the highest contribution to visual pollution. This assumption was made based on knowledge of the city’s scale, population and economy size. This was not the case and disproved by resulting
data. Bangkok, the primate city, has a higher quantity of signage relative to Maha Sarakham but almost has the same contribution to visual pollution as the third order city of Maha Sarakham.

Bangkok is at most risk of facing an increase in visual pollution. It has the potential to change more drastically than the other two cities should a trend of replacing Billboards and Billboards on Buildings with Electronic Message Boards occur. This is because Bangkok has the most Billboards and a relatively large number of Billboards on Buildings in addition to having the largest quantity of Electronic Message Boards amongst the three cities studied. Electronic Message Boards also have the worst pollution levels according to the contribution rating system. The current amount of Electronic Message Boards on Rama 1 Road is 23, the number of Billboards is 68, and the number of Billboards on Buildings is 24. Should all of the Billboards and Billboards on Buildings on this street be replaced with digital variations, Rama 1 Road could have as many as an additional 92 more Electronic Message Boards.

Advertising signage in the greater Bangkok Metropolitan Area has in recent history become an issue in politics. In 2009 to 2010, “Ex Bangkok governor Apirak Kosayodhin announced a … measure, but focused on illegal advertising … removing a whopping 776,408 signs … It seems that where there is a political will, there is always a way” (Kemasingki 2015, 14). The data from this study shows that future debates will need to address and lessen the damaging impact that visual pollution has on a city like Bangkok, and that the politicians in power will be instrumental in shaping this future.

Maha Sarakham is also at risk of becoming more visually polluted due to the amount of Billboards and Billboards on Buildings. Because it has a much smaller scale in population and economy, it can be considered to be at a lower risk. Currently, Maha Sarakham’s Burapha Uthit Road only has 1 Electronic Message Board. It has the potential of having 87 additional Electronic Message Boards if the existing Billboards and Billboards on Buildings were replaced by Electronic Message Boards. Still, the risk is less due to the economic demand of Maha Sarakham.

Chiang Mai’s Nimmanahaeminda Road is at moderate risk from becoming visually
polluted by Electronic Message Boards. Currently, there are 5 Electronic Message Boards with the foreseen potential of having an additional 35 Electronic Message Boards if Billboards and Billboards on Buildings were to be replaced with Electronic Message Boards. It is more likely that Chiang Mai’s CBD will replace Billboards and Billboards on Buildings with Electronic Message Boards than Maha Sarakham due to its scale, population and economy. However, one can predict that the city does not have the potential to change as drastically as Bangkok unless new infrastructure for digital signage is constructed in addition to existing billboard infrastructure.

Prior to numeric data being analyzed, Chiang Mai’s Nimmanahaeminda Road was perceived to be the most visually polluted based on personal observations and meetings with professionals. It was difficult for the researcher to walk down the street without being hindered by a signpost or sidewalk advertisement. The senses were scrambled due to the abundance of messages that the researcher was trying to process. It is possible that Nimmanahaeminda Road was the most polluted due to new development that has been taking place throughout the district. The mall is relatively new (opening in 2014), and forces small businesses along the road to compete with its existence. This information could indicate that Chiang Mai, the second order city, may be developing at a more rapid rate when compared to Bangkok and Maha Sarakham. Chiang Mai appears to be on an economic upswing and, due to its density, has more ability to grow.

Of the three cities studied, Chiang Mai was the only city that had grass roots organizations trying to combat the amount of signage that has consumed so much of the city environment. Chiang Mai has not yet reached the situation that Bangkok has found itself in as a primate city with irrelevant, outdated and unenforced signage regulation— the situation that makes Bangkok high-risk for an increase of visual pollution. The city, thus, has the opportunity to introduce signage regulations to manage the introduction of new signage technologies as the economy of Chiang Mai continues to expand.

The grass roots organization present in Chiang Mai, known as Raks Mae Ping, fights for the removal of signage. They are an environmental organization that believes Chiang Mai
needs to take pride in its beautiful features— its mountains, rivers, and vegetation— and take steps towards preservation to maintain its attractiveness to tourists and Thai residents alike. The organization has met with politicians, participated in protests, and organized many campaigns for environmental issues. Raks Mae Ping traditionally addresses tangible and measurable types of pollution like water and air pollution, and has now turned its attentions toward the rampant visual pollution that is accosting the city. For example, Raks Mae Ping blew the whistle on an illegal sidewalk advertisement on the King’s birthday in January 2015. It blocked the sidewalk in front of the Governor’s residence for four hours until it was removed (see fig. 5.1.1) (Darawan and Wiwatanakarn 2015, 11).

![Figure 5.1.1 Illegal signage removed by grassroots activism. Source: (Darawan and Wiwatanakarn 2015, 11)](image)

The whistle blowing of Raks Mae Ping is only one instance of addressing this rampant issue in Chiang Mai. The sense of urgency for action was further upheld by a local magazine, which the researcher stumbled upon while in Chiang Mai. In it was found an article discussing visual pollution and the amount of signage advertising around the city. The chief editor of the magazine has a personal interest educating the public about the issue of signage pollution. She viewed the issue as a matter of quantity, but also considered the quality of the signs and their effects on visual pollution.

The article in question described the tax system in Chiang Mai as it relates to signage. The mayor of Chiang Mai is quoted as stating, “If you want to put a sign up on your property, I can’t stop you as long as you follow the [existing] rules. It takes years to change the law, I have
changed some already and will continue to do so. We also need to think about businesses and we need Chiang Mai to grow and develop so that everyone benefits.” (Kemasingki 2015, 14)

Currently, the city receives tax revenue from the signage industry when they permit signage in public spaces. The city, therefore, is encouraged to allow an increase in the quantity of signage because it receives money from doing so. This, in turn, supports the signage industry by permitting it to install new signs and thus increase their own revenue by providing more advertising space to their customers.

The author of the article suggests that the present laws in Chiang Mai are not to the benefit of its people. She quotes architect Pawat Tantayanusorn, who states, “the power holders are not using their powers for good, and that is Chiang Mai’s karma” (Kemasingki 2015, 14). He believes that architecture has been undermined as a profession by the signage industry. One can erect a beautifully designed building, but in the end it is disguised by the presence of a newly erected sign. An owner of one of the six largest signage companies in Chiang Mai echoes this opinion. “It’s all very slick ... These companies start off by putting up signs to honour their Majesties or put up public service announcements. This way no one complains ... The next thing you know all these public spaces are being used to sell beers or pick up trucks. ... What a shame it is that now it covers the recently renovated old building which is really quite pretty” (Kemasingki 2015, 13). These sentiments echo the idea that the sign company owner had concerning visual pollution, describing a scenario where signage is detrimental to the identity of a space and the ability to navigate it. The sign company owner and the architect are lamenting the loss of the beauty of their city because it can no longer be seen behind the billboard.

Similarly, Phantawat Gunguksultorn, a social activist and president of the Chiang Mai Musician, Singer, Actors Association, explains that he was “so outraged when he visited the Chiang Mai blind school two years ago and learned of the numerous and repeated accidents blind children befall while navigating Chiang Mai’s pavements. He went straight to the top with his complaints. ... ‘We were all bullying the blind and the handicapped with our apathy,’” he said (Kemasingki 2015, 14). Political pressure can cause those in power to react to the outcries
of citizens, but Gunguksultorn believes that the response he received was simply a show to allay the demands of the public. When the governor and the fifth region police reacted to Gunguksultorn, they held “a press conference to show that they had removed signs from 13 locations. It was all image making. The signs were small unimportant signs. But at least I got them nervous. This is dangerous territory, I don’t think that you realize how insidiously corrupt all of this is. It goes way further up than you think” (Kemasingki 2015, 13). Perhaps, like in the situation of the advertising signage removals in Bangkok by Raks Mae Ping, political involvement could drive reform to signage policies in Chiang Mai. However, Gunguksultorn believes that this may not be possible in Chiang Mai due to the current political climate. The public and the government, ultimately, must work together to determine which policies could benefit the city in order to lower the risk for visual pollution in Chiang Mai.

Chiang Mai already has a foundation for reform. A law was passed at the national level in Thailand in 1960 to regulate signage in public space. This law was revised in 1992. “According to the sign board tax act of 1992, an updated version of the Maintain Cleanliness and Orderliness of the Country act of 1960, without consent from authorities, no signs may obstruct public spaces of any kind nor clutter and make unattractive buildings or public spaces by hanging, affixing or placing advertising of any kind onto them. Fines can be imposed and said signs removed” (Kemasingki 2015, 13). This law shows that steps were once made to address signage in the urban space, but those decisions are either outdated or no longer enforced.

Based on meetings the researcher conducted with professionals from Thailand, the regulation codes for signage were decidedly irrelevant in the three cities. The cities are treating new signage technologies as the same as old ones. The professionals in each of the cities spoke about the sign industry having relationships with politicians or that the city gains a certain amount of revenue from sign tax. Therefore, they concluded that there is little care in regard to what the visual environment looks like as long as there is steady revenue being generated. The results are cluttered, unsightly, dangerous and anonymous streetscapes throughout the beating hearts of Thailand.
5.2 The Surge of Digital Signage

There is a trend of introducing signage that has higher levels of visual pollution because advertisers are looking to use new technologies to compete with lower-technology sign types. The lower-technology signs are in such abundance that they are negating one another’s messages through competition for attention in similar physical ways. In other words, a vinyl banner with the same physical attributes as another vinyl banner is going to equally compete for attention. Therefore, because neither has stronger attributes than the other, they in effect cancel one another out and the viewer treats them both as unimportant messages to consume. If a sign has unique attributes by using newer technology, it will be more visually significant and therefore the viewer will treat the message as more significant. Because the viewer is treating this message as significant, the sign type should be more effective in communicating the message, which is the goal of signage advertising.

Resonance with viewers is causing a demand for new, higher technologies in the signage industry in order to drive advertising and sales. However, once there is an abundance of a new sign type, those signs too will, in turn, cancel one another out. There will be a continual search by the industry for the next “unique” factor that will make their message stand out amongst the crowd. Each layer of technology then creates another layer of pollution because the messages and the environment created become more visually complex. The signage stimulates more senses at the same time. Not only that, but because the signage is more complex, more resources must be directed towards manufacturing, maintaining and operating the signage. This also creates environmental pollution via the excessive and often mismanaged use of resources. Manufacturing, maintenance and operating costs may be of benefit to the sign industry because it creates more demand for their services, but ultimately does not benefit the urban population, environment nor the businesses whose costs to convey messages are increased.

The theory of “design of subtraction,” explained during a lecture at the Milan Politecnico by Ruedi Baur, states, “… any image-object … runs the risk of becoming just one
more sign, automatically lining up as another consumable on the enormous image market. It will thus play its part in the totally underestimated phenomenon of large-scale disinformation through over information” (Baur 1998, Ch. 20). If a sign’s goal is to communicate a message, then a lack of regulations in a space may be more detrimental to that sign’s goal than the existence of regulations. Limitations can help entities communicate messages better by eliminating discord in the environment and regulating the amount of signage competition. It also creates an environment that is less stressful for the receiver of these messages and encourages them to interact with and receive those messages more effectively.

Planners, architects and urban designers can create white space in the physical environment to ease the pace at which messages bombard the recipients, making the messages more digestible and pleasant to consume. “Care must be taken not to fall either into the usual trap of over-repetition or its opposite, cacophony or maximum mix: they both destroy difference” (Baur 1998, Ch. 20). The physical appearance created and emotions instilled by each space becomes the same due to the bombardment of messages. This destroys the unique character of cities. Public spaces no longer have identity due to over-repetition and cacophony, and therefore cannot be used to orient oneself to the space. This is the same experience the author had while studying the CBDs in Thailand. He discovered it was difficult to differentiate business districts from city to city. So, although signage can be used in absence of a landmark to orient oneself, as in the case of way finding, gateways, historical markers, etc., the advertising signage experienced in Thailand is so transient (non-permanent), and in such high quantities throughout Thai cities, that it did not create an anchor or symbol in a community to identify it as different from another.

Due to the signage advertisements, Thailand CBDs have become a place of no places. The researcher found that restrictive sign regulations, no regulations or outdated regulations could have negative affects on the environment. They create bland, mass-produced spaces with no soul. They are unidentifiable because the architecture does not stand out, as the architecture becomes masked by signage just as the sign company owner explained in City Life (Kemasingki 2015, 13). Additionally, the pathways became difficult to relate to one another,
and the messaging was so similar in each place that none of the businesses or services felt more significant than the other.

It is understood that signage can either conceal the heritage of or highlight a space. It is when signage is not suitably regulated that the significance of public spaces becomes diminished. Locations with irrelevant regulations can have a similar feeling due to the over abundance of signage in a place that has no restrictions. It, however, may feel less chaotic or stressful. Sensible policies can help guide signage design, engineering and placement and should be composed tastefully to help foster the identity of a given place. This will change from city to city. Therefore, the author suggests that intelligent, sensitive and flexible signage codes and policies be developed.

Over the last few decades, there has not been enough attention focused on creating well-planned, systematic signage codes and policies. The development of code and policy will depend on how cities react to emerging communication technologies. Signage code and policy in cities needs to be flexible and frequently updated. Technology is constantly advancing and changing, and so should signage ordinances and bylaw.

There could be policies created to help finance unique, well-considered signage for businesses. By creating these incentives this would help foster a business’ unique identity and ultimately beautify the streetscape. Additionally, cities are able to provide initiatives by making grant money and special tax ordinances available to bring business owners, designers, engineers, sign fabricators and local artists together to create signs that represent their community as a whole. An example of this is the projecting signage present in the neighborhood of Northside in Cincinnati, Ohio USA. Per the City of Cincinnati’s municipal code, a projecting sign is defined as “a sign that is wholly or partly dependent on a building for support or suspended from a pole attached to a structure and that projects from the building at a perpendicular angle or approximately perpendicular angle. A Projecting Sign may not extend more than six feet from the wall to which it is attached” (“Municode Library” 2016). Businesses on Hamilton Avenue, Northside’s CBD, and artists from CoSign, a project orchestrated by the American Sign Museum, came together under the sponsorship of the
Haile Foundation to make unique, well-designed projecting signage (“CoSign Project Finishes on a High Note” 2012). The community is full of creative, forward-thinking people and this progressive approach to signage truly captures the identity of the neighborhood.

Given the opportunity and the flexibility, signage will be able to have a great impact on the streetscape. The urban planner must be adaptive to community needs and the needs of the signage industry. One cannot dominate the other, but must be orchestrated in such a way that benefits all.
6. Recommendations for Further Research

Based on the research findings, the author will make recommendations for further research related to the topic of visual sign pollution.

First and foremost, the researcher developed the suspicion of a symbiotic relationship between government officials and advertisement industries working together to gain economic capital. These two forces appeared to disregard any other parties involved, and only take small actions when unrest befell the public. The government and the signage industry have dominion over the urban environment in Thailand. Research that exposes this perceived relationship could possibly lead to a reduction in signage pollution. It could create awareness and empower the general public of Thailand to take action against the visual pollution that is wreaking havoc on their cities.

Secondly, the signage industry has a tremendous amount of power and influence over people and the environment. It is important for planners and government officials to work alongside the industry in order to make progress that benefits everyone. However, it is also important to be aware of the financial agenda at stake. Some signage organizations seek to discredit the planner’s abilities to create meaningful code, attempting to put the control over signage in their own hands. In contrast, the industry has also taken action to educate planners on evolving technology and business needs so that code can be properly informed. The planner’s role should be to act as a liaison between the industry, politicians and the public to ensure that everyone’s needs are met, so there is no single beneficiary.

Another extension of this research could be to analyze and compile city signage codes, bylaw and policy. The information could lead to insights about the effectiveness of code and policy. For instance, if a city with more established regulations rated with an overall low pollution rating, and a place lacking regulations is rated with an overall high pollution rating, one could infer that regulations reduce pollution. Comparing and contrasting this information would reveal what has and has not worked, if unique and creative signage codes have arisen, which codes are old/outdated, if code is missing, and if there are loopholes in the system.
Cities could use this master reference to better insure that they do not repeat existing mistakes made by other cities, or on the contrary, find inspiration in others’ policies. This could close any signage code gaps that may exist. Since technology evolves so fast, the author believes that there is much outdated or poorly written signage code within cities. Policies have not adapted to the pace of innovation. Additionally, tax policies in Thailand and other countries need to be further explored with regard to how city revenue is generated from signage advertising. Currently in Thailand, there is little incentive for the government to create regulations and policies to reduce signage if the city is gaining a sufficient tax base from sign advertisements. One could research alternative tax and policy incentives or disincentives for cities in Thailand with the goal to reduce the amount of signage advertisement and perhaps generate more tax revenue congruently. This could motivate the government to take a different approach to generating taxes. If the right incentives and policies were created the public and government could both benefit in a mutual way.

A fourth means of continuing the study could include the analysis of other emerging countries’ CBDs, following the same general guiding principles of the study conducted in Thailand. This may lead to the discovery of trends and would allow for quantifiable, tangible data to be produced with regards to visual signage pollution. Additionally, this method of study would also be useful for conducting research in developed countries. Comparison between an emerging country, such as Thailand, and a developed country, like the United States, could occur. This would help determine the range of pollution levels found throughout the world. Countries could then be compared on a national scale. A greater number of studies of countries would create data that could be measured, and in turn, reveal patterns which one could then use to make recommendations for municipal code, policy and aesthetic.

A final suggestion for further research would be to focus on targeted advertising. A new rating system could be made to understand what the level of invasiveness such targeting through cellular devices, the Internet, etc. has. Market research may be an avenue for which a researcher could find data on this topic. Such studies could predict the future of advertising by comparing stationary and mobile communication tools. Trends may show that mobile devices
could create a future where stationary signage, like the billboard and the electronic message board, become irrelevant. It may already be evident in the form of signage infrastructure that is vacant of messaging or advertises itself for use rather than advertising an external product or service. A count of the sign types in the environment that are underutilized could provide guidance for cities to better determine if new infrastructure is really needed or needs to be replaced with something more useful. The signage industry may also benefit from this type of study, providing data that describes the demand for sign types and where innovation opportunities may lie. Should these types of studies be conducted, visual pollution in the urban landscape could be lessened and advertising evolved into a conversation between the marketer and the consumer, rather than the shouting match one experiences today.

Overall, there are many opportunities to elaborate upon the research conducted in this thesis. A greater body of literature could yield more action to deter the increasing threat of visual signage pollution in cities across the globe.
Bibliography


Peterson, Tim. “Google’s Ad Revenue Rises in Q4 2015 Despite Continued Price Decline.”


Probst, Alistair. April–August 2015. Personal Collection, Thailand and USA.


