American Neon Signs: Illumination And Consumerism

by

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PREFACE AND ACKNOWLEDGEMENTS

This dissertation represents the culmination of eleven years of research and writing. As an undergraduate at Cornell University, I had the opportunity to write my 2004 thesis on neon lighting entitled *Visual Clash: The Rise of Electrical Advertising and Neon Lighting in the American Cityscape, 1890-1940.* This project, generously funded by an Irving Tanner summer research grant, brought me to the archives of the American Sign Museum and *Signs Of The Times* magazine in Cincinnati, Ohio. Spending two solid months sorting through the nation's longest running sign-making journal gave me a new perspective on the evolution of the neon sign industry: an entity that had evolved from its humble beginnings as an artisanal handcraft into something that has defined the American landscape in significant ways. Our conception of cities, roadways, and towns has been informed by the presence of neon signage – a medium that this dissertation argues has helped to define popular American visual culture.

This project is about signs. They are the raw material of study for this dissertation whether found in images or as surviving artifacts. My dissertation attempts to make sense of the role that these objects played in the evolution of a highly nuanced cultural phenomenon. Studying neon signs contributes to our understanding of American marketing, aesthetics, economics, architecture, industrial design and technology. It provides a bridge to the present day that will hopefully sharpen our skills for understanding the ways within which electronic media and advertising continue to shape our lives. The interdisciplinary emphasis of material culture studies insists on the primacy

of objects as sources for analysis. The greatest challenge of this project has been to find an effective balance between artifactual analysis and the creation of a linear historical framework that relies on textual sources. Using objects simply as an illustration of historical phenomenon does not represent serious material culture analysis. I am deeply indebted to the Material Culture Program at the University Of Wisconsin-Madison for teaching me this valuable lesson – one that took some five years to register with me in all of my stubbornness.

I thank Ann Smart Martin, Anna Andrzejewski and Henry Drewal of the Art History and Material Culture program for helping me to learn a methodology that I had little training in as an undergraduate. I must especially thank Ann for encouraging me to pursue this project as a dissertation and for bringing me to UW-Madison in the first place. The critical feedback and encouragement I have received from Stephen Vaughn in Mass Communications, Eric Schatzberg in the History of Science, and Monica Penick in Design Studies helped me to sharpen my arguments and scope. Tod Swormstedt of the American Sign Museum and Dydia DeLyser of Louisiana State University helped to rekindle my interest in turning my undergraduate thesis into a dissertation. Tod generously opened up his archives and museum for my study and also provided lodging during my visits to Cincinnati. David Benko of Rocket City Neon in Washington state, Greg Rhomberg of the Antiques Warehouse in St. Louis, and Bill Rawski of Zap Props in Chicago have also given me the chance to see and touch a number of rare and wonderful neon signs. My undergraduate advisors at Cornell – Maria Fernandez, Ron Kline, Ken Gabard and Glenn Altschuler – have been there for me throughout the past eleven years.

Doug Solyan of Uptown Neon in Richmond, Virginia sparked my initial interest in signs when I first visited his shop as an elementary school student. Doug has been a huge help throughout all stages of this project. Last but not least, I am deeply indebted to family and friends for all of their support. My late father Dr. Thomas Osdene always yearned to see me complete my Ph.D. and had more faith in my academic and creative pursuits than anyone else. My mother Candy Osdene has always supported this work and encouraged me to follow my passions and dreams. My close friends Mike Petree, Moody Saint Louis, Sam Villanueva, and Bill Nagler have stood by me throughout the most frustrating moments of this project. My dear wife Michelle, my daughter Olivia, and my son Mason have helped me to realize what matters most in life and they have always shown me love. That is what makes life worth living and what gives one the inspiration to carry a project of this nature through to completion.

INTRODUCTION

The deceptively mundane neon sign offers insight into how mass marketing became a physical presence that irrevocably altered American design, architecture, and historical memory. This dissertation examines how neon signage shaped the advertising of goods, services, and messages along roadsides, in cities, and within the minds of consumers. It traces the cultural, technological, legal, and economic forces that shaped neon signage's development in the twentieth-century United States. The advent of neon signage altered the appearance of cityscapes and roadsides in significant ways. Its color and light transformed everything from the design of facades to the appearance of businesses along the nation's highways.

Neon signs employed the affects of light and color to communicate to the public with a sense of visual hyperbole that became entrenched within both the physical landscape and metaphorical conceptions of America beginning in the 1920s. Neon signs served as literal expressions of capitalist impulses and symbolic representations of the drive for artistic novelty and modernity among twentieth-century advertisers. Neon's great visibility in cities enabled it to communicate across a variety of socio-economic and cultural barriers to anyone who witnessed it actively or passively, whether literate or not. In many instances, neon signage could signify through form alone **(FIGURES 1-2)**. Neon emerged as an early form of electrical communication that achieved this effect, foreshadowing one of the key features of contemporary electronic advertising mediums such as television and high speed Internet. This technological feature contributed to neon's role as a symbol of modernity – a meaning also bolstered by its close ties to urban

electrification, mass automotive transit, and storefront modernization programs of the Great Depression.

Studying neon signage contributes to our understanding of how advertising intersects with the built environment, serving as both a causal element that shapes visual environments as well as something shaped by broader cultural forces. This technology's aesthetics changed in concert with different trends in American design that ranged from streamlining to atomic age modernism. Neon signage like all signage can be seen as a barometer of evolving visual preferences in this country. Neon's flexibility in form and meaning has enabled it to literally "shape-shift" from an iconic feature of 1930s and 1940s advertising signage **(FIGURES 3-4)** to an abstract and expressionistic sculptural medium that became popular in the 1960s and 1970s. These amorphous qualities in form and meaning have enabled neon to function as both a highly literal visual signifier and something that communicates in a far subtler and less overt manner. This theme may also be seen in the evolving meanings of neon signage in the twentieth century, meanings that have evoked everything from modernity to nostalgia to antiquation. The issue of shifting forms and functions serves as a key conceptual thread throughout this dissertation.

The chapters chronologically detail the evolution of neon signage through formal analysis of existent signs, vintage photographs, and images found in trade publications. The twentieth century saw this technology's rise to prominence and its abrupt fall from popularity as new technologies superseded it and even mimicked it in their appearance (i.e. backlit colored plastic signage). Each chapter combines a visual or formal artifactual analysis of signs or an object such as a neon catalog or pattern book with the key

economic, technological, social, architectural, cultural, and legal dynamics that shaped the course of the medium's development. One cannot grasp the full continuum of neon signage's evolution without comparatively looking at changes in its visual and material makeup over time. These elements tell us things about this medium that literary sources of evidence cannot convey; for example, no written account of neon can fully capture the sublime levels of handcraft necessary to make a 1930s art deco movie theater marquee nor can the account express the diversity of forms evident in this medium. Secondary literature on the history of electrification, architectural theory, and the history of signage helps to place these artifacts within a meaningful historical narrative. Poetry, film, sculpture, paintings, and song lyrics provide an important adjunct for evaluating the immaterial dimension to these artifacts: neon's portrayal in popular culture, the media, and literature.

Methodologically this dissertation involves an interdisciplinary synthesis of material culture studies, cultural history, business history, American studies, and the history of technology. The tactic of formal or artifactual analysis uses visual and material clues to construct an argument and generate meaning throughout this paper. This has been a common practice in art history, visual culture, and material culture since their inception as fields of study. Understanding the dynamics of technological change, economics, and mass communication demands an analytical perspective that does not always draw from artifactual sources. A linear historical narrative helps to make sense of these issues as they relate to specific artifacts, enhancing and broadening our understanding of the social, cultural, technological, artistic, and economic meaning of

neon signage. Literary sources of evidence help to create this framework of historical analysis. This dissertation takes the perspective that objects enrich our understanding of written sources just as written sources enhance our knowledge of objects.

My dissertation builds upon the work of such authors as design historian Jeffrey Meikle who use artifactual analysis to illuminate the meaning of things in popular American discourse and culture. Meikle's 1997 text *American Plastic* strikes a balance between material culture analysis, science and technology studies, and an engaging historical narrative. Meikle's account of plastic's historical evolution posits that the material and formal features of this material provide important insights into this America's changing cultural and technological dynamics. Through an analysis of plastics, we gain insight into such themes as the acceptance of modernity, the origins of a throwaway consumerist culture, and those societal premiums placed upon technological innovation that may have negative consequences.[1] Like the work of Meikle, this project attempts to make sense of the relationship between commerce, design, advertising and aesthetics in American culture.

LITERATURE REVIEW AND SIGNIFICANCE OF THIS PROJECT

Despite its prominence in Las Vegas or Times Square, neon's history has been under-examined. Several scholarly publications assess signage's role in architecture and literature. William Brevda's 2011 text *Signs Of The Signs: The Literary Lights of*

[1] Jeffrey Meikle, *American Plastic: A Cultural History* (New Brunswick, NJ: Rutgers University Press, 1997).

Incandescence and Neon considers how electrical signage and illumination impacted depictions of landscape and place in American fictional narratives. Brevda offers a strong analysis of the symbolic and metaphorical implications of neon and also provides a brief overview of electrical signage's historical evolution. Signs encapsulate the essence of all things American for Brevda when interpreted as both an artifactual reality and a semiotic device. His descriptions of signs in various forms of literature – everything from modernism to the beat generation poetry – reveal his argument that the meaning of signs in a given genre of literature reflects the trajectory of that specific genre. In the *Great Gatsby*, signs reflect a growing public preoccupation with fashion and big city advertising that characterized the boom period of the 1920s that served as this novel's setting.[2] John Updike's 1971 novel *Rabbit Redux* suggests that neon can supplant the past in an act of erasure by helping one to forget the past by covering it up with a new sense of hope. Brevda's quote from Updike notes: "the great stores with the facades where the pale shadow of the neon sign for the last owner underlies the hopeful bright sign the new owners have put up".[3] Brevda makes a convincing case that neon signs have become the raw material of the American literary imagination – a material culture that has been a key facet of the setting for many American stories of the past seventy years. His analysis leans more towards literary sources than existent material objects or images.

Signs, Streets, and Storefronts: A History Of Architecture And Graphics Along America's Commercial Corridors by Martin Treu approaches the history of signage from

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[2] William Brevda, *Signs Of The Signs: The Literary Lights Of Incandescence And Neon* (Lewisburg, PA: Bucknell University Press, 2011), 47.
[3] Brevda, 296.

a much more artifact-driven approach that emphasizes formal analysis of historical artifacts and images. This 2012 monograph builds upon earlier works such as Gabrielle Esperdy's *Modernizing Main Street: Architecture and Consumer Culture in The New Deal* (2008) and Chester Lieb's *Main Street To Miracle Mile: American Roadside Architecture* (1985) in its consideration of how architectural facades have evolved along American roadways. Treu carefully evaluates neon's graphical and architectural impact upon this process but also focuses heavily on non-electrified signage and storefront architecture.[4] He provides a carefully crafted analysis of the evolution of different fonts and the graphic design of commercial facades -- areas of analysis that consider neon sign-making as but one of many visual components rather than the key topic of analysis.[5] Treu provides a nuanced analysis of the interface between visual design and dynamics such as modernization, electrification, urbanization, and historical preservation. He also offers an excellent analysis of the overlap between vernacular and professional approaches to façade design and the contentious interactions between sign-makers and architects about creating visual harmony.[6]

Thomas E. Rinaldi's *New York Neon* (2012) offers a great visual documentation of existing historical signs in New York as well as a brief thirty-six page synopsis of neon's historical and technological evolution. This book focuses exclusively on New

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[4] Martin Treu, *Signs, Streets, And Storefronts: A History Of Architecture And Graphics Along America's Commercial Corridors* (Baltimore: Johns Hopkins University Press, 2012).
[5] Ibid., 62-63.
[6] Ibid., 126-127.

York and can be considered more of a popular text rather than an academic history.[7] Rinaldi does offer a very clear analysis of neon technological and visual development such its connection to the development of gaseous discharge lighting in the late nineteenth century and how it mimicked broader aesthetic trends in American culture such as streamlined design.[8] Rinaldi also displays a keen awareness of neon's imperiled future existence, its historical value, and its nostalgic implications. He argues for the historical preservation of neon signage and uses this book to graphically preserve images of this now aged material culture.[9]

Christoph Ribbat's 2013 text *Flickering Light: A History Of Neon* considers the literary, metaphorical and artistic connotations of neon within popular culture. This interdisciplinary study considers visual, material, and literary evidence that offer a glimpse into how neon has come to define American culture on a global scale. This work often approaches neon from the perspective of literary criticism but it still displays a great deal of analysis that draws upon art history. In one chapter Ribbat discusses such themes as the "excitement, toughness, and blatant sexuality" that neon signs imply in the 1953 crime novel *The Neon Jungle* by Los Angeles Times write John D. MacDonald.[10] Another preceding chapter discusses neon and light artists of the 1970s and 1980s from an art historical perspective; Ribbat even provides a formal analysis of several sculptures

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[7] Thomas E. Rinaldi, *New York Neon* (New York: Norton, 2013).
[8] Ibid., 16-25.
[9] Ibid., 46.
[10] Christoph Ribbat, *Flickering Light: A History Of Neon* (Chicago: University Of Chicago Press, 2013), 70.

by the contemporary American artist Bruce Nauman.[11] Ribbat's work offers snippets of artifactual amidst its predominate textual emphasis.

These four studies of neon signage suggest that this medium has been a formative element in creating the American visual and material culture of cityscapes and highways; they argue that neon has also been shaped by a number of cultural dynamics such as mass consumption, urbanization, and the never-ending quest for technological modernity. These authors concur that neon signage represents an important embodiment of the American visual and material experience; but none of them anchor their individual chapters with thorough analysis of extent signage or historical imagery. Treu, Ribbat, and Rinaldi often use elements of artifactual analysis throughout their texts and do discuss artifactual changes in the materials and appearance of signage over time. Yet they do not use a single object as the focus for an outwardly expansive analytical process as I do in each chapter.

My dissertation aims to offer a presentation of neon's visual and technological evolution that primary documents alone cannot provide. For this reason it emphasizes artifact-driven inquiry on an even greater level than any of the previously mentioned texts. Each chapter includes at least one formal analysis of a sign, artifact, or film that relates to a major theoretical or historical theme. This engagement with tangible material and visual evidence enhances our understanding of the history of American consumerism, visual culture, and material culture. My work also differs from previous studies in three other ways. None of them consider advertising psychology in depth nor do they heavily

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[11] Ibid., 139-140.

emphasize the technological development of neon in their historical analyses. They also give little attention to the legal dynamics that shaped the diffusion of neon during its first two decades in the United States – an important force that stymied neon signage's initial growth in the United States prior to the Great Depression. These are three contributions that my project will make to the study of this topic.

What is the value or significance in studying neon signage? Why should this project straddle so many disciplinary boundaries? How does this dissertation enhance our broader understandings of American culture, history, consumerism, and design? Before answering these questions, I must briefly tackle the issue of nostalgia and American-ness. As William Brevda has shown, neon has become immutably linked to our understanding of place and nostalgia in the United States.[12] Literary figures such as Jack Kerouac have helped to promote popular conceptions of midcentury American cities as places ablaze with glowing neon – a form of light that illuminated highly personal spaces for many who lived in these myriad urban locales. As Kerouac writes in *Visions Of Cody:* "the throb of neons at O'Farrell and Mason bars with cocktail glass cherrysticks winking invitation to the open hungering hearts of Saturday and actually leading to Sunday morning blue emptiness."[13] Such literary portrayals and personal experiences have created this sense of collective nostalgia for neon. Fond memories of road trips along Route 66 and other such neon-laden highways among baby boomers have contributed to the popular belief that neon is the quintessential embodiment of an "American aesthetic" however vaguely that term may be defined. Popular history works, movies, and museums

[12] Brevda, Ibid., 277.
[13] Ibid.

have further entrenched this understanding of neon as something intrinsically American despite the fact that this technology originated in France.

In a more pragmatic sense, the study of neon signs enables a greater understanding of how advertising impinged upon the visual and architectural surroundings experienced by so many Americans in the twentieth century. Understanding neon's evolution further aids in our knowledge of how advertisers adopted new technologies for the purposes of mass communication. Contemporary advertising methods such as L.E.D. (Light Emitting Diode) signage, television advertisements, and Internet pop up advertisements all rely upon light and color viewed quickly through the eyes of the consumer. In this sense they may be considered the logical extension of the principles that neon advertisers pioneered in the 1920s. The study of neon also enriches our understanding of how subliminal practices became so embedded within the repertoires of American advertisers.

DISSERTATION STRUCTURE

To grasp the technological and material development of neon signage, one must first turn to the origins of illuminated advertising and electrification in nineteenth-century America. Chapter One offers a historical context for understanding the development of neon as an advertising medium that grew out of previous lighting technologies and advertising techniques in the nineteenth-century such as pre-neon incandescent electrical advertising signage **(FIGURE 5)**. Chapter Two looks into the evolution of early gaseous

discharge lighting systems such as Geissler tubes and Moore lamps that created technological precedents for the development of neon signage. This chapter also considers the work of Georges Claude in the commercialization of neon signage as a patentable technology. Chapter Three examines the structure of Georges Claude's marketing empire and the fierce legal battles waged to gain control of the American neon market in the 1920s and 1930s. This chapter also delves into the first decade of America's fledgling neon industry. It offers a brief visual analysis of several of America's first neon signs and assesses the growth of independent neon businesses not affiliated with the Claude Company.

Chapter Four emphasizes neon's tremendous growth during the Great Depression, focusing on its formal/visual diversity and its role as a system of mass communication. The cultivation of visual spectacle through the use of great scale and visual hyperbole also serves as a guiding frame of analysis in this chapter. Chapter Five examines the factors that led to neon's demise as a popular advertising medium in the 1940s and 1950s, namely the impact of World War II and the advent of plastic signage. Chapter Six evaluates neon's changing cultural roles from the 1960s to the present day. This chapter looks at neon's role within the visual arts, cinema, musical lyrics, and nostalgic reproductions of artifacts intended to evoke a positive view of the American past.

HISTORICAL BACKGROUND AND VISUAL CONTEXTS OF NEON SIGNS

The rapid growth of neon signage in the 1920s coincided with the growth of the

nation's highway systems. Registered automobiles in the U.S. increased from 8,000 in 1900 to 458,000 in 1910, to 8 million in 1920, and to 23 million in 1930.[14] Travelers along routes such as the Lincoln Highway became keenly aware of the presence of urban districts through neon signage. The minutely visible red aura of a neon sign in the distance signified the presence of a business area, city or a roadside enterprise to the rapidly moving motorist **(FIGURE 6)**.

Neon clashed against the nightscape with a brash clarity that made it stand out. To early onlookers, neon's appearance seemed otherworldly, enrapturing, and even akin to a pastel painting done in light. Hollywood advertising executive John L. Peltret remarked in 1930 that neon signage could be interpreted as a large-scale version of an artist's canvas and paint:

"In constructing the signs the electrical engineer has mixed his electricity just as a painter does his paints. The primary colors are selected and blended into the exact tone desired for a scene. Pastel shades, never before available in electricity can be used. Any design, any scene, can be produced in natural colors, exactly as in color process printing or painting. [The neon sign] becomes veritably a painting in light, with all its original beauty and warmth retained."[15]

Neon signage heralded a revolution in American advertising that brought unparalleled scale, color, and boldness to product marketing. This medium's appearance represented technological modernity by serving as a visual expression of mass electrification. Electrical advertising predominated within American city centers. Prior to the rural electrification initiatives of the 1930s, electricity proved to be much cheaper in

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[14] John A. Jakle, *The Tourist: Travel In Twentieth-Century North America* (Lincoln: University of Nebraska Press, 1985), 121.
[15] John L. Peltret, "Painting With Colored Light," *Signs of the Times* (May, 1930): 31, 105.

urban rather than rural areas.[16] Neon still took hold in rural areas despite the relatively higher costs of electricity outside of the nation's cities. It became one of the first electrical advertising mediums to gain widespread use outside of highly illuminated business districts known colloquially as Great White Ways **(FIGURE 7)**. Neon achieved a greater concentration of use in rural areas than earlier forms of incandescent electrical signage because of its suitability for roadside use. It proved to be a powerful advertising medium when employed along the growing network of highways that bisected the nation's hinterlands.

Neon proved to be so successful in these non-urban contexts because it appeared more legible at night than even the most well lit billboards. As previously mentioned, motorists could often recognize a neon sign from afar and quickly discern its intended message without carefully reading its textual component. As William K Lowry wrote in a May 1932 issue of *Signs Of The Times,* America's pre-eminent sign-making journal, neon signs such as those used by the Coca-Cola Company proved so effective among motorists because they enabled "he who runs [to] read."[17] These signs needed only a split-second of recognition for Coca-Cola to communicate to potential customers. Billboards in contrast often required that passerby carefully read them to decipher their messages.[18]

Like earlier forms of incandescent electrical signs, neon enabled marketers to extend the temporal duration of advertising. The sharp visual delineation of the earliest

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[16] Harvey Schermerhorn, *The Dairyland Power Story* (La Crosse, WI: Dairyland Power Cooperative, 1973), 12.
[17] William K. Lowry, "Coca-Cola Company: America's Most Persistent Sign and Outdoor Advertiser," *Signs of the Times* (May, 1932): 26-27.
[18] John A. Jakle and Keith Sculle, *Signs In America's Auto Age: Signatures Of Landscape And Place* (Iowa City: University Of Iowa Press, 2004), 45.

red and blue neon signs against the nightscape helped to transform advertising into a twenty-four hour cycle visible year round. The colored enamel or paint backgrounds used on neon signs often allowed them to function moderately well during daylight hours even without their neon illuminated. This inherent sense of versatility and twenty-four hour functional capacity made neon signs a favored medium for large-scale advertising among corporations such as Anheuser Busch and Coca-Cola. Although neon signage had only been used in America for less than a decade by 1932, Coca-Cola had already become America's leading user of this technology. By that year, Coca-Cola had erected 128 neon rooftop displays and some 45 neon-framed pictorial billboards in this country.[19]

This technology differed significantly from previous forms of electrical signage. Its tubing brought a previously unknown sense of clarity to sign making: a limitless array of shapes, letters, and words that appeared as continuous and unbroken patterns of light **(FIGURE 8)**. Although earlier incandescent signs sometimes used colored light bulbs, they lacked the sharp visual delineation and boldness of color that proved to be neon's defining characteristics. Neon signage served as a color-coded signature of location within the built environment and demarcated the existence of a particular business. This medium could also transform an architectural structure into a signifier itself when integrated into the overall design of a facade. Modernist architects such as Morris Lapidus pioneered the integration of signage into the overall design of commercial exteriors in the 1930s **(FIGURE 9)**.[20] This encouraged a closer collaboration between

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[19] Lowry, Ibid.

[20] Gabrielle Esperdy, *Modernizing Main Street: Architecture and Consumer Culture in The New Deal* (Chicago: The University Of Chicago Press, 2008), 152-153, 197-198.

architects and sign makers that had rarely if ever existed before the adoption of this medium.

The production of large quantities of neon signs at great speeds on industrial assembly lines proved difficult. Skilled designers and tube benders spent hours methodically planning and building signs intended for highly specialized purposes. With the exception of generic open signs or mass-produced point of purchase signs, most neon sign shops custom made each design and sign for a given business. Even the production of a large order of Kelvinator refrigerator signs by Neon Products Company of Lima, Ohio in the mid-1930s demanded this same degree of handcraft and specialized production that might be termed a cottage industry **(FIGURE 10)**.[21] Neon remains a small-scale handcraft that relies upon a tiny and highly skilled labor force. Although the ancillary technologies used in neon signs such as electrical transformers continue to be made on industrial assembly lines, bending neon tubing demands a level of patience and finesse that comes from years of artisanal training. Few early observers of neon even considered this facet of the technology's production according to a 1938 Time Magazine article entitled "Spectacular." The novelty and bright lights remained their main focus.[22]

Observers of neon in the 1920s and 1930s often remarked that this lighting technology possessed a highly futuristic and synthetic appearance. It also used a color palate not unlike that of plastics such as Catalin or cellulose acetate that emerged within

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[21] Neon Products Promotional Photos, The Neon Products Company, Lima, Ohio, Circa 1935. (Borrowed From The Collection Of The American Sign Museum, Cincinnati, Ohio).

[22] "Spectacular," *Time Magazine* (July 18, 1938): 42-43.

ten years of neon's first American installations.[23] Unless an observer closely scrutinized the tight bends and marks on a neon tube, they would be unable to determine the preindustrial production method used in making this medium. Neon's tremendous role as an early form of electrical communication and its predominant use within 1930s streamlined facades and atomic age modernist signage of the 1940s and 1950s belied its intrinsic reliance upon handcraft **(FIGURE 11)**. Ironically the less technologically sophisticated roadside billboards of the same period relied upon industrial lithography – a process of mass production that could never suffice for the production of neon. As much as neon served as a visual semaphore for modernity, its production methods never kept pace with its sophisticated visual presentation of modernist impulses.

Neon and incandescent signage possessed a capacity to communicate almost instantaneously with the human mind on a level that some believed to be subliminal.[24] Russian realist poet and cultural critic Maxim Gorky criticized electrical advertising on account of its subliminal influence as early as 1907 after visiting Coney Island.[25] To Gorky, electrical advertising transformed consumers into mindless entities that could be easily manipulated by the greedy ploys of advertisers. He believed that light, color, and the repetitive viewing of signage had a power and influence on consumers so great that it rendered them unable to exercise free will in their role as consumers.

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[23] Meikle, 76.
[24] Reed Clement, "Five Elements of Electric Sign Design: Size---Shape---Color---Motion---Light", *Signs of the Times* (June, 1932): 27-28.
[25] John Jakle, *City Lights: Illuminating The American Night* (Baltimore: Johns Hopkins, 2001), 174-175.

The issue of signage's subliminal impact remained a topic of controversy among psychologists and cultural critics for much of the twentieth century. This issue became especially contentious in the mid-1950s as television took hold within the United States. Television brought forth a new type of electronic advertising that, like neon, relied upon visual tactics that offered bold and penetrating suggestions to purchase goods and services. Some critics in postwar America feared that electrical advertising might develop into a sinister hybrid of telecommunication systems and electrical advertising signage – a system that would furrow deeply into human consciousness simply for consumerist aims. As *Ad Age* writer Edward Weiss noted in 1956, "It is entirely probable that some day at least some of the brain's functions may be controlled by external electrical penetration. (I get frightened as I write this!)…Will advertising, some day, consist of broadcast electrical discharges beamed to penetrate specific brain areas for the purpose of shaping specific buying behavior patterns?"[26] To Weiss, this electro-telepathic form of advertising could be seen as the logical evolution of electrical signage. Studying neon's psychological ramifications provides a foundation for understanding the evolution of subliminal advertising practices and other technologies designed to manipulate human desires. The intended messages of these advertisements, not just their subliminal potentials, also proved to be a source of controversy – especially in the case of religiously themed neon signs.

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[26] Lawrence R. Samuel, *Freud On Madison Avenue: Motivation Research and Subliminal Advertising In America* (Philadelphia: University Of Pennsylvania, 2010), 90.

THE DIVISIVE NEON CROSS

A glowing fifty-one foot tall red neon cross stood perched atop Skinner's Butte in Eugene, Oregon, in 1966 **(FIGURE 12)**. After sunset, this landmark became an unavoidable and often divisive presence within this college community. Its location at one of the highest geographical elevations in the city and its clearly delineated glowing cruciform shape drew numerous glares of disdain and few nods of admiration. As one local merchant noted, "There hasn't been a bigger cross to bear since Jesus's". Its large scale and bright color made it stand out with great acuity against its darkened surroundings, a visual tactic that neon advertisers have employed since the technology's inception. John Alltucker, owner of Eugene Sand and Gravel Company, used this electrical advertising medium to reinforce his religious convictions within the public domain. To some, this glowing structure appeared as a poor electrified facsimile of Christianity's most iconic form. A Methodist minister from Portland even went so far as to say "the entire Christian faith has been cheapened by misuse of the [neon] cross".[27]

The increasingly tawdry nature of neon and its growing associations with decaying inner cities in 1960s America did not help to convey the positive religious messages that Alltucker so desired. The red glow of the cross may have been a metaphor for Christ's blood and its concrete construction may have referenced the concept of sound religious bedrock. Yet the visual impact of this glowing blood red light appeared to violate the separation between church and state. Ten residents of Eugene sued the city on

[27] "The Old Neon Cross," *Newsweek* (September 5, 1966): 60.

account of this very issue. Not only did they decry its construction on public grounds as illegal; they also argued that it promoted insensitivity in an increasingly diverse religious population. A spokesman for the local Jewish community noted, "My conscience and feelings are restricted by the cross. It makes me feel more and more a minority."[28]

Such criticism hints at the powerful visual presence of neon signage as a form of semiotic communication. The image of the neon cross, like other types of electrical signage such as casino advertisements, possessed a capacity to communicate as strongly with images and color as with words. Scale and geographical positioning heightened the omnipresent visual effects of this neon crucifix. This artifact forcibly stood out to some as a mode of mass communication intended to proselytize in the most blatant manner possible, even without the added impact of the written word. By default, this sign became an after-hours focal point, a goal intended by its creator and acknowledged by its detractors.

The now classic text on the architectural development of Las Vegas, *Learning From Las Vegas*, first theorized this issue in 1972. Robert Venturi, Denise Scott Brown, and Steven Izenour argued that the buildings and landscapes in Las Vegas could be interpreted in the same way as the large neon signs that often adorned these same structures **(FIGURE 13)**. Form alone, even without the addition of a linguistic component, related meaning to fast moving motorists in a matter of seconds on the Las Vegas strip: "The sign for the Motel Monticello, a silhouette of an enormous Chippendale highboy, is visible on the highway before the motel itself. The architecture of styles and

[28] Ibid.

signs is antispatial; it is an architecture of communication over space, communication dominates space as an element in the architecture and in the landscape…A driver 30 years ago could maintain a sense of orientation in space. At the simple crossroad a little sign with an arrow confirmed what he already knew…He [still] relies on signs to guide him [but they are now] enormous signs in vast spaces at high speeds."[29] As Venturi, Brown, and Izenour imply, form, scale, and color in signage may trump the communicative value of script due to the distance and speed at which individuals often view signage. Neon possesses a capacity to imply or designate a given location through form, light, and color even when it cannot be read legibly. These characteristics enabled neon to communicate across vaster bodies of space than previous modes of signage. Although neon lacked the far-reaching range of radio or television, it too could communicate quickly across miles and miles of empty space.

[29] Robert Venturi, Denise Scott Brown, and Steven Izenour, *Learning From Las Vegas* (Cambridge: MIT Press, 1972), 4.

FIGURE 1: Golden Burro Café neon sign dating from 1938 in Leadville, Colorado photographed at night. This locally iconic sign continues to create a striking presence after sunset. Image from:
http://duolian.smugmug.com/photos/15063795-O.jpg

FIGURE 2: Remaining panel from a double-sided Ford neon dealership sign of the 1930s or 1940s. Notice the holes where neon tubing once existed. Image from: http://www.Ebay.com

FIGURE 3: Star Noodle neon sign constructed in Ogden, Utah in 1944. Notice the great degree of intricacy and the unbroken patterns of light formed by the neon tubing on this sign. Image from: http://media-cache-ec0.pinimg.com/736x/52/ff/2b/52ff2b9052d053dc8288864e8eb276a2.jpg

FIGURE 4: 1930s-1940s Mobil Oil Pegasus neon sign used nationally to signify the presence of a Mobil gas station through its visual form. Image courtesy of Carlton Ward, Weaverville, North Carolina.

FIGURE 5: Backlit incandescently illuminated sign with milk glass letters and a painted zinc body in the collection of the American Sign Museum, Cincinnati, Ohio. This sign dates from roughly 1910 and uses backlighting to generate a similar visual effect to that of neon, namely a sharp contrast with darkened negative space. Photograph taken by author, June 2012.

FIGURE 6: "Westerner Motel" neon sign near Salida, Colorado along a rural highway. Now abandoned signs such this have factored into popular nostalgia for the American roadside – something found in a variety of popular cultural forms including the 2006 Disney-Pixar movie *Cars*. Photograph by author, September, 2012.

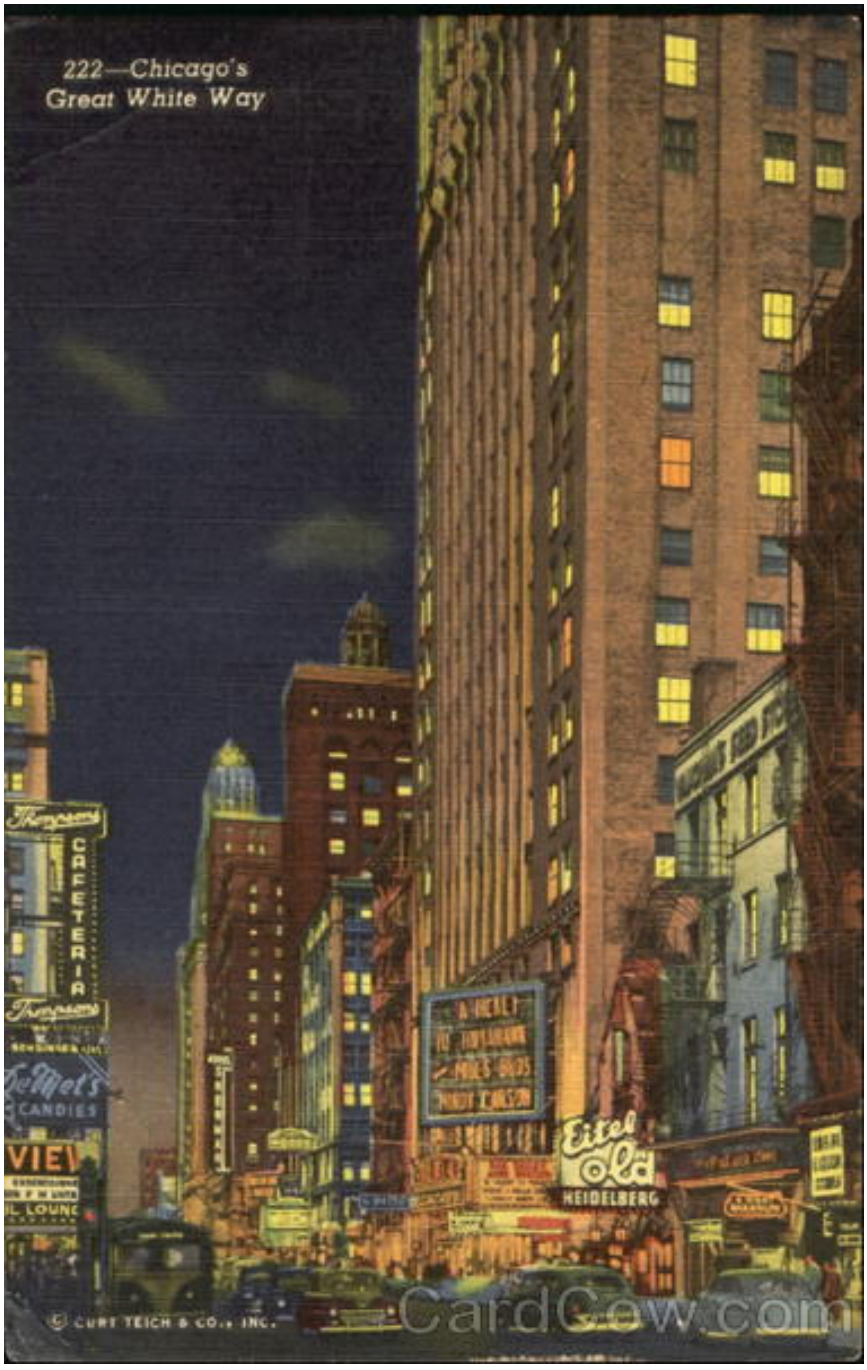

FIGURE 7: Postcard depicting Chicago's Great White Way. This 1954 postmarked card shows a heavy abundance of neon signage in this business district. Image from http://www.cardcow.com

FIGURE 8 "Signs Of Main Street" display at the inaugural opening of The American Sign Museum's new location at 1330 Monmouth Avenue in Cincinnati, Ohio. Note the formal diversity of these signs. Photograph by author, June, 2012.

FIGURE 9: Hoffritz Cutlery Store façade in New York City with integrated neon. Architect Morris Lapidus designed this sign and its owners erected it in 1939. Image from: http://storedesign.tumblr.com/post/661491024/morris-lapidus-pioneer-of-store-design

FIGURE 10: Handcrafted Kelvinator signs produced at the Neon Products Factory, Lima, Ohio, circa 1936. Image courtesy of The American Sign Museum, Cincinatti, Ohio.

FIGURE 11: "Welcome To Fabulous Las Vegas Nevada" neon sign constructed in 1959 at 5500 Las Vegas Boulevard. Sign designer Betty Willis exemplified atomic age modernism in this sign's design by adding in the starburst and linear display of neon circles that evoked the image of an electronic display. Image from: http://upload.wikimedia.org/wikipedia/commons/thumb/1/1d/Welcome_to_fabulous_las_vegas_sign.jpg/250px-Welcome_to_fabulous_las_vegas_sign.jpg

FIGURE 12: Skinner's Butte neon cross during the day, circa 1966. Image from: http://www.waymarking.com/waymarks/WM2DD_Willamette_St_Overlook__Skinners_Butte_Cross

FIGURE 13: Fremont Street at night, Las Vegas, Nevada, circa 1975. Image from: http://classiclasvegas.squarespace.com/classic-las-vegas-photo-galler/classic-las-vegas-neon/899924

CHAPTER 1
Like Flies To Light: The Genesis Of Advertising And Electrical Illumination In The American Cityscape, 1840-1920

The development of neon signage would not have been possible without sweeping changes in electrical technology and illumination that transformed the American cityscape in the nineteenth century. This chapter argues that the genesis of incandescent electrical illumination and signs served as a direct progenitor for neon advertising formally, functionally, and aesthetically. The late 1800s witnessed the formation of power networks that made public lighting and electrical signage a mainstay of urban environments; the development of electrical signage paralleled the growth of these power networks in much the same way as neon's spread followed the creation of highways in the twentieth century.[30]

The goal of creating the biggest and brightest forms of illuminated signage for the sake of visual spectacle evolved out of this technological movement. Ideas for stimulating consumer desires with electrical signage also began during this period as sign makers tapped into the incipient field of advertising psychology – promoting the belief that movement, light, and color could penetrate the deepest levels of the human mind.[31] Associating light with commerce and economic success therefore became a driving force

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[30] Chester H. Liebs, *Main Street To Miracle Mile: American Roadside Architecture* (Boston: Little, Brown and Company, 1985), 20-24.
[31] Jakle, *City Lights*, 56.

amongst American advertisers of the pre-neon era: a paradigm that would inform the later design of neon signage.[32]

THE ORIGINS OF ILLUMINATED ADVERTISING AND POWER NETWORKS

The earliest illuminated signs in the United States originated in New York City during the early nineteenth century. Gas-lit advertising signs served as a focal point in New York's dark and foreboding nightscape, using the dimly illumined environment as a contrasting form of negative space. Illuminated gas signage stood out with great clarity because of the clearly painted images and letters on its illuminated glass panels. Aside from the gas street lamps, few if any other sources of exterior lighting could produce such luminescence in the pre-electrical era. Cultural geographer John Jakle credits the NIBLO Gardens illuminated gas sign in New York as the first example of this new technology when erected in 1828 at Broadway and Prince Street.[33] The NIBLO sign and others like it relied upon a centralized gas network that supported illumination, cooking, and heating applications. Gas-illuminated signage remained a relatively small phenomenon that only existed in areas with access to major gas lines prior to the mid-1800s.[34] This technology relied upon public utilities in much the same way as later forms of electrical illumination and signage.

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[32] David Nye, *Electrifying America: Social Meanings of a New Technology, 1880-1940* (Cambridge and London: MIT, 1990), 32-33.
[33] John Jakle, *City Lights*, 26.
[34] Peter C. Baldwin, *In the Watches of the Night* (Chicago: University of Chicago, 2012), 16-17.

Another new form of illuminated signage emerged in the 1840s that created a similar effect on a larger scale: illuminated facades. Fierce competition to attract the wandering gaze of the consumer's eyes spurred a sense of competition to create the brightest and most visually conspicuous displays possible. P.T. Barnum pioneered this trend. His American Museum, located on the corner of Broadway and Ann Street, served as a blank template for illuminated advertising from 1841 onward **(FIGURE 1)**. Barnum illuminated the whole façade of his museum using limelight – a form of theatrical lighting that burned a combination of oxyhydrogen and calcium oxide. This bright form of stage lighting illuminated a series of panels and posters festooned across the exterior of his building. Barnum's museum stood out as an illuminated focal point amidst the dimly lit buildings on either side of it, presaging the visual impact of electrical signage some fifty years later. Additional gas-lit signs enhanced the building's overall illumination.[35]

By the late nineteenth century, New York City became a formative location for the development of electrical illumination. Thomas Edison's construction of the Pearl Street Power Station in lower Manhattan in 1882 marked the advent of the country's first central power station. This facility played a primary role in the illumination of Wall Street and its surrounding business district. Thomas Edison pioneered the commercialization of electrical power sales to consumers from this first location.[36] Between 1880 and 1890 he controlled the production of electrical power, its transmission,

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[35] "A Brief History Of The Sign Industry," *Signs of the Times* (September, 1976): 63-64.

[36] Wolfgang Schivelbusch, *Disenchanted Night: The Industrialization of Light in the Nineteenth Century* (Berkeley and Los Angeles: University Of California, 1988), 64-66.

and the manufacture of electrical equipment ranging from generators to lighting equipment. Edison and his chief engineer William J. Hammer created one of the earliest if not the first electrical signs in the world for the January 1882 International Electrical Exposition in London. Their simple one-sided construction spelled out the word "Edison" using incandescent bulbs **(FIGURE 2)**.[37] It showcased his newly developed incandescent light bulb, the first mass-produced electrical lighting technology for the consumer market. Edison's concept of using exposed incandescent bulbs to spell out messages for the sake of communication would remain a cornerstone of electrical sign making well into the present day.

Prior to the late 1890s, incandescent signs remained a rare sight in all but the largest cities. The majority of illuminated signs of this period consisted of non-electrified, hand-painted signs or lithographs lit by overhead arc lighting or incandescent bulbs.[38] A spotty direct current electrical power infrastructure became as a key issue for businesses considering the adoption of electrical lighting let alone illuminated signage. Direct current had a limited area of distribution and high financial cost because it could not be transmitted for any distance greater than ten miles.[39] Alternating current could be transmitted over long distances without the need for small, interconnected generating plants in the same city. This reduced its end cost for the customer. The development of a large-scale alternating current power station at Niagara Falls by Nikola Tesla and the

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[37] "A Brief History Of The Sign Industry," Ibid.
[38] Catherine Gudis, *Buyways: Billboards, Automobiles, and the American Landscape* (New York and London: Routledge, 2004), 14-15, 21.
[39] Thomas P. Hughes, *Networks Of Power: Electrification in Western Society, 1880-1930* (Baltimore: Johns Hopkins, 1993), 15.

Westinghouse Electric Company in 1894 demonstrated the economic advantages of alternating current over direct current. Electrical power networks grew as electrical companies across the country adopted alternating current power en masse after the construction of the Niagara Falls plant. Electricity became more readily available in locations that previously lacked access to centralized power networks in the period after 1900.[40]

Electrical signage became a viable option for business owners as the cost of the electrical hardware needed for signs – light bulbs, fixtures, and wiring – decreased in price along with their utility bills. But cost alone did not drive this phenomenon. Early users of incandescent lighting and signage recognized key visual advantages in this new technology. Henry Rustin, chief of the electrical bureau at the 1901 Pan-American Exhibition, had firsthand experience with early incandescent lighting. From his prerogative, filament lamps represented the most well developed lighting technology he had yet to experience: "By the use of the… [incandescent] lamps, a uniformity of light is secured which, since it is all of the same quality, gives an even tone of illumination to the eye."[41] Incandescent lamps attenuated glare and offered greater control of illuminating intensity – two features that would be essential for electrical signage. For perhaps the first time in the history of American sign making, one could create linear patterns of light that stood out as a bold visual communicant in darkness. The development of improved tungsten lamps in 1909 furthered the popularity of electrical sign making. With life expectancies in excess of 2000 hours and low operating costs, businesses eagerly adopted

[40] Ibid., 2.
[41] Nye, Ibid.

this new technology.[42] Companies such as General Electric and Westinghouse also began to produce colored bulbs that added a new visual dimension to electrical signage in the 1890s and early 1900s. Incandescent signage gradually unseated a well-entrenched system of hand-painted and lithographed signage that had been the primary form of large-scale advertising in the American cityscape prior to electrification.[43] These electrical signs irrevocably changed the appearance of urban space. They encouraged a once unimaginable sense of growth in after-hours commerce, culture and leisure that would take place within brightly glowing public spaces known as Great White Ways **(FIGURE 3)**.

DEVELOPMENT OF THE GREAT WHITE WAY AND FORMAL ANALYSIS OF AN EARLY SPECTACULAR

By the late 1890s, the glowing aura of electrical illumination enveloped whole business districts known in popular parlance as "Great White Ways". The name of these districts alluded to the common public misperception that these spaces glowed with a brilliant white light: a light that in reality comprised the yellow hues of incandescent bulbs and the greenish glow of arc lamps.[44] Many of these spaces resembled Broadway Street in New York City – one of the nation's earliest electrically illuminated corridors and the first street to be described as a Great White Way. Great White Ways served as

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[42] W. B. Goudey, "Use of Tungsten Lamps," *Signs of the Times* (September, 1911): 24.
[43] Gudis, Ibid.
[44] John T. Sprague, *Electric Light: Its State and Progress and Possible Influence Upon The Gas Interests* (London: E. & F. N. Spon, 1878), 9.

centers of entertainment and shopping created through the collaborative efforts of business owners, sign-makers, and electrical utilities.[45]

Electrical signage formed the visual backbone of Great White Ways. O.J. Gude has often been cited as the originator of this visual phenomenon.[46] He erected his earliest electrical sign on the side of New York's Cumberland Hotel in 1892 – a location at 23rd Street and Broadway that the Flatiron Building would eventually occupy. This simple hotel sign spelled out the phrase "Manhattan Beach – Swept By Ocean Breezes". Public reception of the sign proved positive from the outset, and visitors flocked to see this new sign. It became something of a visual spectacle because of its scale and use of electrical light to mimic the script of a lithographed or hand painted sign. It also dwarfed the surrounding electric streetlamps in its visual luminosity. Condiment tycoon H.J. Heinz recognized a great opportunity to promote his product with flashing lights in a myriad of colors. In 1895 he contracted with O.J. Gude to erect a sign advertising his condiments at this same location as the original "Manhattan Beach" spectacular **(FIGURE 4)**. This sign consisted of a vertical display that took up a full seven floors and the width of the whole hotel building where the display stood. The bottom of the sign began roughly three foot above street level and stretched to the top of the building on this busy corner. This sign emphasized eight block sections of wording that read "A Few Of Heinz 57 Good Things For The Table…Preserves…India Relish…Malt Vinegar…Tomato Chutney…Sweet Pickles". Incandescent bulbs illuminated these vertically stacked rows of block capital letters. A gigantic image of a pickle surrounded the word "Heinz" and blazed a flashing

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[45] "Fifty Years Of Electric Signs," *Signs Of The Times* (May, 1956): 20.
[46] John A. Jakle, *City Lights*, 201.

green light that mimicked the color of this condiment.[47] This installation represented one of the earliest examples of integrating electrical signage into a building façade.

This sign set a precedent for other large electrical signs that would soon become known as "spectaculars" because of their gargantuan size and use of the brightest incandescent lights then available. This sign occupied not only a prominent location with a tremendous amount of pedestrian, trolley and horse-drawn carriage traffic; it existed far enough above street level to have a dominant position within its viewers' line of vision even from a distance of several blocks. This effect would only be amplified after sunset, when the bright patterns of light contrasted with their darkened backdrop that functioned much like negative space in a painting. Like later iterations of neon, this sign attempted to use lighting technologies to mimic the appearance of writing by creating a semi though not perfectly contiguous pattern of illuminated script. Its modular construction of sockets on removal panels and interchangeable light bulbs served as a prototype for other large signs that Gude and his competitors constructed in the ensuing years. This sign also demonstrated the feasibility of using exposed light bulbs in an exterior application; prior to the erection of this sign, exposed light bulbs served mainly as a form of interior lighting.

In spite of this sign's large circulation value – its capacity to reach a large number of viewers each day – it attracted as much criticism as adoration. The light of this sign proved to be so brash that it impinged upon a non-commercial public space closely adjoining it. John DeWitt Warner complained about this matter in a 1900 issue of the

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[47] S. N. Holliday, "Through The Years," *Signs Of The Times* (May, 1931): 20.

journal *Municipal Affairs* – a publication dedicated to urban reform issues such as using architecture to cultivate a public appreciation of art. This Cornell University graduate and practicing lawyer sat on New York's Municipal Art Commission.[48] Like others involved in urban architectural reform, he expressed a great antipathy for electrical signage – something that he believed clashed with the architectural harmony of his city. He believed that Heinz and Gude had violated their proper boundaries, for their sign's visual impact extended beyond the Great White Way. Their pickle sign cast unusual shades of red and green light onto the Dewey Arch – a memorial commemorating U.S. Naval victories. Warner claimed that the Heinz sign detracted from an important public monument, transforming the surrounding area into an unsightly visual realm. He described the situation as "Advertising Run Mad," adding that, "the dancing flash light of the 57 varieties…is thrown in the faces of all who throng Madison Square."[49]

Regardless of its detractors, this sign proved to be a great commercial success. The Heinze installation marked the beginning of Gude's sign-making empire – the largest enterprise of its type in the United States prior to the turn of the century. Surrounding businesses adopted signs based on Gude's earliest model, recognizing a fortuitous opportunity to stand out in the darkness and boldly announce their presence to potential customers.[50] Gradually the Great White Way spread out from its original location along Broadway to Times Square by the early 1900s. Urban planners, business owners, sign makers and illuminating engineers developed smaller versions of these illuminated

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[48] "Biographical Notices Of The Writers In Municipal Affairs For March, 1902," *Municipal Affairs* (March, 1902): 164.
[49] Nye, 51.
[50] Ibid., 50.

districts across the United States. These proponents of the technology argued, as had their predecessors, that well lit cities prospered economically and socially.

Civic leaders became the most vocal proponents of these spectacular lighting systems, staging elaborate ceremonies to celebrate their openings. They argued that illuminated displays bolstered civic pride and served as a socially beneficial medium. Electrical signage appeared to deter crime by illuminating darkened spaces where illicit activity could happen during the evening hours. This medium could also serve as a visual pronouncement of a city's affluence. Rosslyn M. Cox, president of the New York State Mayor's Conference, summarized the guiding logic behind large-scale urban illumination and electrical sign-making in 1908, "In my experience there is nothing which gives so much life and activity to a city as to have it well and handsomely illuminated."[51] Sign-maker H. G. Porter of Lincoln, Nebraska concurred with this viewpoint, adding that "civic pride, if nothing more, is a sufficient reason for placing an electric sign" along a Great White Way. Porter also associated light with commercial success: "It is a significant fact that whenever you find a well-lighted city you find a prosperous one. If a business man is casting about for a location he will be most impressed with the city where there is light and life, and as a consequence, prosperity."[52]

Great White Way advertising signified more than economic prosperity. Historian of technology David Nye argues that these spaces served as "an instrument of cultural

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[51] John A. Randolph, "The Talking Line of Fire," *Signs of The Times* (November, 1915): 3-4.
[52] H. G. Porter, "Electric Signs and Outlining," *Signs of The Times* (December, 1908): 9.

expression [that] provided symbolic validation of the urban industrial order."[53] Electrical signage offered a visual contrast to the scenery of daylight, synthetic imagery that served as a counterpoint to darkness. Sign makers literally juxtaposed electric light – a prominent visual symbol of industrialization – against the natural backdrop of the evening sky or the darkened cityscape. Herein lay the medium's most sublime visual characteristic: starkly illuminated visual contrast. Electrical advertisers valued this visual effect as one of electrical advertising's greatest attributes. Neon sign makers of the early and middle twentieth century would appreciate this same visual feature in their installations.

EARLY ELECTRICAL SIGNS: SOCIAL AND VISUAL ATTRIBUTES

Visual accounts from the 1910s illustrate the ways within which this phenomenon of light contrasted against darkness transformed the appearance of urban space. A 1911 advertisement from the Commonwealth Edison Company described the brash gleam of illuminated imagery as something that completely dominated the urban horizon after sunset. "Far up and down the street, reaching across lines of travel…electrical signs blazed," filling the built environment with the names and slogans of the community's largest enterprises.[54] Pedestrians who had yet to reach their destination could be enticed

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[53] Nye, 73.
[54] Commonwealth Edison Company Advertisement, *Signs of The Times* (September, 1914): 11.

from a distance, even as they encountered incandescent electrical signs from four miles away. These lit displays appeared to "[float]…half a mile up in the air," apparently unencumbered by the laws of physics.[55]

Many observers seemed impressed with the vast assortment of visual forms represented in the American cityscape, particularly those in the sign-making community who had witnessed the transformation of their vocation from a medium of paint and brushes to one of electricity. George Williams of New York's H.L. Doherty Sign Company remarked about this in a 1909 issue of *Signs of The Times*. For him, the most intriguing aspect of these technologies lay not in their widespread visibility, but rather in the visual flexibility they enabled sign makers. Sign makers could now sculpt light into almost any conceivable form, creating imagery and phrases as well as iconography.[56]

Many turn of the century sign designers and users believed their signs would "force themselves upon the consciousness of the pedestrian" with brazen phrases and imagery. They worked assiduously to create this calculated and striking aesthetic effect, equating visual hyperbole and scale to commercial success. They also blindly accepted the notion that illuminated signage could be seen from almost any quadrant of a city – even its outskirts. Advertisers considered anyone who ventured out at a night a potential customer who would inevitably be attracted to light much like an insect that could not ignore its basic instincts. "Light the lamp at night and the lamp is the compulsory center

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[55] J. H. Van Dyne, "Growth of Commercial Signs: How the Business has Expanded and Conquered New Fields – About the Electric Sign," *Signs of The Times* (April, 1911): 24.

[56] George Williams, "Electricity For National Advertising: The New Creative Power That Increases The Efficiency Of All Other Selling Energy," *Signs of The Times* (August, 1909): 2.

of vision" so read the creed of George Williams. Fellow sign-maker T.I. Jones noted in the same trade journal, that many sign makers of the 1910s believed they could "literally burn the name of an advertiser or…his wares into the public mind…imparting the message in such brilliant and convincing [fashions] that to overlook it [was] well nigh impossible."[57]

Darkness represented the polar opposite of prosperity and economic vibrancy for promoters of this trade. One writer for *Signs of the Times* who wrote under the pseudonym "Chained Lightning" described these sentiments in a May 1910 article entitled "Light As Evidence of Prosperity." Darkness in urban business districts could be viewed as the antithesis of modernity. Darkness signified antiquity, a lack of technological momentum, and an aversion to economic growth. "Sorrow and care usually dwell amid the gloom [present in the absence of bright illumination]…A gloomy store is anything but inviting, while one well and artistically lighted is the mecca for all those who have the money with which to buy the articles displayed therein."[58]

Some turn of the century sign-makers espoused technologically deterministic viewpoints. They argued that electrical signage would always influence the buying habits of after-hours pedestrians that had expendable income, regardless of their socio-economic status. Not surprisingly, advertisers criticized people that did not view electrical signage at night. George Williams even went so far as to say "The people who do not go out at night are usually those who have no money to spend or no inclination to spend what they

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[57] T.I. Jones, "Write In Light," *Signs of The Times* (November, 1913): 12.
[58] Chained Lightning, "Light As Evidence of Prosperity," *Signs of The Times* (May, 1910).

have; obviously these people are not of much value as customers."[59] Like many of his colleagues in the advertising industry, Williams argued that electrical signage permeated visual and social barriers with its unmistakable legibility. He believed electrical signage could override many of the cultural, racial, and economic barriers in those cities and locations where it had a strong presence: "electrical advertising is [viewed by everyone including] the saint and the sinner, the aristocrat and the plebian, the cultured and the vulgar, the scholar and the illiterate."[60] Williams failed to account for that portion of the American population that lived far from urban areas and lacked access to the large-scale power networks that made electrical advertising possible. Nor did he take into account the literacy of his potential viewers. In spite of these shortcomings in the logic of his argument, Williams did touch upon the reality of electrical signage's democratizing capacity: it could reach a broad audience because of its widespread and often unavoidable presence in the turn of the century America. Larger and brighter signs appeared to achieve this intended aim with even greater effect than smaller signs.

Advertisers related the success of electrical signage to visual dominance within the cultural landscape. Many espoused the simple dictum that bigger signs yielded bigger profits. Competition to build the "biggest and brightest" signs naturally became a priority among these businessmen.[61] To compete for the consumer's attention within this richly illuminated environment, advertisers also attempted to construct signs that displayed a keen sense of novelty, the creative use of images/phrases, and ample amounts of color.

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[59] Williams, Ibid.
[60] Ibid.
[61] "The Economics of the Great White Way," *Literary Digest,* (September 12, 1923): 23.

As W.E. Underwood of the trade journal *Electrical Review* noted in 1921, these creative and gargantuan inventions served as visual signifiers of capitalism and stiff economic competition: "Under the present conditions of keenest sales competition, there is a strenuous struggle for the potential buyer's attention. Two merchants, side by side, competing for trade, will certainly not overlook the electric sign as an immediately effective way of compelling attention. The contest is to see whose sign can be made to gain the greater share of interest."[62]

Spectacular signs positioned along the rooflines of large buildings became a common site in the early 1900s. The Fisk Tire Company proved to be one of the nation's staunchest supporters of this new medium. In 1919, Fisk contracted with the Federal Electric Sign System to erect what at the time comprised the largest spectacular in the Chicago area **(FIGURE 5)**. Located at Twelfth and Michigan Avenue, this display "command[ed] the [attention of] the immense…traffic on this busy thoroughfare." The 3200 square foot sign spelled out the slogan "Time to Re-Tire? Buy Fisk" with 4000 light bulbs. Flashing images of a small boy lifting a tire also formed a core element of the display. This striking combination of slogan and imagery reached an estimated 150,000 people daily, inclusive of pedestrians, motorists, and those using public transit systems.[63]

The urban skyline, a montage of imposing buildings and bright lights, created the need for prominent spectaculars like the Fisk Display. By placing these units on top of the tallest buildings, sign designers avoided visual competition with eye level illumination and architectural forms. Darkened night skies and facades became the

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[62] "New Wrinkles In Electric Signs," *The Literary Digest* (October 8, 1921): 24-25.
[63] "Fisk Tires Display, Chicago," *Signs of The Times* (October, 1919): 52.

primary backdrop for these illuminated forms, a backdrop that highlighted visual distinctions between darkness and light. Advertisers of the 1910s believed, as one correspondent from the London Times would later note, that large buildings overwhelmed the line of vision in urban areas. "The denizen of the modern city is more inclined to look downward than upward. One of the reasons for this is that inhabitants of large cities rarely get the opportunity of seeing a really good expanse of sky."[64] Designers developed spectaculars as a reaction to these visual circumstances, seeking to draw a pedestrian's line of vision upward from the streets below.

The majority of American businesses, however, lacked the financial resources to erect spectaculars. Instead they used smaller versions of these signs in their storefront windows and facades, positioned to attract the roving consumer at eye level. These signs often promoted nationally recognized brands such as Coca-Cola or Rexall Drugs. Many of these smaller signs simply also consisted of an illuminated phrase denoting the name or type of business present in a given location. Generic signs reading café, garage, open or other such commonly used commercial denotations became a big business for small sign-making companies as well as the nation's largest sign manufacturers **(FIGURE 6)**. Electrical signage also enjoyed tremendous popularity in non-commercial contexts that required a direct visual interface with pedestrians, passengers, and motorists. Electrically illuminated signs for fraternal organizations, cemeteries, police stations, and cities became commonplace in the early 1900s.

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[64] "Line Of Vision Dropping," *London Sunday Times* (March, 1931).

One of the few existing non-commercial electrical signs of this period can be found at the Illinois Soldiers and Sailors Home Cemetery in Quincy, Illinois **(FIGURE 7)**. This circa 1912-1912 installation by the Federal Electric Sign System displays an interesting mixture of prefabricated and custom made elements.[65] A bent arc of prefabricated blue vitreous enamel panels containing incandescent lighted syllables spells out the words "Illinois Soldiers & Sailors" above a set of four linear panels displaying the word "Home". Intricately cast iron flags and an eagle painted in red, white, and blue differentiate this sign from the more typical componentized Federal signs once seen throughout the country. The sign also straddles two ornamental pillars that form the cemetery gate, imbuing it with a highly patriotic and ceremonial appearance evocative of the Federal style popular in the early American republic.

Federal revolutionized the development of incandescent signage in the early twentieth century. They became the largest electrical sign producer in the nation by 1910, with a multitude of distributors throughout the country that sold signage produced in their Chicago factory. From 1900 until the late 1920s, Federal produced tens of thousands of their distinctive blue and white enameled incandescent signs before switching over to the production of neon. These incandescent signs typically used componentized single or double-sided letters that could be arranged into any phrase or series of numbers imaginable.[66] The most commonly seen Federal sign used white block letters with rows of lighted bulbs that stood out from a navy blue black backdrop bordered with white

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[65] Debra Jane Seltzer, "Federal Electric Sectional Signs," *Society For Commercial Archaeology* (Submitted For Publication, 2013).
[66] Ibid.

floral motifs as seen in plate 6. The vitreous enamel fronts of these signs proved to be highly resistant to inclement weather and the use of incandescent light bulbs made the replacement of the lighting systems in Federal signs a simple and relatively cheap endeavor.

Prior to the pioneering work of Federal, clients often ordered electric signs custom made to their own specifications. Such signs typically used backlighting and handmade tin surroundings as seen in plate 5 of the introduction. Although this particular sign in the collection of the American Sign Museum used premade interchangeable milk glass letters, its body displayed a distinctly handmade quality in its intricate tinsmith work. This sign lacked many of the interchangeable features of panel-segmented Federal signs. The versatility and legibility of Federal signs helped them to become the most popular brand of signage along America's Great White Ways in the pre-neon era.

MEANINGS OF THIS NEW TECHNOLOGY: ITS PSYCHOLOGICAL IMPACT AND CULTURAL CRITICS

Some early users of incandescent advertising took note of the burgeoning field of commercial psychology. Maurice Switzer, the advertising manager of Ohio's Kelly-Springfield Tire Company displayed at least a nominal knowledge of psychology in 1915. In a discussion of his company's advertising tactics, he suggested that electrical advertising could forcefully penetrate a person's consciousness and even subvert their

sense of agency: "The value of the electric sign, especially an attractive one, is that one does not have to look for it – it forces itself upon the consciousness of the pedestrian."[67] Switzer and many of his colleagues considered electrical advertising to be a powerful and effective medium that increased their bottom line by proactively shaping consumer desires. For them, signs exerted agency and could use electrical communication to shape consumer desires for better or for worse.

Churches valued electrical signage for this very same reason; it enabled them to "sell" their message to potential congregants and subtly meld them into better human beings. Glowing light bulb studded crosses bearing phrases such as "Jesus – The Light Of The World" stood out brilliantly in the nighttime landscape beginning in the 1910s.[68] As one minister argued, these "fiery message[s] in the sky…aided in filling church pews." Churches conveyed spiritual concepts to the public in a manner commonly used to sell consumer products such as soap. Taking heed of this concept, Pastor Charles N. Pace wrote in 1917, "the problem of selling has a much wider application than merely to merchandise, [for] the church has something to sell. A great many have been lost to it because they did not…look…this way…[to our electrical signs]."[69] Pace believed that electrically illuminated signage brought Christ to peoples' attention in a manner nearly as forceful as a sermon, circulating the gospel far beyond the church's sanctuary. More conservative Christians ridiculed this idea of the gospel as a consumer product. From

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[67] Maurice Switzer, "Little Talks by Advertisers on Electric Signs," *Signs of The Times* (December, 1915): 22.
[68] "Spectacular Advertising In Washington, D.C. – America's Brightest and Busiest Streets," *Signs of The Times* (April, 1917): 5.
[69] Reverend Charles N. Pace, "Why Our Church Uses an Electric Sign," *Signs of The Times* (February, 1917): 23.

their perspective, religion became a trivialized commodity once it became advertised electrically – a spiritual message that competed for viewer recognition against an endless backdrop of beer signs and chewing gum advertisements.[70]

The subliminal danger of electrical advertising also raised the ire of cultural critics. They feared its democratic reach and potential for lowering the standards of public taste – a phenomenon similar to that described by Thorstein Veblen in his groundbreaking 1899 text *Theory Of The Leisure Class: An Economic Study Of Institutions*. To these critics, electrical signage represented an aesthetic affront that had a deeply troubling potential for unhealthy psychological persuasion. As mentioned earlier, Maxim Gorky emerged as one of the most vocal critics of signage after visiting Coney Island in 1906. He viewed signage as a culturally debased element that had far too great of a visual and social impact within American society: "Thousands of ruddy sparks glimmer in the darkness…the visitor is stunned; his consciousness is withered by the intense glow. People wander about in the flashing, blinding fire, intoxicated and devoid of will…*greedy expectation* envelops their souls."[71] For Gorky, electrical signs represented little more than shallow attempts to stimulate consumer desires and incite human greed. They represented the embodiment of unchecked capitalism. He believed that electrical signage possessed the potential to reach consumers on a subconscious level because of its brash clarity and unavoidable presence – a visual culture that revealed America in its worst light.

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[70] "Flashes," *Signs of The Times* (September, 1927): 54.
[71] Maxim Gorky, "Boredom," *Independent* 63 (August 8, 1907): 309.

Some architects also took issue with electrical signage, yet often on purely aesthetic grounds. They argued that electrical signage cheapened the appearance of buildings. The engineer C. A. Atherton described this phenomenon in a 1922 speech held at the Cleveland Chapter of the Illuminating Engineering Society. "Many architects still look upon signs largely as a sort of fungus, an ugly parasitic growth upon the beautiful buildings they have been at such pains to erect. To most [architects], electrical signs are an avoidable evil and they have as little to do with them as possible, approving the least ugly of the submitted designs if they are asked to pass on them at all." He added that, "one of the chief criticisms of signs…is that their daytime appearance is not good. To obtain a spectacular effect at night, the daytime appearance of the building front and roof are often sacrificed." Atherton, like many of his colleagues, recognized that electrical signage had often been poorly integrated into architectural facades. Signs appeared to be placed on buildings simply as an afterthought, and marred the architectural "harmony" of buildings with their shoddy appearance. Atherton argued that sign-makers and architects needed to forge a closer relationship, designing signage that balanced the needs of advertising and aesthetic harmony. This same criticism would persist well into the 1930s when architects and sign-makers finally began to forge a closer working relationship.

CONCLUSION

In spite of its contested role in American society, electrical signage became a hallmark of the urban landscape by the turn of the century. The development of neon

would soon bring electrical illumination to an even greater level of intensity and brashness, perhaps fulfilling the greatest fears of incandescent signage's early critics. Neon would build upon many of the same principles used within early incandescent electrical advertising: scale, color, brightness, and contrast with darkness. Yet neon would bring an unparalleled sense of clarity and color to advertising that had never been seen before. Neon's production would ironically demand skills completely different from the industrial production methods used in so many aspects of incandescent sign production: everything from the manufacture of light bulbs to the prefabrication of interchangeable letters. Handcraft would be the only economical way to create the more visually and materially complex neon signs that American businesses adopted in the 1920s. Neon would enable sign-makers to shape colored glass tubing into contiguous patterns of light of virtually any shape. This medium would allow for a greater flexibility of forms and color than ever possible with incandescent electrical signage.

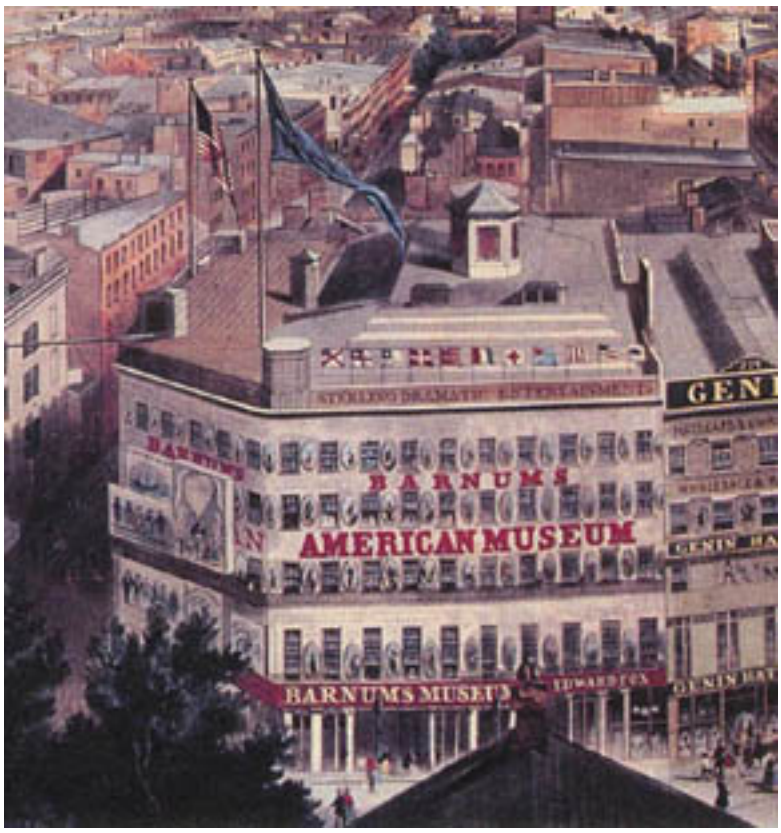

FIGURE 1: Barnum Museum in New York City, circa 1850. Image from: http://historymatters.gmu.edu/d/5289

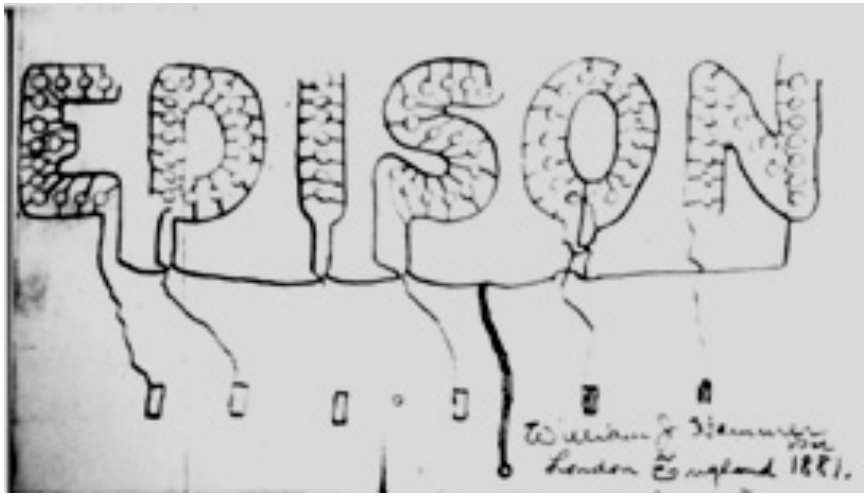

FIGURE 2: 1881 rendering of Edison's first electrical sign by engineer William J. Hammer. Image courtesy of the Smithsonian National Museum of American History.

FIGURE 3: Postcard of St. Louis' Great White Way on Sixth Street, postmarked 1915. Image from: http://www.cardcow.com/129247/great-white-way-night-st-louis-missouri/

FIGURE 4: 1895 Heinz sign installation by O.J. Gude at the future site of the Flatiron Building in New York City. Image courtesy of the Signs Of The Times Archive, Cincinnati, Ohio.

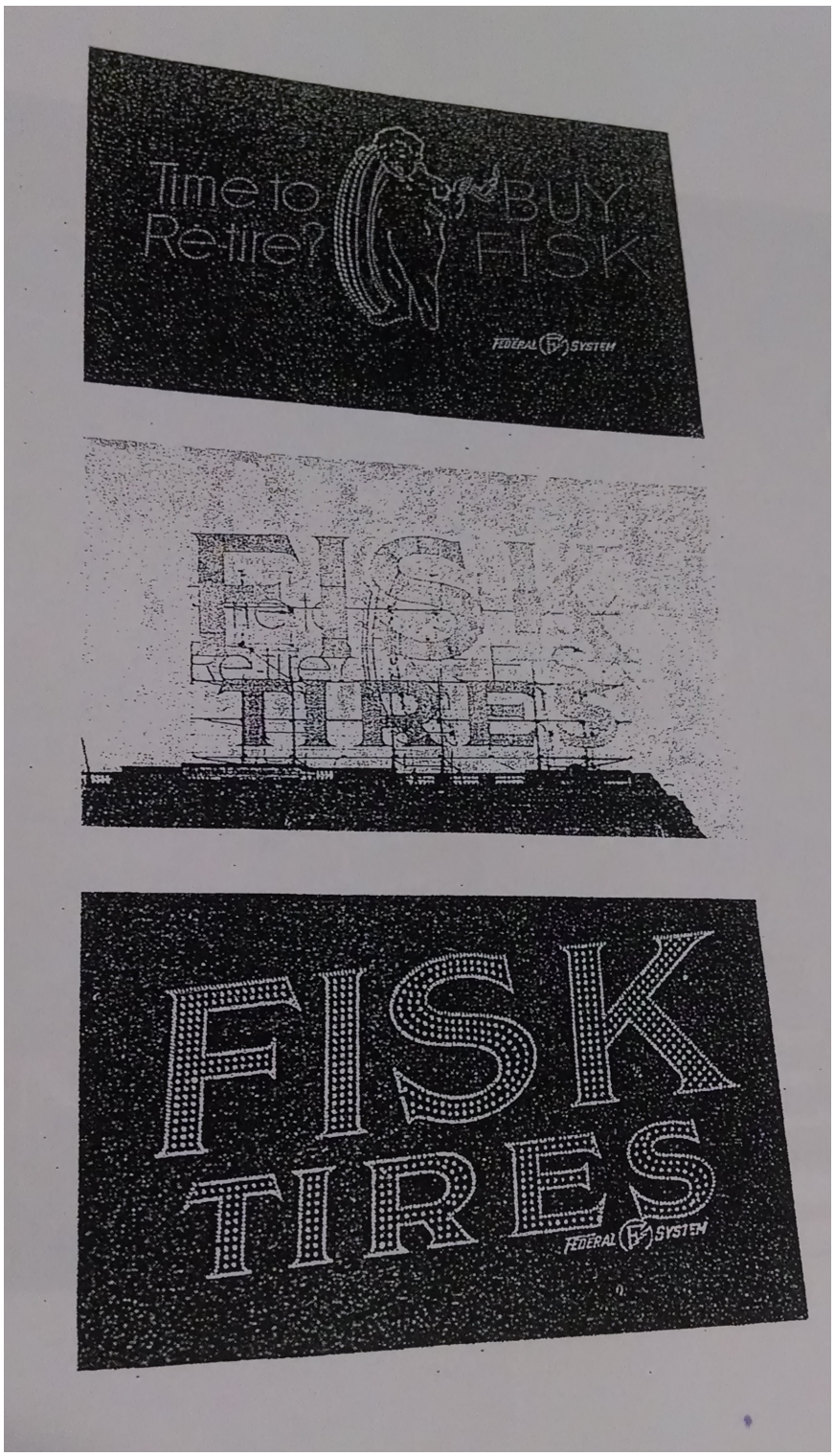

FIGURE 5: 1919 Fisk Tire Spectacular, Chicago, Illinois. Image courtesy of the Signs Of The Times Archive, Cincinnati, Ohio.

FIGURE 6: Generic form of prefabricated incandescent drug store sign manufactured by Federal Electric of Chicago, Illinois, circa 1914. Image courtesy of Roger Buttignol. Portsmouth, New Hampshire.

FIGURE 7: Close up view of the Federal Sign System installation at The Soldiers and Sailors Home Cemetery in Quincy, Illinois, Circa 1912-13. Image copyrighted and taken by Debra Jane Seltzer, Circa 2010.

CHAPTER 2
Neon's Antecedents And Early Technological Development

The development of neon lighting technologies built upon previous systems of electrical illumination. Gaseous discharge lighting devices such as Geissler tubes and Moore nitrogen lamps set a precedent for the use of hand-bent glass tubes filled with gas that would illuminate when electrified. Neon shared this conceptual basis with these earlier technologies as well as an emphasis on handcraft rather than industrial methods of production. Neon differed from these technologies, however, in its almost exclusive application to advertising rather than interior illumination. This chapter explores the evolution of lighting technologies that preceded neon as well as neon's early technological development by the likes of Georges Claude and others. Additionally this chapter examines the actual process of neon manufacture and its earliest commercial applications in Europe.

THE VISUAL IMPACT OF NEON

For some eighty years, visitors to the Wisconsin north woods encountered an unusual sight that stood in marked contrast to the rustic atmosphere of this upper Midwestern environment. A glowing red neon sign advertising the Turk's Inn Supper Club boldly stood out amidst old growth pine trees in a clearing along rural Highway 63 just to the north of Hayward **(FIGURE 1)**. Made of metal coated in rust-resistant vitreous enamel, this approximately six-foot wide and four-foot tall double-sided neon sign

beckoned potential customers to stop for dinner from roughly 1933 to 2012.[72] It remained an iconic feature of the local landscape, an artifact likely by manufactured by the McGinnis Brothers Sign Company of nearby Rice Lake, Wisconsin.[73] Neon or daytime light from the sun illuminated a colorful mishmash of hand-painted imagery showing idealized Oriental motifs on this installation.

Two minarets stood on either side of the sign, symmetrically framing an Arabesque style script that spelled out the words "Turk's Inn" in bright red neon tubing. Miniature light blue images of Mosques could be seen at all four corners of the sign, evoking hand drawn cartoons of the Hagia Sophia or perhaps the Blue Mosque in Istanbul. A peeling bright red background showing through to areas of dark blue porcelain enamel contrasted with flaking white painted lettering behind the neon. The word "Welcome" in hand painted yellow block letters lay directly below the red neon tubing. Above this stood white painted letters in an Arabesque font that read "The Sultan Room." The bright red backdrop against the white and yellow script offered a bold contrast that gave the sign a great sense of legibility even during daytime hours. Neon's operative capacity for standing out within nocturnal environments could also be achieved with great success at the Turk's Inn, largely due to the lack of surrounding ambient light from other businesses and its rural isolation away from the light pollution endemic to cities.

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[72] Kathy Hanson, "ACCIDENTAL REPORTER: Marge was the legend, The Turk's Inn her gift," *Sawyer County Record* (March 16, 2013).
[73] Informal Conversations with Guy Houston, Northern Wisconsin Antique Dealer, Osseo, Wisconsin, Fall, 2013.

The Turkish-inspired imagery on this sign concealed the less ornamental and original vitreous enamel surface that existed beneath many layers of paint. Porcelain enamel backings – pioneered by the Federal Sign System – served as the dominant material for neon sign bodies from the 1920s to the 1940s. Enamel surfaces remained impervious to water and rust.[74] Yet they also contained immutable script and images that could only be changed if covered up with another layer of paint or metal. Like so many other neon signs used continuously since the 1930s, the owners of this sign painted over its original glass baked enamel block letters to update its design as the years went by. This practice became de rigueur among American business owners when the original art deco faces of their signs became obsolete or their businesses changed hands. Such half-hearted attempts at modernization revealed concerns with a sign's growing antiquation rather than the sense of cutting edge design it once signified. Ironically this practice of creative reuse saved some early neon signs from permanent removal or demolition.

The Turk's Inn offered a posh and semi-exotic experience intended to transport patrons to a realm that would have seemed otherworldly in Northern Wisconsin when this restaurant first opened in the early 1930s.[75] Kebabs, baklava, dry aged steaks and an atmosphere intended to evoke the Near East could be found within this fantasy-inspired architectural space. At the Turk's Inn, the ever-flexible medium of neon beckoned

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[74] Federal Electric Sign System, *Desirable Dollars* (Chicago: Federal Electric Company, 1925), 21.

[75] "Turk's Inn, Waswagoning: Tales Of Two Endangered Gems." Accessed November, 2013. http://roadstraveled.com/views/turks-inn-waswagoning-tales-of-two-endangered-gems/

potential patrons to come in and consume the exotic and the oriental in a single serving.[76] Businesses such as the Turk's Inn became popular in the 1920s and 1930s with the growth of programmatic architecture alongside America's waysides. This new genre of architecture consisted of whimsical forms, exotic visual themes, and a strong dose of hyperbole that conspired to create a sense novelty. Programmatic architecture appealed to a growing coterie of the motoring public that sought memorable experiences in their travels.[77] Neon served as one of the most emblematic features of these environments – a means not only of attracting the watchful gaze of motorists, but of conveying the sense of individuality that such businesses hoped to portray.[78] The Turk's Inn neon sign epitomized this phenomenon.

Prior to the closure of the restaurant in 2012, this neon sign remained a testament to the symbiotic relationship between the growth of rural highway networks and neon advertising prior to the age of expressways. Small roadways such as Route 63 became less popular as motorists chose to use newer and faster highways by the 1960s and 1970s. With the growing clusters of fast food restaurants that adjoined these modern highway systems, one would have little incentive to stop at a rural, out of the way business such as the Turk's Inn.[79] That is unless one sought to take a leisurely vacation up north and seek

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[76] Hanson, Ibid.
[77] Karal Ann Marling, *The Colossus Of Roads: Myth and Symbol along the American Highway* (Minneapolis: University Of Minnesota, 1985), 41-44.
[78] Brian and Sarah Butko, *Roadside Giants* (Mechanicsburg, PA: Stackpole Books, 2005), 2.
[79] John A. Jakle and Keith Sculle, *Fast Food: Roadside Restaurants in the Automobile Age* (Baltimore: Johns Hopkins, 1999), 49.

out an experience that cultural geographer John Jakle has termed "overcoming the commonplace".[80]

The ruby red neon used at the Turk's Inn has important historical and technological significance that transcends this specific application. Red neon emerged as the first color variant of this technology developed by British, French, and American scientists in the late nineteenth and early twentieth centuries. The phrase "neon" descended from this singular invention of illuminated red tubing, a technology named after the Greek word "neos" or new.[81] Unlike other colors of tubing that rely upon noble gasses such as xenon, krypton, or argon, red tubing remains the only form of this technology to use unadulterated neon gas.[82] The umbrella term for all forms of illuminated glass tubing – neon – thus represents something of a misnomer that likely stemmed from the technology's earliest marketing campaigns in the mid-1920s. This misnomer also alludes to something more important: a shared set of technological underpinnings and methods of handcraft that have been an intrinsic part of this product's manufacture since day one regardless of the gas or color of tubing used in a specific sign.

THE HANDCRAFT AND MATERIALITY OF NEON IN THE INDUSTRIAL AGE: A HIDDEN TECHNOLOGICAL ANACHRONISM

Neon created a visual presence that many onlookers viewed as symbolic of modernity and the industrial age. Neon's prominent place in the art deco and streamlined

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[80] John A. Jakle, *The Tourist: Travel In Twentieth Century North America*, 200-201.
[81] Ribbat, 23.
[82] Samuel C. Miller and Donald G. Fink, *Neon Signs: Manufacture – Installation – Maintenance* (New York: McGraw-Hill, 1935), 38.

design movements of the late 1920s and 1930s helped to create public perceptions that neon lighting signified modernization.[83] Beneath this illusion of modernity, neon sign making has relied exclusively upon an ancient material rather than a synthetic one: glass tubing made of melted silica. The Corning Glass Company of Corning, New York served as the preeminent supplier of this material to the neon industry, offering tubing in a variety of colors from "mercury clear glass" to "blue coated blue glass" as described in their 1951 booklet *Color By Corning for electrical advertising*.[84] Corning used industrial methods to manufacture their glass tubing as a prefabricated component for sign-makers. Despite its industrial origins, this simple material would undergo a process of transformation that may best be described as an artisanal form of handcraft: neon tube bending.

The first step in making a neon sign involved the creation of plans and sketches for the installation. Sometimes these plans came directly from a sign-making pattern book such as the 1929 text *Electrical Advertising Sketch Portfolio No. 1* by entrepreneur and designer Sam Kamin of Lima, Ohio.[85] After reviewing preliminary drawings with clients and finalizing their intended messages and aims, the sign-making contractor would generate detailed drawings and plans for the sign's script/imagery, color, size, metal backing, and electrical hardware. These blueprints would then be distributed to various craftspeople involved in different stages of the sign's production. A

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[83] Ribbat, 19.
[84] *Color By Corning for electrical advertising* (Corning, NY: Corning Glass Works, 1951), 3.
[85] Sam Kamin, *Electrical Advertising Sketch Portfolio No. 1* (Cincinnati: Signs Of The Times, 1929).

metal fabricator would cut the sign backing out of tin or steel to create the desired shape from the blueprint. Holes would be punched into these metal sheets for the eventual installation of a rigid internal structural framework that would hold the sign body or "can" together and support its neon.[86] After creating these metal chassis components, painters or enamel specialists would add a colored exterior by hand. In some instances, they would use spray guns to paint the signs and then apply detailed lettering or painted imagery using freehand. Most neon signs made prior to 1940 used a glass coating on their metal panels to generate color, imagery, and script that would abut the neon. These specialists would coat these panels with different colors and patterns of vitreous glass enamel that would be fired in a high temperature oven in much the same way as a lead glaze on ceramics. Larger sign making companies often did their own enameling work, whereas smaller enterprises employed subcontractors such as the Ingraham-Richardson Manufacturing Company of Beaver Falls, Pennsylvania.[87]

Shaping the neon tubing by hand proved to be the most cumbersome, demanding, precise, and time-intensive aspect of neon production. This preindustrial method of glass blowing and bending relied upon a similar set of skills to those used in making glass laboratory instruments. Both practices represented a precise craft with little room for error. After selecting the tubing gauge and glass color, a glass bender would construct a flat template for his or her pattern based upon the initial blueprint of the sign designer. The length, size, and shape of the neon tubing would be sketched out on a non-flammable

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[86] Miller and Fink, 80-85.

[87] "Fadeless Publicity" (An Advertisement For The Vitreous Enamel Backgrounds Ingram-Richardson Manufacturing Company of Beaver Falls, Pennsylvania), *Signs Of The Times* (January, 1931): 17.

sheet made of a material such as asbestos. The tube bender would then expose the glass tube to a high temperature gas burner that would make the material malleable while blowing into the glass tube.[88]

After heating the tube to a point of flexibility, the neon craftsperson would bend the tube into the shape found on the flat template in segments that often had to be spliced beforehand **(FIGURE 2)**. He or she would perform bends that had a uniform wall with neither too little nor too much glass at these various junctures; for this could make the eventual sign susceptible to breakage. Simple bends – everything from straight drop bends that went at a ninety-degree angle to curvilinear or circular bends – demanded a rigorous attention to detail. More complicated double bends to form certain letters and images required a still greater skill level and precision. After executing these bends on various pieces of glass, the neon maker would heat up the ends of each piece and meld them together, forming a contiguously sealed tube.[89]

Following the arduous process of bending the glass, electrodes would be added to each end of the tube using heat. These bonded pieces of glass contained a positive anode and a negative cathode for the transmission of electricity to the gas inside the tube. A tubulation or small tip that entered into the main tube body would be added to each contiguous segment of glass. This would enable the addition of rare gasses that would illuminate the tube when exposed to high voltage electricity from a transformer. Before this step, the neon sign-maker would evacuate the glass tube of any impurities by

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[88] Wayne Strattman, *Neon Techniques: Handbook of Neon Sign and Cold Cathode Lighting* (Cincinnati: ST Publications, 1997), 103-105.
[89] Ibid., 108-115.

hooking it up to a manifold. The manifold served as an entryway into the tubulation that would be directly connected to a vacuum pump. This machine would remove any impurities in the tube and create an internal vacuum.[90]

During the evacuation process, the sign-maker would also bombard the electrodes with high voltage electricity to heat up the interior of the tube and burn off any additional impurities. After bombarding the tube, the craftsperson would run the manifold's vacuum pump to remove the most miniscule particles of remaining impurities. Finally the neon operator would open the manifold and fill the now clean tube with small amounts of rare gasses such as argon, xenon, neon, or krypton **(FIGURE 3)**. He or she would then seal off the tubulation with heat. Different ratios and combinations of rare gases and the liquid metal mercury would determine the color and shade of the illuminated tube.[91] Phosphorous coatings on the inside of the tube could also effect a change in its color. Following this complex operation, the neon tubing would be ready for use. It could then be attached to the now complete sign body and hooked up to a transformer that would illuminate its rare gasses via the electrodes.[92]

The classic 1935 American text on the production and installation of neon tubing, *Neon Signs: Manufacture – Installation – Maintenance* discusses this process in great detail. Authors Samuel C. Miller of the Tube Light Engineering Neon Company and Donald G. Fink of the trade journal *Electronics* provide a detailed glimpse into the handcraft and technologies used to create all forms of luminous signage. These principles

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[90] Miller and Fink, 134.
[91] C. E. Weitz, *Electric Signs and Control of Lamps and Lighting* (Scranton, PA: International Textbook Company, 1939), 28-29.
[92] Strattman, 7.

remain virtually unchanged some one hundred years after the commercial introduction of neon lighting in Europe. Neon sign production still requires the creation of hand bent glass tubes that must be filled with rare gasses and then exposed to high voltage electricity in their production and operation. Automation has yet to supplant this process. The craft of neon represents an artisanal process that hearkens back to antiquity in many facets of its manufacture.

Few sign companies discussed this medium's preindustrial production methods during its first two decades of commercial use in the United States. Instead they framed discourse about this technology within the rhetoric of the new and the cutting edge. Many of these companies neglected to mention that neon sign production could be classified as a cottage industry. A circa 1933 catalog of the Specialty Neon Lights Company of 245 Hennepin Avenue in Minneapolis, Minnesota, almost completely glosses over the intricate handcraft necessary for the production of neon signs. This promotional booklet for a relatively small regional maker emphasizes their use of modern, mass-produced components such as the most efficient electrodes then available.[93] The catalog displays a plethora of small display signs that appear prefabricated in their construction **(FIGURE 4)** as well as six different choices of premade metal backdrops for use on exterior signage **(FIGURE 5)**. Such imagery implies that this company used mass production and prefabrication.[94] Nothing could have been further from the truth; none of their neon signs could exist without the careful and steady hands of a capable human tube bender not a machine. One undated circa 1930s trade journal advertisement from the Neon Products

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[93] *Neon Advertising* (Minneapolis, Speciality Neon Lights, Circa 1933), 2.
[94] Ibid., 8, 12-13.

Company of Lima, Ohio also emphasized the modernity of their product line and production methods, obscuring the reality of its handcrafted origins. This advertisement brought special attention to the phrase "streamlined mass-production" by underlining it to stand out from the rest of the copy. A description of the Neon Products factory as "The Largest, Best-Equipped Plant Of Its Kind In The World" emphasized the technological savvy of what then comprised the nation's largest neon factory.[95]

No matter how much these manufacturers touted the modernity of their products, handcraft remained one of neon's intrinsic production features. As Fink and Miller outline throughout their whole book, neon production represented the antithesis of assembly line labor. Neon sign making relied upon skills acquired through a long and arduous apprenticeship or intensive instruction at a neon sign school such as the Egani Institute Of New York City.[96] In addition to neon's anachronistic methods of manufacture, one should also note that the technology itself merely represented the evolution of a much earlier technology. The conceptual basis for neon emerged from a lighting technology that caught on in the middle and later nineteenth century. It represented a logical extension of these earlier systems in its reliance upon glass blowing and the illumination of trapped gasses using electrical current.

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[95] Undated 1930s advertisement for The Neon Products Company of Lima, Ohio likely from an edition of *Signs Of The Times*. Advertisement retrieved from the archives of the American Sign Museum, Cincinnati, Ohio in a folder entitled "Neon Products."

[96] Rudi Stern, *The New Let There Be Neon* (Cincinnati: ST Publications, 1996), 30.

ANTECEDENTS OF NEON LIGHTING

The basic technological premise of this illumination system emerged from a series of experiments conducted by American, French, and British scientists prior to the turn of the twentieth century. The Geissler tube represents the earliest antecedent of neon lighting. German glassblower Heinrich Geissler invented this illuminating device in 1859. Thin glass tubes filled with a variety of common gases such as nitrogen generated brilliant colored light in a variety of hues when exposed to electrical current transmitted via electrodes.[97] Made primarily for purposes of public demonstration, Geissler tubes became a common laboratory teaching aid at universities and also a popular novelty for public lectures about electrification in European salons. Geissler tubes exhibited a wide array of forms and patterns that ranged from decorative abstractions to letters spelling out names. These tubes showcased the artistic talents of the glassblowers that made them. Intricately overlapping tubes with double bends, zig-zags, and squiggly patterns became hallmarks of this art form **(FIGURE 6)**.[98] Forms evocative of stars and aquatic life became common visual tropes amongst Geissler tube makers of the nineteenth century. These intricately bent tubes generated complex geometric patterns of light and color when set into motion with a motorized device known as a tube rotator **(FIGURE 7)**.

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[97] James A. Cox, *A Century Of Light* (New York: General Electric And Benjamin Publishing, 1979), 65-66.
[98] Ibid.

Nikola Tesla even employed Geissler tubes in some of his lectures along with tube rotators[99] – captivating the audience with luminescent forms that served as a visual representation of electricity for his audiences. The streaking patterns of colored light generated a great deal of attention from viewers when shown in a darkened room. In effect they used the same principles of contrast between light and darkness that would make neon such a popular advertising medium. The painstaking and detailed process of bending these tubes into a variety of forms could not be achieved on an industrial scale – a commonality with the production of neon lighting. The concept of filling glass tubing with gasses for purposes of illumination remained a costly and small-scale endeavor in the late nineteenth century. Since most Geissler tubes did not use a highly purified form of rare gas, their electrodes would oxidize and fail if used repeatedly. Their relatively weak capacity for illumination detracted from their utility as a form of indoor lighting or electrical advertising. The high voltage transformers necessary to light a Geissler tube larger than some ten or fifteen inches in length remained an unsolved technological challenge at this time; transformers did not even exist when Geissler first developed his invention.[100]

Noble gasses exposed to high voltage electricity would accomplish the same technological function as the Geissler tube with greater efficiency, longevity, and luminous strength. The major constraint that hindered the commercial development of neon lighting in the 1890s proved not only to be the development of cost effective and

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[99] Stern, 19.

[100] The Ganz es Tarsa Company of Budapest, Hungary developed the world's first working transformer in 1885. Please see works such as Thomas Hughes' *Networks Of Power* (1993).

efficient transformers, but rather the difficulties in isolating and purifying rare gasses in the atmosphere. In weak concentrations like that used in some early 1890s Geissler tubes by Nikola Tesla, neon had minute luminous capacity. For neon to work effectively, large concentrations of the gas proved a necessity.[101] The commercial development of neon would only occur after inventors and entrepreneurs overcame this major technological hurdle.[102]

The Crookes tube proved to be yet another antecedent of neon signage that first appeared some years after the Geissler tube's invention. This device used higher voltages than Geissler tubes and also relied upon a true cold cathode system with dual electrodes – the same technology used in neon signs of the twentieth century. Like these later neon signs, the Crookes tube required a much stronger vacuum than Geissler tubes. British scientist William Crookes developed this technology sometime between the late 1860s and the early 1870s. Crookes added fluorescent coatings to enhance the glowing effects of the electrified tube, much like the phosphorescent coatings used to create different color variations in later neon signage. William Rontgen used Crookes tubes to develop his x-ray system, a device that had immediate utility in medical applications. Crookes tubes failed to find much use in electrical signage for the simple fact that they glowed only at the cathode end, not throughout the whole tube. They had a tendency to loose their vacuum over time and burn out because Crookes could not sufficiently evacuate the oxygen from his tubes. He also lacked access to concentrated noble gasses that would not

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[101] W. L. Schallreuter, *Neon Tube Practice* (London: Blandford Press, 1933), 29.
[102] Mel Morris, "History of the Neon Luminous Tube Had Beginning with Electricity", *Signs Of The Times* (December, 1927): 37, 44-45.

cause his cathodes to oxidize. The use of a high voltage cathode system in these tubes still served as a technological foundation for all later iterations of neon signage.[103]

The British scientific team of William Ramsey and Morris W. Travers isolated neon from the atmosphere in 1897, effectively laying the groundwork for its rapid commercialization after the turn of the century. Not only did they formulate the basic techniques used to refine and extract neon from thin air; they demonstrated its applicability to advertising. As part of a display at the Royal Society of Science in London, they constructed a bright red neon sign. It read "Vical Victoria Regina" in hand-bent tubing to honor queen Victoria. Ramsey and Morris placed little emphasis on the commercialization of their invention. Their greatest difficulty lay in obtaining enough concentrated neon gas to produce multiple examples of their advertising invention. Their future experiments with illuminated tubing used commonly found gasses such as nitrogen and helium that could be distilled more cheaply and in greater quantity than neon.[104]

The Cooper Hewitt Company and Moore Company of New York City commercialized the use of interior gaseous discharge lighting around the turn of the century.[105] These companies expanded upon the work of Ramsey and Travers by selling nitrogen and carbon dioxide lamps for domestic and commercial illumination that used high voltage transformers. The growth of alternating current power systems after 1900

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[103] C.A. Atherton, *Electrical Advertising: A Hand Book to Assist in a Better Use of Light in the Design of Signs, Poster Panels, Building Decorations, Etc.* (Cincinnati: Signs Of The Times, 1925), 102-104.
[104] Daniel McFarlan Moore, "Report Of Committee On Progress" in *Transactions Of Illuminating Engineering Society* (New York: Illuminating Engineering Society, 1912), 503-504.
[105] Cox, 66.

made these transformers a relatively cost-effective technology for such applications. Unlike later forms of neon signage, nitrogen offered a yellow tinted light and carbon dioxide's light contained much of the color spectrum found in natural sunlight.[106] Lamps by both companies served as a forerunner of both fluorescent illumination and neon signage.

Daniel McFarlan Moore, inventor of the Moore Tube, created several illuminated signs using nitrogen in New York City. One of his early sign installations spelled out the words "The World" for the newspaper of the same name **(FIGURE 8)**. This circa 1904 sign used hand bent glass tubing that mimicked cursive handwriting; it also used a contiguous piece of bent glass with two electrodes and a transformer contained within a metal sign body like neon signs made twenty years later.[107] Like this later mode of advertising, Moore's sign contained exposed tubing on an exterior that cantilevered out from the façade of a building. The need to constantly replace gas and electrodes in his lighting system made the maintenance of such signs a costly and time intensive undertaking. Although Moore's signs effectively used a continuous band of light to spell out phrases, they lacked the striking red color of neon that could pierce the darkest environments. They also could not match neon's electrical efficiency in their luminescent capacities. As Moore himself noted in the 1912 *Transactions of The Illuminating Engineering Society*, neon had approximately four hundred times the efficiency of the nitrogen and also created a brighter light than his lamps. This issue of inefficiency would render his technology obsolete soon after its development.

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[106] Schallreuter, 25.
[107] Rinaldi, 19.

Recognizing the shortcomings of nitrogen, Moore experimented with neon signage at an even earlier date than Georges Claude – the French engineer that first commercialized neon's manufacture. Moore collaborated with Claude to create one of the earliest neon signs used publically prior to 1912: "When…neon was discovered, I immediately thought of its application to the various forms of my vacuum tubes and made every effort to obtain information regarding its production and qualities. A few years later, 114-foot lengths of Moore light tubes were being installed on the front of the Grand Palais in Paris, and the request of a liquid air manufacturer [Georges Claude's Company Air Liquide, SA] to try neon in the Moore tubes was granted. The results of the first experiments were encouraging. Since then various experiments have been carried out."[108] Georges Claude recognized the technological advantages of Moore's design if non-corrosive gas such as neon could be used in this application. Sir William Ramsay also saw this potential value in Moore's design. Ramsay personally presented Moore with a quart of neon for experimental use in his system of gaseous discharge lighting in 1912.[109]

To Claude, Moore's invention appeared as a readymade template that would work perfectly as a system of advertising or ornamental exterior lighting when filled with neon gas. This collaborative exchange of knowledge between Moore, Ramsay, and Georges Claude set the stage for the rapid development of neon lighting after the First World War. One can speculate that Moore did not commercialize this invention because he sold his

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[108] Moore, Ibid.
[109] Ibid.

patent rights to General Electric in 1912.[110] He also focused his efforts on trying to replicate the color spectrum of daylight for interior illumination and this naturally led him away from neon lighting design. This focus on the replication of daylight would carry over into General Electric's development of fluorescent lighting out of Moore's technology.

General Electric specialized in interior illumination rather than the manufacture of bespoke advertising signage. There likely proved to be little room within their corporate structure for doing custom applications such as Moore's New York City sign installations in the early 1900s. When Georges Claude approached General Electric (G.E.) with the prospect of manufacturing based on his French patents and pending American ones in 1913, they declined.[111] Unlike the sale of mass-produced light bulbs for interior illumination, G.E. had no prior knowledge of neon's commercial potential and they erred on the side of caution. Neon tubes of the 1910s could only produced a brash red light. This did not fit within the corporate schema of G.E.'s attempts to create a more neutral form of illumination that mimicked sunlight.

Early gaseous discharge tubes cost far more to install and power than incandescent lighting; yet they lasted longer than incandescent bulbs and provided a more neutral light. This system set a technological precedent for fluorescent lighting. The long thin tubes used in these systems as well as their white color would become hallmarks of fluorescent lighting by the 1930s and 1940s.[112] The same high voltage transformers, cold

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[110] Cox, *A Century of Light,* 66.
[111] Rinaldi, 20.
[112] Cox, *A Century of Light,* 218.

cathode electrodes, traces of mercury, and glass tubing found in Moore or Cooper Hewitt lamps would also be used in neon following the technology's commercial introduction in Europe around 1910s. Moore's early electrical signs proved to be identical to later neon signs in every way with the exception of the gasses they used.

Neon would supplant the Moore and Cooper-Hewitt technology in custom advertising applications that demanded complex visual forms and bold colors. When used for purposes of advertising, neon's perceived inability to mimic daylight became advantageous. Its brash red light created a then novel and striking visual effect that advertisers valued. Neon also had a much longer life than Moore or Cooper Hewitt tubes because rare gasses had a less corrosive effect on high voltage electrodes than nitrogen or helium. Georges Claude became keenly aware of these distinct properties of neon lighting and he directed much of his attention to its commercialization prior to the outbreak of World War I.

GEORGES CLAUDE AND THE COMMERCIALIZATION OF NEON

Georges Claude revolutionized the production of neon signage by making the distillation of neon from the atmosphere a commercially and technologically feasible endeavor. In 1903 he developed a system that efficiently extracted large quantities of the noble gasses from the atmosphere during the production of liquid oxygen. Attaining enough rare gas to light a sign proved tedious and costly before the advent of Claude's

extraction method.[113] This system used a re-circulative process that literally distilled these rare elements out of thin air. Claude's technology built upon the earlier work of German engineer Carl Von Linde who devised a similar system in 1895.[114]

Illuminating engineer C.H. Sharp visited George Claude's operation L'Air Liquide, S.A. in Paris shortly after it began the commercial production of neon gas around 1910. In Sharp's account, neon emerged as a byproduct of the liquefaction of oxygen for medical and industrial applications. Claude's system demanded no raw materials other than access to the free, cheap, and infinitely available air we all breathe. Claude's extraction of neon from the atmosphere appeared as the fortuitous byproduct of his venture into the commercialization of oxygen purification and bottling.[115] The simple application of a carbon filter and large vacuum pumps enabled Claude to extract a seemingly infinite amount of neon and other noble gasses from the atmosphere with virtually no overhead other than the cost of his equipment, marketing, research, and labor. His company now known as Air Liquide continues to be one of the world's largest producers of liquid oxygen and rare gases.[116]

Georges Claude transformed the pioneering technological developments of Moore, Ramsay, and Travers into a commercially viable endeavor by developing a

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[113] Carl Von Linde created an air liquefaction system some ten years prior to Claude but placed little emphasis on obtaining large quantities of rare gasses. He primarily focused on extracting liquid oxygen for steel manufacture.

[114] "Carl Von Linde," *Encyclopaedia Britannica*. Accessed April 1, 2014. http://www.britannica.com/EBchecked/topic/341835/Carl-von-Linde

[115] Dr. C. H. Sharp, "Report Of Committee On Progress" in *Transactions Of Illuminating Engineering Society* (New York: Illuminating Engineering Society, 1912), 502.

[116] Air Liquide. Accessed December 2013. http://en.wikipedia.org/wiki/Air_Liquide

powerful vacuum pump and purification system that made rare gas extraction possible on an industrial scale. Claude merely improved upon the processes developed by these earlier inventors after recognizing the commercial utility of rare gasses. In addition to refining the air extraction process, Claude improved upon Moore's electrode design to make neon lighting a more reliable technology. The relatively small surface area of Moore's electrodes made them prone to overheating and drastically shortened their lifespan. Georges Claude increased the surface area of these electrodes to mitigate these deleterious effects on the cathodes and anodes, prolonging the life of neon tubing.[117]

Testing conducted in 1912 showed that the use of neon with large electrodes enabled the tubes to operate with no deterioration in light quality after 2000 plus hours of use and greatly reduced the amount of neon absorbed by the electrodes.[118] Georges Claude recognized this modification to Moore's design as a patentable technological improvement. No other neon lighting system prior to Claude's large electrode system had proven as impervious to failure after prolonged use. Most of these earlier experimental neon tubes used small electrodes that failed quickly due to overheating and oxidation. Claude developed his large electrode system around 1909 and began to use it in his earliest commercial applications in Europe. He received his first patent for a neon lighting system in France on March 7, 1910.[119] This patent covered not only his electrode design, but also his method for purifying the neon gas within his tubes. Even the most

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[117] Georges Claude, "System of Illuminating By Luminescent Tubes". United States Patent 1,125,476. Application Filed On November 9, 1911. Patent Granted On January 19, 1915.
[118] Ibid.
[119] Georges Claude, "System of Illuminating By Luminescent Tubes," Ibid.

miniscule trace of nitrogen or other non-noble gasses could cause electrode failure as he noted in these patents.[120] Claude obtained two different patents in the United States to cover this process.

Claude's first patent, 1,125,476, covered his large electrode design as well as the basic process of evacuating tubes of air to be filled with noble gasses such as neon **(FIGURE 9)**. Although he filed this patent in 1911, it would not be granted for almost four years in 1915.[121] Claude had already begun the commercialization of neon production in Europe by 1910-1911.[122] He attempted to bring neon signage to the American market during this same time period, yet the realities of World War I and the lengthy time required to obtain a patent in the United States hindered this endeavor. Claude continued to file additional patents in an attempt to secure his exclusive rights for the manufacture of neon signage in the United States. Claude applied for his second successful patent, 1,191,495, in 1913 and the U.S. Patent Office granted it three years later in 1916 **(FIGURE 10)**. This patent expanded upon the previous patent but offered greater technological specificity concerning the purification of neon or other noble gasses once added to a luminous discharge tube. This second patent did not simply cover the hardware necessary for the manufacture of neon tubing; it covered the actual steps of manufacturing neon as a patentable form of intellectual property.[123]

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120 Ibid.
121 Ibid.
122 Bruno Ulmer and Thomas Plaichinger. *Les Ecritures De La Nuit: Un Siecle D'Illuminations Et De Publicite Lumineuse* (Paris: Syros-Alternatives, 1987), 20-22.
123 Georges Claude, "Method For Separating Neon From Gases With Which It Is Mixed". United States Patent 1,191,495. Application Filed On June 17, 1913. Patent Granted On July 18, 1916.

These patents reveal Claude's attempt to control all aspects of neon manufacture in the United States. He sought ownership of everything from neon's production methods to the conceptual underpinnings that made it a functioning technology. From 1924 to 1933, Claude established a monopoly on neon signage in the United States. He successfully litigated many companies that infringed upon his patents – a theme that will be given close attention in the following chapter. These legal battles enabled Claude to maintain an ironfisted reign over his empire for almost a decade, successfully controlling the American neon market from across the Atlantic.

THE BEGINNINGS OF THE CLAUDE NEON EMPIRE

Many influential cultural figures such as Jack Kerouac have described neon as a quintessentially American phenomenon. Ironically the first examples of this technology's commercial use occurred in Europe. Claude contracted with the electrical appliance and lighting company Paz et Silva to manufacture and install neon signage throughout Paris just before the outbreak of World War I. He simply supplied this firm with the rare gasses and technological wherewithal needed for the manufacture of neon under a franchise agreement.[124] Claude would follow a similar course when he set up his neon operations in the United States. Here he contracted with the sign-making giant Federal Electric Sign System of Chicago to manufacture and oversee the installation of all neon signs made

[124] Ulmer and Plaichinger, Ibid.

under his patents.[125] This process of generating intellectual capital and then reaping the financial benefit of contractual profits proved to be a common theme in most of Claude's technological innovations. He served as the inventor and took little role in the day to day manufacturing of those technologies he licensed.

Claude developed a repertoire of inventions that extended far beyond neon lighting – inventions that had both positive and negative social implications. Claude pioneered renewable electrical energy. He began developing a power generation system that would use the temperature differentials of water layers in the ocean to generate electricity in the 1920s.[126] This project never came to fruition on a practical or commercial level; but it represented an early attempt to create a source of "green energy." The French government even financed his construction of several experimental ocean-generating plants in 1930 and 1948. In spite of his seemingly beneficent motives for this project, Claude oversaw its construction from a jail cell.[127] Georges Claude espoused fascist viewpoints and collaborated with the Nazis during their occupation of France. He aided theme technologically and propagandistically. Such work landed him a lifetime sentence in jail in 1944 – a sentence later lifted in 1950 by the French government for his contributions to alternative energy production.[128]

In spite of his unsavory personality traits, Claude proved to be a brilliant inventor with great commercial insight and sagacity. Claude recognized neon's potential as an

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[125] "Claude Neon Federal Signs – Company History." Accessed April 1, 2014.http://www.cnfsigns.com/pages/company_history_.html
[126] "Harnessed Water, *Time Magazine* (January 5, 1948): 41.
[127] Ibid.
[128] Leonard Engel, "Power from the Sea," *Science Digest* (April, 1950): 45-47.

advertising medium from day one. He felt that neon's capacity to bent into almost any shape imaginable of unbroken light made it a highly versatile medium for advertising. Moore and Claude's collaborative installation of neon tubing at the Grand Palais auto show on December 11th, 1910 proved to be the first public display of neon in an architectural setting **(FIGURE 11)**. Claude used neon to outline the structure's peristyle or columned porch.[129] Attendees at this show walked away in awe after encountering such a bold and synthetic-looking form of colored light.[130] Neon proved to be far more focused, crisp and intense than colored bulbs in incandescent signs of the 1910s. Incandescent signage could not form unbroken patterns of light unless used as a source of backlighting for letters or images made of materials such as milk glass, synthetic crystal or stained glass.[131]

Bruno Ulmer and Thomas Plaichinger capture the essence of Claude's early exposed tube neon signs in their 1987 text *Les Escritures De La Nuit: Un Siecle D'Illuminations Et De Publicite Lumineuse.* This book offers photographic documentation of Paris' first neon signs that used only red and blue tubes – the first available colors sold by Claude.[132] Unlike the large marquees and spectacular signs found in the U.S., the earliest iterations of European neon signs tended to be smaller window, façade, or balcony installations **(FIGURE 12)**. Small cafes, liquor companies, automobile makers and independent merchants emerged as some of the Claude Neon

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[129] Ulmer and Plaichinger, 21-22.
[130] "The History Of Neon Lights" CBS News Online. Accessed December 18, 2013. http://www.youtube.com/watch?v=4XfEEAieO6k
[131] "Signs Of Main Street" Museum Display, The American Sign Museum, Cincinnati, Ohio.
[132] Ulmer and Plaichinger, 24.

S.A.'s earliest clients. Large-scale neon signs on the scale of an American spectacular did exist in Europe prior to 1920; but smaller signs of less than ten feet in length predominated. Their scale worked in accord with the more pedestrian orientation of the Parisian street system – something more typical of Europe than America. Parisian neon advertisers also displayed a keen sensitivity to preserving historical facades rather than embellishing them with huge and overwrought neon signs.[133]

The Parisian beauty boutique "Caracaglios, Mode et Beaute" purchased one of Claude's earliest neon signs in 1912 **(FIGURE 13)**. A simple design in red cursive neon script spelling out the word "Caracaglios" stood in a prominent central position above the main entrance to the building. Two smaller blocks of capital letters reading "MODES" and "BEAUTE" attached to window frames on the right and left of the main script.[134] This sign, like many of Claude's other World War I era installations including the 1913 Editions Pierre Lafitte Music Store sign, simply involved the attachment of bare neon tubing to the existing architectural frameworks. Unlike the large porcelain enameled sign bodies common in U.S. neon a decade or two later, these early French neon signs emphasized the use of unadulterated neon tubing against a façade. Light alone, rather than a fanciful sign body or background, became the enduring visual element in these signs. Although their brash colors created a distinct sense of contrast with their

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[133] This represented a great contrast to American signage and highway systems. Highways that passed through American cities would, by the 1920s, cater to automotive rather than pedestrian travel; accordingly they would require neon signs large and bright enough to be seen from a distance when traveling at speed. William R. Ewald and Daniel R. Mandelker, *Street Graphics: A Concept And A System* (Washington, D.C.: The American Society of Landscape Architects Foundation, 1971), 9-10.

[134] Bruno Ulmer and Thomas Plaichinger, Ibid., 23.

surrounding architectural framework at nighttime, these early Claude signs proved far less obtrusive during the daytime than their later American counterparts.

French sign-makers of the 1910s emphasized a subtle approach to the use of neon that would not drown out architectural details. They also used neon tubing to illuminate surfaces and forms that highlighted rather than obscured the classical, gothic and baroque elements found in much French architecture. One image from about 1913 even shows the subtle use of red neon tubes within the alcoves of the St. Quen church in Rouen, highlighting its gothic elements with a strong sense of theatricality **(FIGURE 14)**.[135] American neon signs of the 1920s and 1930s involved the creation of altogether new forms that emphasized modernity and novelty rather than the enhancement of antiquated architectural forms.

American business owners of the 1910s may have rejected neon on account of its less than dramatic use in Paris. Incandescent signs of the same period used in the United States emphasized a far more overt approach to visual communication than these relatively subdued French installations. Large porcelain block letters filled with flashing multicolored lights placed on vertical arrangements jutted out far from the facades of buildings in American cities. The brash flashing and movement of these signs focused the attention of consumers not simply on the phrase or image advertised, but on the whole optical panoply of movement, color, and light that these signs embodied. The large scale of these American signs, which often stood perched along the rooftops or upper floors of buildings, would have dwarfed many of these small-scale French installations in scale

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[135] www.diomedia.com

and cost. These American signs also relied upon light bulbs that cost a few dollars to replace unlike the expensive tubing found in Claude's early neon signs.

CONCLUSION

Georges Claude possessed the foresight to interpret neon's value as an illuminating medium that had specific rather than general applications. Instead of trying to adapt his technology to the uses of interior illumination, Georges Claude chose to blaze his own new path in the realm of electrical advertising. As Claude's technology gradually made its way into the American market, it became a symbol and celebration of capitalism. It would soon evoke a futuristic and synthetic set of meanings. But appearances are deceiving, especially in the case of neon. As this chapter has argued, neon has and always will demand a sense of handcraft and bespoke production that is seemingly at odds with its visual appearance. The next chapter will detail the early evolution of neon signage in 1920s America, closely considering the legal forces that shaped its diffusion.

FIGURE 1: Turk's Inn Supper Club neon sign near Hayward, Wisconsin. Image from: http://www.yelp.com/biz_photos/turks-inn-the-hayward?select=juhst4lqaHS3o_Gu5DE_9g#juhst4lqaHS3o_Gu5DE_9g

FIGURE 2: Neon sign bender Todd Paden at work in New Orleans, Louisiana, 2011. Note the presence of the pattern template below the tube. Image from: http://www.yelp.com/biz_photos/turks-inn-the-hayward?select=juhst4lqaHS3o_Gu5DE_9g#juhst4lqaHS3o_Gu5DE_9g

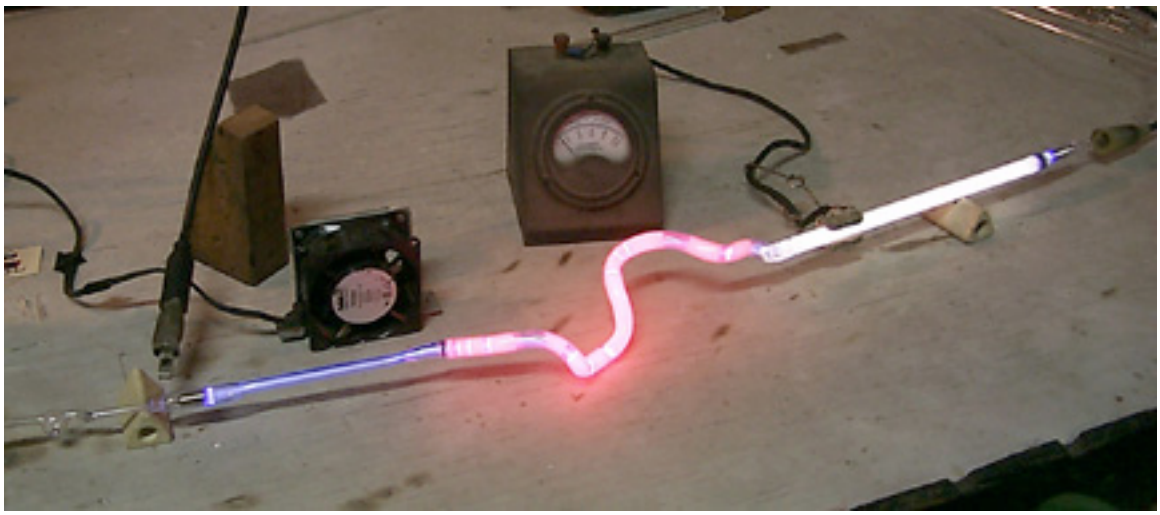


FIGURE 3: Image showing the process of bombardment and the filling of a neon tube with its precious gases. Image from;: http://venusiangardens.com/Pagemill_Resources/studio_photos/bombarding_.jpg

FIGURE 4: Handmade neon point of sale display signs masquerading as a mass produced object in a circa 1933 catalog of the Specialty Neon Lights Company from Minneapolis, Minnesota. Courtesy of the American Sign Museum, Cincinnati, Ohio.

FIGURE 5: Metal backgrounds for exterior neon signs produced by the Specialty Neon Lights Company, circa 1933. Courtesy of the American Sign Museum, Cincinnati, Ohio.

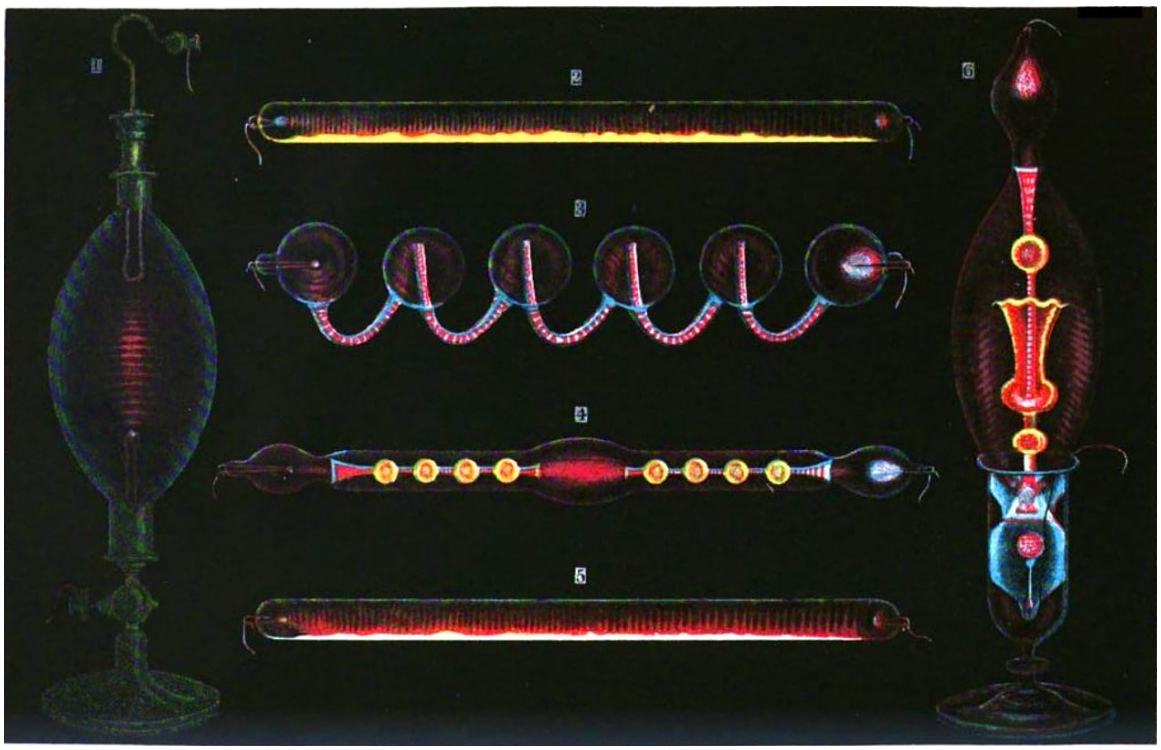


FIGURE 6: Geissler tubes illustrations from an 1869 French physics text. Image from: http://en.wikipedia.org/wiki/File:Geissler_tubes.jpg

FIGURE 7: Geissler tube rotator in operation. Image from: http://www.earlytech.com/shop/view_item/1248700044

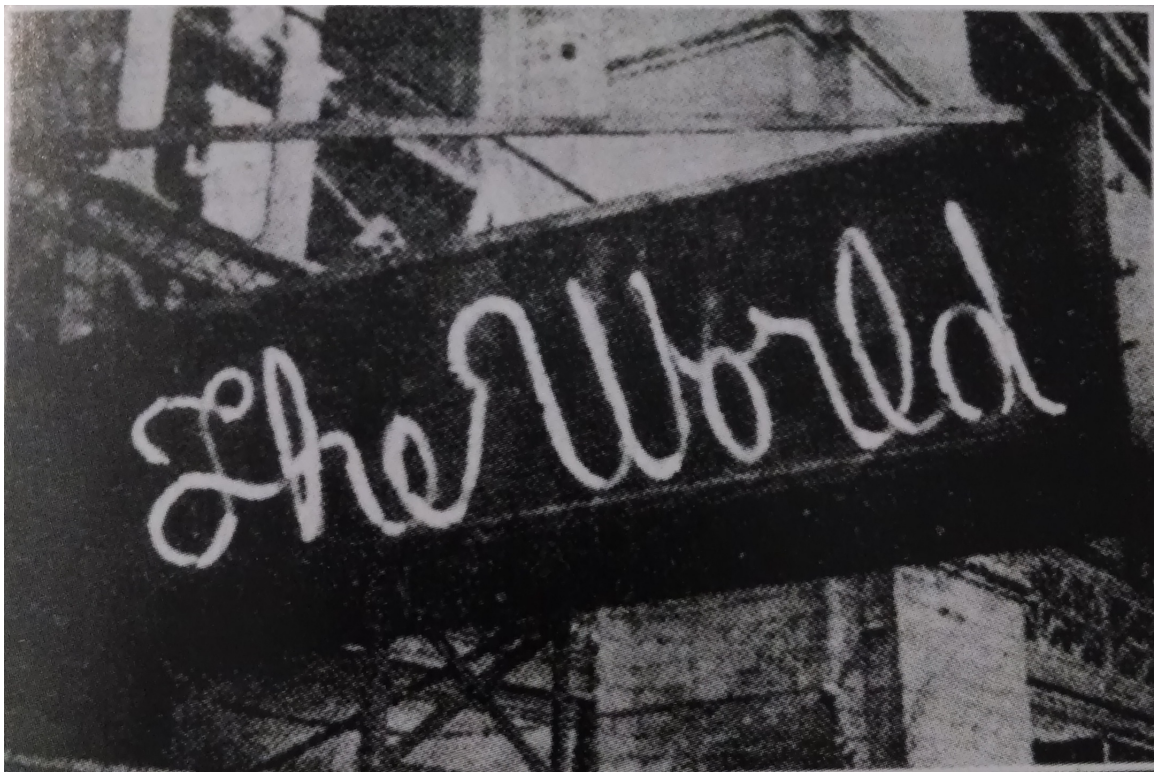
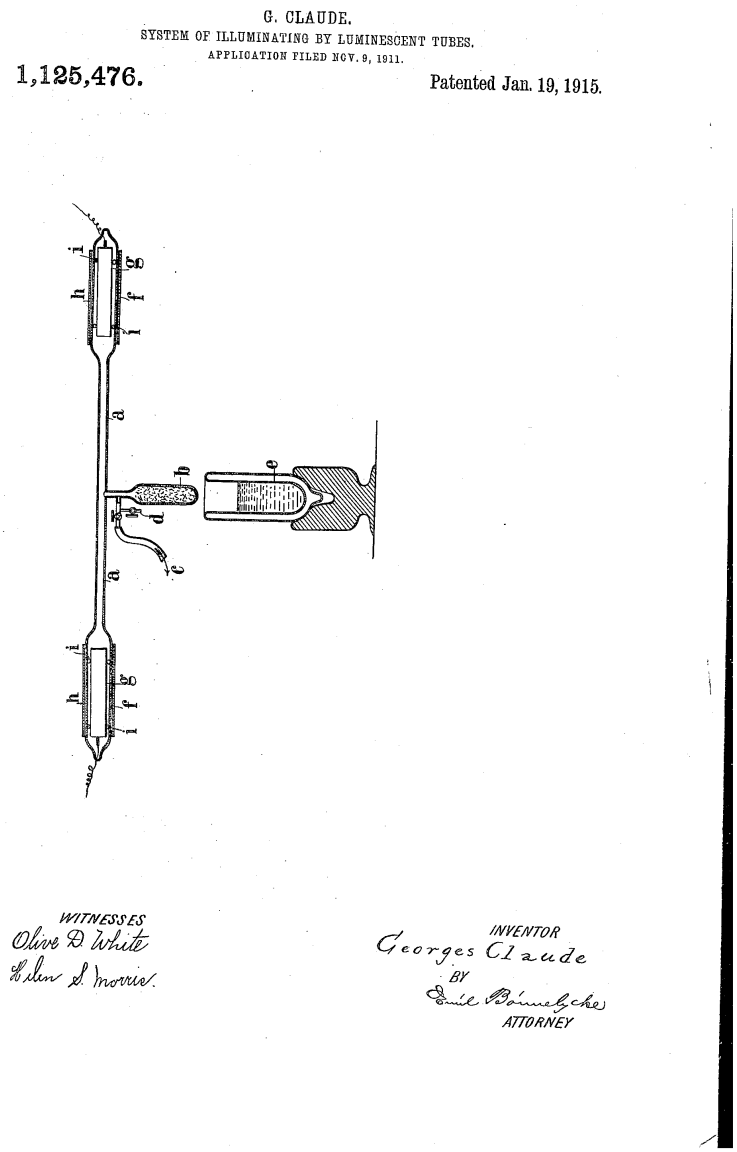


FIGURE 8: Moore nitrogen tube sign advertising “The World” Newspaper in New York City, circa 1904. Image from: Thomas E. Rinaldi, *New York Neon* (New York: Norton, 2013), 20.



G. CLAUDE.
SYSTEM OF ILLUMINATING BY LUMINESCENT TUBES.
APPLICATION FILED NOV. 9, 1911.

1,125,476. Patented Jan. 19, 1915.

WITNESSES
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ATTORNEY

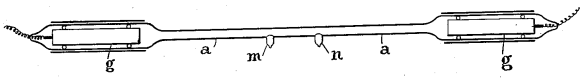
FIGURE 9: Claude patent drawing for patent #1,125,476 patented on January 19, 1915. Image courtesy of the United States Patent Office, Washington, D.C.

G. CLAUDE.

METHOD FOR SEPARATING NEON FROM GASES WITH WHICH IT IS MIXED.

APPLICATION FILED JUNE 17, 1913.

1,191,495. Patented July 18, 1916.



WITNESSES

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FIGURE 10: Claude patent drawing for patent #1,191,495 patented on July 18, 1916. Image courtesy of the United States Patent Office, Washington, D.C.

FIGURE 11: Grand Palais neon installation by Georges Claude, Paris, France, 1910. Image From: Bruno Ulmer and Thomas Plaichinger. *Les Ecritures De La Nuit: Un Siecle D'Illuminations Et De Publicite Lumineuse* (Paris: Syros-Alternatives, 1987), 23.

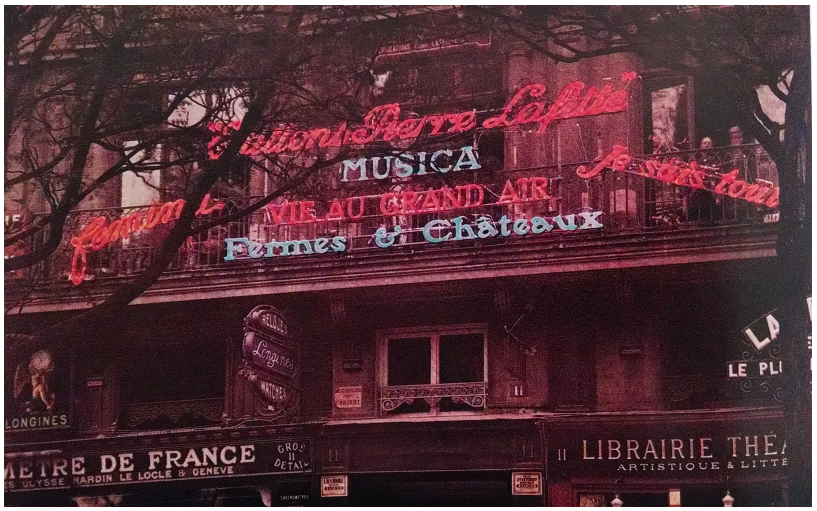

FIGURE 12: 1913 Pierre Lafitte Music Store neon installation by Claude franchisee Paz & Silva, Paris, France. Note how this sign has been carefully integrated aesthetically into its surrounding architectural details. Image From: Bruno Ulmer and Thomas Plaichinger. *Les Ecritures De La Nuit: Un Siecle D'Illuminations Et De Publicite Lumineuse* (Paris: Syros-Alternatives, 1987), 24.

FIGURE 13: 1912 Caracaglios neon sign in Paris, France. Bruno Ulmer and Thomas Plaichinger. *Les Ecritures De La Nuit: Un Siecle D'Illuminations Et De Publicite Lumineuse* (Paris: Syros-Alternatives, 1987), 23.

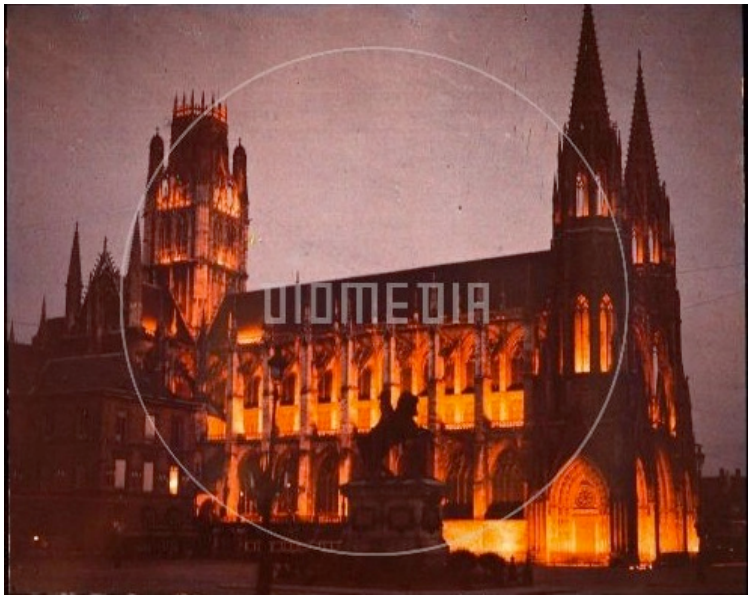

FIGURE 14: St-Quen Church with Claude neon tubes in Rouen, France, circa 1913. Image courtesy of Dydia DeLyser, Los Angeles, California.

CHAPTER 3
THE RISE OF THE CLAUDE NEON DYNASTY AND THE FIRST TWO DECADES OF AMERICAN NEON

This chapter suggests that legal forces shaped the diffusion of neon sign technology in important ways during the 1920s. Competition to control the dispersion of this knowledge in America stymied this medium's growth prior to the expiration of Claude's key patents. The knowledge necessary to successfully produce neon existed within an exclusionary bureaucratic framework: a franchise system that Claude Neon used to exert strenuous control over the American neon industry. This legal framework stimulated a sense of innovation among potential competitors that all vied to create new electrodes that elided the parameters of the Claude patents. Understanding this legal history provides key insights into the overlap between legality and technological innovation in American culture: forces that have dually impacted growth of many other technologies in this country such as the development of electrification. A careful discussion of the key legal matters related to the Claude Neon patents forms the first part of this chapter.

Only after the loss of Claude's far-reaching control of the industry would independent neon shops have a chance for economic success. The second portion of this chapter examines the growth of independent neon makers and the channels of knowledge that allowed for the spread of this handcraft. The expansion of these shops encouraged a diffusion of neon sign-making into previously untapped rural markets and helped to make neon an important element of rural roadways and business districts. This second portion of the chapter also considers the formal appearance, economic function, and

psychological implications of early American neon signage. It will briefly detail its developmental history prior to and during the early years of the Great Depression, suggesting that neon became an emblematic feature of this nation's visual culture because of its close ties to the commercialism of the roaring twenties.

NEON WARS: PATENT BATTLES AND THE CLAUDE MONOPOLY

Neon lighting developed slowly in 1920s America. Claude Neon's monopolization of this industry enabled them to control the prices and diffusion of this technology in the early and middle part of this decade. Their exclusive patent rights and steadfast determination to defend them deterred a number of potential competitors from venturing into this new business prior to the late 1920s. Claude artificially inflated the prices of neon signage while in control of their key patents. Neon's higher cost than comparable incandescent signage would be a major hindrance to the technology's initial acceptance. Yet the high costs of early neon lights proved to be a boon to Claude Neon – an enterprise that benefitted directly from the high costs of their products

The Claude syndicate controlled the American neon industry prior to the Great Depression, establishing an empire of franchised shops and reaping profits from licensing agreements. Claude Neon became synonymous with urban illumination following one of the earliest American neon installations in 1924.[136] This sign depicted a simple cursive

[136] "Luminous Gas Lights New Electric Sign," *Signs of The Times* (September, 1924): 47. This mention of the Loft neon sign in *Signs of The Times* represents the first article about neon in this publication. This gives strong credence to the possibility

script that spelled out the word "Loft" for one of the Loft Candy Company's New York City locations **(FIGURE 1)**. Much like Claude's prewar neon installations in Paris, this design emphasized the sign's luminescent attributes rather than extraneous ornament on its supporting backdrop. This simple red sign appeared to float in space. *Signs of The Times* noted that it displayed, "greater visibility and more far-reaching penetration than any other form of light."[137] This sign and the adjacent "Overland" neon rooftop sign by Claude represented the earliest use of nationally registered trademarks among American neon manufacturers.[138] The Overland sign, constructed for the Willys-Knight Overland

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that this sign may be the first neon sign erected by Claude New York City if not the whole United States. Contrary to popular belief, these were likely the first neon signs installed in the United States using the Claude patents. Books such as Rudi Stern's *Let There Be Neon*, Christopher Ribbat's *Flickering Light: A History of Neon*, and Thomas Rinaldi's *New York Neon*, have argued that the Earle C. Anthony Packard dealership of Los Angeles installed the nation's first neon sign in 1923. These books have also argued that neon made its first appearance on the west coast as opposed to the east coast of the United States. Cultural geographer Dydia DeLyser of Louisiana State University has recently debunked this myth along with her research partner Paul Greenberg. The Los Angeles Times recently published an article on their work entitled "Pair Sheds New Light On L.A.'s Claim To Neon Fame" on December 3, 2013. Through a painstaking analysis of aerial photographs showcasing the Anthony dealership, DeLyser and Greenberg could find no evidence of a neon sign at this site prior to 1926. Rather it seems that a lapse in historical memory occurred among former employees of the Anthony dealership who made this claim in the first place. Please see http://www.latimes.com/local/la-me-c1-los-angeles-neon-20131203-dto,0,367955.htmlstory#axzz2nx7AhOpd

[137] Ibid.

[138] Ibid., 51. There have also been additional claims as to the inventors of neon signs. Engineers John J. Madine and Russell Trimble supposedly erected a neon sign in 1909 in Newark, New Jersey advertising Ingersoll watches while working as employees of Daniel McFarlan Moore. No material or photographic evidence has surfaced to validate their claims, save that of a line drawing of their sign done almost twenty years after its supposed installation. Supposedly this sign used a nationally registered trademark fifteen years before the construction of the Overland and Loft signs. Please see Mel Morris, "History Of The Neon Luminous Tube Had Beginning With Electricity," *Signs Of The Times* (December, 1927): 37, 44-45. The issue of the first neon sign in America remains a contentious issue that has not been validated historically.

Automotive Company, emphasized a similar aesthetic to the Loft sign but on a much larger scale **(FIGURE 2)**.

These early and successful Claude installations attracted a great deal of attention within the sign-making community. Many sign-makers noted the potential for a high profit margin with this new technology: one that merely consisted of cheap glass tubing filled with what was once considered an industrial byproduct. By the late 1920s, Claude faced a host of competing neon manufacturers that operated without company franchises. The Claude Company fervently sought to curb the power of these maverick producers, charging them with patent infringements. Legal battles soon raged, in a clash to control the neon business in America.

The Claude companies consisted of nearly forty franchises by 1928. They vehemently defended their patents on both American and European soil, maintaining a monopoly on neon sign manufacturing until 1933. Electrical Products – Claude's first and largest West Coast franchise – proved adept at prosecuting patent infringements, forcing some small neon manufacturers into bankruptcy.[139] In 1928 alone, Electrical Products took six California companies – California Electric Signs, General Signs, National Neon Signs, Standard Glass Products, Tubalite Corporation, and Western Neon Signs – to the United States District Court of Southern California. Electrical Products won injunctions against each of these companies, preventing them from manufacturing

[139] "American Neon Proceedings," *Signs Of The Times* (August, 1930): 18.

neon tubing.[140] Electrical Products maintained a tight reign over their monopoly, which included divisions in eleven western states as well as the Philippines and Hawaii.[141]

Claude Franchises in the Midwest and East Coast pursued legal tactics similar to those used by Electrical Products, leaving many sign-makers unemployed in the wake of company closings.[142] *Signs Of The Times*, the preeminent sign-making journal, expressed great concern over these circumstances, often siding with independent neon manufacturers. Editors at the journal described this situation as endemic, fearing that many would face unemployment until a favorable patent verdict could be reached in the Supreme Court – a verdict amenable to neon manufacturers other than the Claude franchises.[143] This commentary foreshadowed a series of legal debates that reached the Supreme Court, undermining the authority of Claude patents long before their expiration in 1932 and 1933. The downfall of the Claude Empire followed a lengthy battle with the company's greatest nemesis – Rainbow Neon Lights.

Rainbow Neon Lights, a nationally franchised conglomerate based in New York City, posed a far greater threat to the Claude syndicate than any other neon producer. Rainbow possessed tremendous financial leverage and a 1925 cesium electrode patent that the United States patent office initially considered to be non-infringing in its

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140 "Neon Injunctions Brought By Electrical Products Corp.," *Signs Of The Times* (September, 1928): 14.
141 "Injunctions Issued Against Non-Existing Neon Sign Firm," *Signs Of The Times* (June, 1927): 27.
142 "Settlement Made," *Signs Of The Times* (March, 1930): 117.
143 "Injunctions Being Brought Against Neon Infringers," *Signs Of The Times* (October, 1928): 166.

design.[144] The Claude Company set out to invalidate this patent, seeking a permanent injunction against the manufacture of Rainbow neon signs and compensation for lost profits. After unsuccessfully halting the manufacture of Rainbow tubes in 1926, Claude's partner Electrical Products faced a countersuit by Rainbow for patent infringement. Rainbow unsuccessfully sued for $5,000,000 in damages in the New York Supreme Court, perpetuating a vicious cycle wherein each party responded to one another's charges by filing countersuits.[145]

The year 1927 proved to be a landmark in this battle, as Claude Neon faced their first major setback in the ongoing case. On October 24, 1927 the United States District Court Of Eastern New York ruled that the Rainbow cesium electrode did not violate patent 1,125,476 for non-volatizing electrodes. Claude's patent 1,191,495 for neon distillation also became invalid at Judge J.D. Campbell's discretion.[146] Campbell ruled in favor of Rainbow Neon on the grounds that their cesium unit offered an improvement over the large Claude electrode, without violating the critical surface area of 1.5 square decimeters outlined in the Claude patent.[147] He felt that the cesium added a new element to electrode design, constituting a previously undiscovered means of creating anodes and cathodes to illuminate neon.[148] The second patent, dealing with neon distillation, became invalid on the basis of past precedents. From the judge's perspective, this mode of

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144 "Rainbow," *Signs Of The Times* (November, 1927): 32.
145 Ibid.
146 Judge D. J. Campbell, *United States District Court Proceedings Of The Eastern District Of New York* (November, 1927): 1.
147 Ibid., 3.
148 Ibid., 4.

fractional air distillation had been in use prior to Claude's patent in the technologies of those such as Carl Von Linde.[149]

Independent neon manufacturers savored this small victory, rejoicing in the hopes that they would soon be able to manufacture neon tubing without a fear of patent infringement. *Signs Of The Times* magazine voiced this overwhelming sense of satisfaction in their November, 1927 editorial: "The skies of doubt are now cleared, and neon tube manufacturers may now know definitely where they stand. They can go forward with this popular branch of advertising with…vim. The rainbow hues of neon that have been gradually beautifying the principal metropolitan thoroughfares will now reach out as "the dominating light of the world" – a magnificent commercial rainbow."[150] Rainbow Neon Lights became a symbol of resistance to the Claude dynasty, an organization that represented the goals and aims of the independent neon maker.

Almost as soon as this editorial made its way to print, more litigation dashed the high hopes of those independent neon shops that supported Rainbow. Claude Neon made this clear in a biting commentary that appeared two months later in the January 1928 issue of *Signs Of The Times*. R.L. Kester, vice president of Claude Neon, responded to the verdict and editorial by commenting: "that all of these suits will be pressed to a conclusion, and, as the trade should know this is to correct any mistaken impressions created by and erroneous conclusions drawn from [the last] editorial."[151] Claude Neon

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[149] Ibid., 5-6.
[150] "Rainbow," Ibid.
[151] R.L. Kester, "Claude Neon Appeal Before United States Circuit Court," *Signs Of The Times* (January, 1928): 122.

emphasized this viewpoint in trade journal advertisements, claiming the sole right to manufacture neon tubes in the United States. Manufacturers that lacked Claude franchises also faced legal consequences if they used non-Claude components: the use of any non-Claude electrode constituted a patent infringement even if the end user did not personally make this unlicensed electrode.[152] These issues came to a head when New York's Second District Court Of Appeals overturned the 1927 Rainbow decision nine months later.

Circuit judges Manton, Swan, and A. N. Hand ruled that Rainbow Neon Lights infringed upon Claude electrode patent 1,125,476. This decision, reached in August 1928, deemed the Rainbow cesium electrode a derivative of the Claude patent. The cesium plate added additional surface area to the electrode, exceeding the 1.5 square decimeters or larger limit patented by Georges Claude; yet the judge felt that the Rainbow electrode simply represented a minor modification of Claude's existing design. It did not represent an altogether new improvement upon the Claude design as Rainbow had argued.[153] The United States Supreme Court upheld this circuit court decision in October 1928, refusing to review an appeal made by Rainbow to reverse the August decision. J. H. O'Neill, president of Claude Neon Lights exclaimed that his company now controlled all commercial applications of neon, without fear of competing manufacturers.[154] This

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152 "The Neon Decision" (Advertisement By Claude Neon), *Signs Of The Times* (August, 1928): 17.
153 "Neon Patent Decision Modified In Favor Of Claude Neon Lights," *Signs Of The Times* (August, 1928): 46.
154 "Decision in Neon Tube Sign Case Upheld By Supreme Court," *Signs Of The Times* (November, 1928): 14.

victory proved short lived. Rainbow quickly developed an electrode that avoided infringement and eventually acquired a controlling interest in the Claude franchises.[155]

Rainbow continued to suffer many crushing legal defeats from 1928 to 1929. Yet the corporation won a favorable ruling as to the validity of a new cesium "button" electrode in the District Court of Eastern New York. After Claude Neon alleged infringement of patent 1,125,476, Judge Campbell determined that this new cesium model did not impinge upon the Claude unit's patent; in his estimation, the cesium button did not equate to electrode surface area. In June 1929, Campbell dismissed the Claude Company's allegations on the same legal basis as the 1927 ruling in favor of Rainbow.[156] The next month Claude appealed this verdict, and was granted an injunction in the District Court of Southern New York,[157]

This period marked a significant turning point in the industry, for Claude no longer possessed a total monopoly on neon manufacturing. A glut of low cost neon products appeared on the marketplace, produced by small manufacturing concerns that did not always use patented electrodes. The growth of unlicensed neon manufacturers continued unabated into the late 1930s, diminishing the market share of the two largest neon companies from the prior decade: Rainbow and Claude. Despite ensuing reductions in the costs of the technology, many business owners seemed reluctant to adopt neon because it still cost far more than incandescent signage.[158] From a purely technological

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155 "Neon Interests Combine," *Signs Of The Times* (December, 1929): 14.
156 "Opinion Of Court Upheld," *Signs Of The Times* (December, 1929).
157 "Upper Court Denies Petition," *Signs Of The Times* (May, 1930): 119.
158 E. G. Neale, "Price Of Neons Is Greatest Obstacle For Salesmen In This Field To Overcome," *Signs Of The Times* (January, 1929): 64.

and material standpoint, neon signs exhibited a number of potential deficits when compared to incandescent signs. Their fragility, lack of interchangeable industrially made components (i.e. light bulbs), and lack of a large workforce of skilled service technicians emerged as key issues for businesses considering the adoption of neon signage in the 1920s and 1930s.

THE CLAUDE MARKETING MACHINE AND A FORMAL ANALYSIS OF CLAUDE'S *LET THERE BE LIGHT* PROMOTIONAL BOOKLET

The Claude Neon Company remained a powerful force in American sign making despite their loss of a monopoly on neon production and electrodes in 1929. The gross income of Claude neon rose from $5,000,000 in 1927 to over $18,000,000 in 1929.[159] Claude reinvested some of these profits in advertising campaigns that actively promoted their technology to large and small businesses alike. This helped to make Claude Neon a household name.[160] The Claude Company produced an array of elaborate catalogs that unabashedly proclaimed that they would always lead the American neon market in quality and market share. In reality, Claude faced a host of other challenges in marketing their product to American business owners that extended beyond the issue of patents and product infringements. Claude and other neon manufacturers had to convince their potential clients of the technology's benefits.

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[159] Claude Neon, *Let There Be Light* (Los Angeles: Jones, Hubbard, and Donnell, 1930): Unnumbered Page Entitled "The Practical Business Man."
[160] Rinaldi, 22.

Some business owners feared that neon's brash color would be little more than a passing fad in electrical signage, a mere novelty not worth the added expense over the cost of incandescent signage. They also expressed some skepticism as to the value of its glaring bright red appearance.[161] Journals such as *Electrical World* even suggested that neon's limited color range could be overcome by adding in a corrective mercury tube that would introduce some blue or violet into the light's spectrum. A 1913 article in this journal in noted: "Mr. Claude has made corrective tubes containing a little mercury. These tubes, when used in conjunction with the neon tubes, produce what seems to be a very satisfactory illumination as far as the color effect is concerned. Without color correction, the tubes may be used in decorative lighting or as advertising novelties."[162]

This article spoke to the bias against neon lighting in America that predominated within the illuminating engineering community and some segments of the sign-making world from the 1910s and 1920s. Many electrical journalists and engineers viewed neon as little more than a costly gimmick – a product that failed miserably when used for purposes of general illumination. Georges Claude possessed the foresight to interpret neon's value as an illuminating medium that had very specific rather than general applications. Instead of trying to adapt his technology to the uses of interior illumination as others encouraged, he chose to blaze his own new path in the realm of advertising. Claude's promotional materials clearly outline this argument in an attempt to convince a

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[161] Ibid., 20.
[162] "Neon Lamps," *Electrical World* (New York: Electrical World, 1913, Vol. 62. No. 13.): 616.

skeptical audience of this technology's value. The 1930 Claude catalog, *Let There Be Light*, speaks to this very theme **(FIGURE 3)**.

The cover of *Let There Be Light* places the invention of neon in the same historical continuum as the most important forms of illumination developed by humankind. A pictorial depiction of this continuum shows five small figures and their accompanying illumination systems; it represents a linear historical evolution of illumination with neon as its most recent and perhaps significant development. The first image shows a brutish caveman holding a torch within a cavernous environment, using light in its most rudimentary form. Next one finds the site of a medieval European knight standing next to a small oil lamp with a large cross on his shield and suit suggestive of the Crusaders. Third the catalog presents a line drawing of Ben Franklin's head in front of a burning candle, the candle shedding light on him while he looks to be deep in thought, generating an abundance of brilliant ideas. Abraham Lincoln appears in the next to last image, pensively staring into the distance; an oil lamp burns in front of him while he appears to contemplate the future of a divided America. The last small figure in the continuum shows Thomas Edison beaming with pride and confidence in front of his incandescent lamp, a device invented in 1879. Neon exists outside of this continuum, illuminating the whole background of this text's cover and assuming an even greater visual presence than any of the other lighting systems.

Darkened silhouettes of skyscrapers that evoke a large metropolitan area appear below these images of different lighting technologies. A radiant red aura suggestive of neon falls around the edges of these skyscraper forms. It illuminates the contours of this

darkened cityscape. Cursive script imitative of neon tubing spells out the word "Claude" amidst these abstracted, Art Deco inspired urban forms. Below the word Claude stands four even larger capital block letters that read "NEON" in bright red. Neon gas radiates out of this final word and moves skyward, blending into the linear sequence of illumination inventions showcased on the catalog frontispiece. The foreword to this book bluntly describes Claude's neon technology as one of the most important inventions in the whole history of illumination, touting its historical significance:

"The purpose of this booklet is to present a brief resume of the history of artificial lighting and particularly to stress the importance of its latest development which is concerned with the discovery of NEON gas and other rare gases and their modern use as a medium for practical and artistic illumination…In this connection the organization and remarkable progress of the "CLAUDE NEON ELECTRICAL PRODUCTS CORPORATION, LTD." forms a most important chapter".[163]

This catalog reassured potential clients of Claude's technological prowess and superiority to other manufacturers even though this company had already begun to loose market share at the time of its publication. "Let There Be Light" invoked the historical importance of Claude Neon visually and textually to persuade its potential clients of the company's prowess. It also discussed the vast reach of Claude's neon enterprise by 1930 – an organization that consisted of a series of partnerships between Claude's central European operations and large American sign-making firms such as Electrical Products of Los Angeles. By the time this catalog had been published, American advertisers had recognized neon's distinct commercial benefits and this advertising medium quickly gained a large following among urban advertisers. This would prove to be a continuing

[163] Claude Neon, Ibid., Unnumbered Page Entitled "Foreword."

challenge for the Claude Neon Company throughout the 1930s as a host of competitors sprung up across the country.

THE DISINTEGRATION OF THE CLAUDE MONOPOLY AND THE DIFFUSION OF NEON MANUFACTURING SKILLS AND TECHNIQUES

Barriers to the once closely guarded production methods of neon signs began to dissolve in the early 1930s on account of Claude's expired patents and losses in the courtroom. The heavy costs of litigation and the growing competition of companies that patented non-infringing methods of neon production caused Claude to loose a significant amount of market share between 1928 and 1936. In 1928 Claude controlled 80% of the American neon market; by 1936, Claude only possessed 35% of this same market. Claude even experienced seven annual losses out of these eight years despite the exponential growth of the neon market as a whole – an industry that amounted to over $30,000,000 in sales by 1936 and grew 35% annually.[164] The collapse of Claude's monopoly proved advantageous for many smaller sign manufacturers that initially lacked the financial wherewithal to purchase one of the forty Claude franchises that existed by 1936.

A glut of manufacturers appeared on the market soon after the Claude patents expired. Sign-making journals such as *Signs of the Times*, electrical engineers such as Samuel C. Miller of the Tube Light Engineering Company, and sign designers like Sam Kamin of Neon Products jumped at the opportunity to produce instructional literature on

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[164] "Bright Lights: Neon Company's Earnings Rise, Signs Illumine Recovery in Nation," *Literary Digest* (December 26, 1936): 37-38.

neon's production and design. As mentioned in the prior chapter, Samuel C. Miller and Donald G. Fink's 1935 text *Neon Signs: Manufacture—Installation—Maintenance* made its way into the marketplace as one of the earliest how-to guides for the production of neon signage. This book served as a veritable compendium of all the technical processes, equipment, materials, and electrical knowledge necessary to set up and operate a neon shop.[165]

Schools such as the Egani Institute of New York City and apprenticeships at neon sign shops throughout the country provided firsthand experience in the art and craft of bending glass.[166] Learning this trade proved to be tedious and time consuming – the antithesis of unskilled assembly line work. The simple act of bending a perfectly round neon circle or correctly executing a double bend demanded patience and persistence.[167] Mechanical labor could not easily supplant the skilled hands of a competent neon tube bender. Neon's growth as a handcraft during the Great Depression appears most unusual when one considers the increasing sense of mechanization and cost cutting measures across all facets of American industry during this period. Neon's strong emphasis on bespoke custom-made work went against the grain of industrial processes intended to make factories modern, efficient, and standardized. In this regard its manufacture remained and still remains an anachronism.

Signs Of The Times began running a six part series of articles on the basics of tube bending that would introduce sign-makers to this once forbidden craft. These articles first

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[165] Miller and Fink, Ibid.
[166] Stern, 30.
[167] Informal Conversations with Doug Solyan, Owner Of Uptown Neon Signs, Richmond, VA. 2003-2013.

appeared in 1934, several years after the techniques and production methods of the Claude Neon franchise had become common knowledge. This how to guide could never capture the tactile experience of bending glass nor the heat, sweat and absolute precision of this activity. Yet it helped to demystify the process of neon production that the Claude Company had so carefully guarded. George J. Madill, president of the Chicago Vacuum Equipment Company, a manufacturer of neon production equipment, wrote these rudimentary articles to illustrate the sequence of making a working neon sign.[168] He covered such topics as how to seal two tubes together, the process of bending glass into a pattern, the introduction of rare gasses into tubing, and the electrical bombardment that purified the interior of neon tubing prior to its use. Not only did these articles help to promote the products that Madill's company manufactured, they portrayed neon as a craft that anybody could learn with dedication. In his words:

"Of course, the beginner's first efforts at bending letters will bring rather crude results, but by practicing constantly on the bends which seem to be the most difficult, the beginner will soon be making perfect letters…There is a certain knack in handling glass that comes only through practice…Even the experienced glass blower who stays away from glass blowing for any length of time finds that it takes several days to break in again."[169]

Despite the optimistic tone of Madill's writings on the vocation of making neon, he did not deny the high levels of technical proficiency that this craft demanded. The repetitive and arduous practice of bending glass on a daily basis instilled neon sign benders with a sensory knowledge of this handcraft that could not supplanted with book

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[168] George J. Madill, "Glass Tube Bending --- I: First Steps in Shaping tubing for Signs," *Signs Of The Times* (August, 1934): 34-37.
[169] George J. Madill, "Glass Tube Bending --- II," *Signs Of The Times* (September, 1934): 42-43.

learning alone. Developing a nuanced "touch" or feel for this process could become almost second nature but only after a long process of hands on work experience. Neon tube benders represented a highly specialized work force – one that would grow rapidly in the 1930s as more and more independent sign shops sprang up across the country as Claude Neon's dominance began to flag.

The emergence of more and more independent neon shops led to more competitive pricing structures among manufacturers – a stark contrast to the 1920s when one major corporation controlled this medium's pricing. The reduction in the cost of neon signs in the mid-1930s made the purchase and installation of these signs a more economically feasible decision for business owners. Governmental tax breaks and stimulus programs under the New Deal also influenced many business owners' decision to adopt neon, particularly the National Recovery Act's storefront modernization programs. Growing highway networks and rural electrification programs brought neon from the nation's city centers to more sparsely populated locales. This convergence of factors helped to make neon sign making a mainstream endeavor that grew more during the 1930s than any other decade.

Neon gradually made its way to rural America during the depression, buoyed by a growing access to less expensive power and an increase in automotive traffic outside of major urban hubs. Neon sign shops appeared in the most out of the way locations during the Great Depression – everywhere from rural southeastern Missouri to sparsely populated environs in Northwestern Wisconsin. As E.S. Spaulding of the E.S. Spaulding Advertising Sign Company in Caruthersville, Missouri remarked: "Neon is an extremely

fertile business…the neon plant in the small town will continue to be well off, due to the fact that overhead and prices can be kept low."[170] Spaulding recognized an opportunity for expansion into a relatively untapped market: neon advertising in small town America. Not only did the low overhead for the production costs of neon in rural areas encourage this industry's growth beyond cities, so too did the ever-expanding advertising campaigns of national and regional businesses. Nationally pervasive brands such as General Motors, Rexall Drugs, and A&P Groceries expanded into rural markets during the 1920s and 1930s. Many of these companies turned to small town neon shops for their larger neon sign installations when they did not use serially produced point of sale displays from vendors such as the Lackner Company of Cincinnati, Ohio or Flexlume Corporation of Buffalo, New York.

The fragility of neon and the expense of transporting larger signs to remote locations provided small town sign shops with the opportunity to create and install custom signs for corporate franchisees. Their lower overhead also enabled them to appeal to the relatively small advertising budgets of regional and local brands that lacked the financial largesse of their nationally known competitors. Small town neon shops often faced less competition than those operating in urban areas due to sparser population densities that resulted in less sign shops in these communities. This enabled them to gain the lion's share of business in whole regions rather than just a single city like many independent sign shops in urban America.

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[170] E.S. Spaulding "Neon in the Small Town," *Signs Of The Times* (April, 1933): 48.

The McGinnis Sign Company of Rice Lake, Wisconsin pioneered the introduction of neon into Northwestern Wisconsin during the Great Depression.[171] The growing popularity of storefront modernization and the growth of national advertising campaigns greatly benefitted their business. Brothers Bill and Pat McGinnis transformed their sign shop from a small operation that made hand lettered signs in 1913 to one that produced the largest neon signs in all of Northern Wisconsin by 1939.[172] McGinnis secured contracts with the Ford Motor Company and Gustafson's Ice Cream of Rice Lake, Wisconsin to produce large-scale installations for each company. At only 27 and 24 feet in length respectively, these neon signs lacked the scale of many urban spectaculars and roof top neon advertisements. But they still created a strong visual presence within the rural landscape.[173] Without the competing light of other large neon signs and less public illumination than typical of urban environments, these McGinnis installations made a startling and otherworldly impression for passerby that contrasted sharply with their rural surroundings.

EARLY AMERICAN NEON SIGNS: VISUAL, CULTURAL, AND PSYCHOLOGICAL MEANINGS

American businessmen of the 1920s and 1930s erected neon signage alongside existing incandescent advertisements. The older, and often monochromatic, incandescent

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171 Ralph P. Young, "A Newspaperman Appraises a Sign Firm in His Town…Small Town Boys who Made Good…in a Small Town," *Signs Of The Times* (July, 1939): 33-34.
172 Ralph P. Young, Ibid.
173 Ibid.

signs of the 1910s remained an indelible element in the urban landscape despite their lack of visual acuity in comparison to neon. The editors of *Signs Of The Times* commented on the positive visual characteristics of neon in 1924 in their discussion of the Overland and Loft signs: "Neon…glows with a deep, powerful orange-red color...The illumination is continuous throughout the length of the tube."[174] Neon offered its users a sharper and more focused source of illumination than incandescent bulbs, despite complaints that it appeared too red.

Observers noted that the blurred effect of incandescent signage, when viewed from a distance, disappeared with the use of neon tubing.[175] Neon tubes provided a contiguous and crisp pattern of light that proved difficult to replicate with bare light bulbs. This high visual resolution became an essential feature in neon advertising, one necessary for clear communication between advertisers and pedestrians. Industry leaders, including sign making tycoon James H. Betts, also argued that color would always be an essential feature of successful nighttime displays. Neon fulfilled this parameter with blue, green, and red hues in the 1920s, differentiating such signs from more monochromatic backdrops.

Neon tubes rarely faded after prolonged exterior use, a common problem with colored lamps and gels of the 1910s. Neon did not emerge as the first colored light source in the illuminated nightscape; but it greatly increased the variety and permanence of colored signage. It lasted for decades rather than months or years like conventional

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[174] "Luminous Gas Lights New Electric Sign," *Signs Of The Times* (October, 1924): 47, 51.

[175] J.H. Betts, "Use Of Color On Electric Signs," *Signs Of The Times* (December, 1918): 18.

incandescent light bulbs.[176] Few urban advertisers could afford to overlook such benefits, even if at first they considered neon an unnecessary expense. Neon possessed great benefits obvious to those in the sign-making trade. Neon allowed for a greater flexibility of forms and color than earlier types of incandescent electrical advertising. Different tubing could be replaced if a new owner took over an existing business, allowing them to save the sign body and transformers while adding different phrases or images that would be custom made.

The mass adoption of neon lighting coincided with the development of major highway systems in the United States. Rapid expansion in automobile use and ownership in the 1910s and 1920s contributed to the growth of these new transportation networks. Registered automobiles in the U.S. increased from 8,000 in 1900 to 458,000 in 1910, to 8 million in 1920, and to 23 million in 1930.[177] To attract the attention of this new demographic of consumers, sign makers worked with roadside businesses to construct neon signs. The emphasis on colored light served as a key factor in attracting attention at night. During daytime use, however, neon signs did not live up to their full potential because they could not generate the sense of contrast that they engendered after dark.

Neon's use reigned supreme along highways and within the nation's urban centers. Here advertisers continually fought for consumer attention at both eye level and high above the streets. Neon's tendency to stand out amidst competing visual elements endeared this technology to advertisers.[178] Viewers often saw neon as a dominant focal

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[176] Claude Neon, Ibid.
[177] John A. Jakle, *The Tourist: Travel In Twentieth-Century North America,* 121.
[178] Jakle and Sculle, *Signs in America's Auto Age*, 13-17, 23.

point after dark. The John H. Woodbury Beauty Salon, on New York's Broadway, possessed this sought-after aesthetic capacity. According to one sign making trade journal description: "The front of the salon has been made a veritable blaze of glory by the installation of luminous tubing in the second floor window space. No corner in the Times Square area, it is said, presents such a striking appearance. A halo of neon light hangs over everything in the vicinity."[179]

Makers of neon advertisements such as this beauty salon sign reported that their installations increased sales by 150-200 percent.[180] Exaggerated claims like this are not hard to fathom, as neon manufacturers sought to market their product in the face of tremendous competition – financial competition from manufacturers of incandescent signs and visual competition from increasingly brighter public illumination along Great White Ways. In response to these circumstances, sign makers of the 1920s and 1930s built increasingly large neon signs. Times Square in New York City epitomized this trend; here gargantuan neon spectaculars boldly dominated all other sources of light on the horizon much like the incandescent ones constructed by OJ Gude decades earlier**.**

One apartment on Fifty-Eighth Street offered a prime vantage point for viewing this spectacle in the 1920s and 1930s. The apartment "offered a view of Broadway with the brilliantly illuminated Paramount Theatre looking like a palace in the distance. Flashing electric signs of a furniture store and mortgage firm prevented the dreamer from

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[179] "Salon Sign Is Blaze of Glory," *Signs Of The Times* (December, 1929): 66.
[180] "Luminous Tubes Help Outdoor [Advertising]," *Signs Of The Times* (August, 1929).

wandering entirely away from the city of reality."[181] This phantasmagoria of neon was emblematic of commerce, a vivid display of competition for consumer attention. Neon equated financial success within the minds of many business owners that eagerly adopted this new technology during the Roaring Twenties and the Great Depression. For them, it served as a means of embedding their slogan or imagery in the massive circulation of after hours advertising. It embodied the spirit of unfettered commerce that drove America's rapid and unsustainable expansion in the 1920s, a culture that pandered to extravagant levels of consumption and instant gratification.[182]

Despite neon signage's popularity among business owners during the 1920s, many lacked the financial wherewithal to purchase one. Enterprising inventors responded to this growing interest in neon by marketing low cost imitations of neon signage. Such devices employed sheets of sandblasted glass that would be etched with colored script and imagery. Manufacturers then placed incandescent light bulbs behind the glass to create a glowing effect of contiguous light patterns that stood out from painted or sandblasted areas; this created an illusion of negative space akin to illuminated tubing standing out against a darkened backdrop. By 1930, business owners could choose from over ten different types of pseudo neon signs in the *Signs Of The Times*, including the Fryer "Neon Effect" sign, the "Ray-O-Gram Glow" sign, and the "Crystalux Double Tubelite Effect" sign.[183] Manufacturers of these units touted their products as genuine reproductions of neon at a fraction of the price. The Liberty Tube Lights Company,

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[181] "Flashes," Ibid.
[182] Brevda, 48-51.
[183] *Signs Of The Times* (May, 1930): 55, 109, 116.

manufacturers of the "Solitoob" neon imitation, proclaimed their 1930 sign "…the Greatest Development in years…POSITIVELY AN IMPROVEMENT OVER NEON…Yet It Is Not Neon…"[184]

The marketing of these fake neon signs borrowed heavily from the advertising rhetoric of real neon manufacturers. Like manufacturers of real neon signs, these imitators claimed that their signs could be seen legibly from great distances and also create a point of visual focus in the nightscape. Many business owners viewed such claims with skepticism, deeming pseudo neon signs inferior to the "Real McCoy." These potential consumers of pseudo neon probably recognized that devices such as the "Solitoob" lacked neon's myriad colors, visual precision, versatile forms and pronounced contrast with darkness. Neon's popularity superseded these cheap imitations and they quickly fell out of favor. More business owners chose to use real neon signs by the mid-1930s for the simple fact that they offered greater color, luminosity, and formal diversity than any other medium of the time.[185] But even if a business owner wanted to erect a neon sign, he or she would face a host of critics, especially if operating a roadside business.

Elites such as Mrs. John D. Rockefeller crusaded against neon signage and billboards on American highways. Often, these critics of highway signage argued that neon signage clashed with the pastoral scenery of the natural landscape. They most often derided neon as a brash element of American commerce that cheapened its surrounding

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[184] "Solitoob" (Advertisement), *Signs Of The Times* (April, 1930): 11.
[185] "Public Demonstration Marks Installation Of Tube Sign On Chicago's Union Station," *Signs Of The Times,* (January, 1927): 37.

visual environment. Rockefeller and other critics of neon such as those involved with the Federated Society of Planning and Parks collaborated with urban planners and architects to constrain this technology's use to intercity spaces. Rockefeller and her colleagues argued that "unsightly [signs], and hot dog stands [should be] replaced by shrubbery and more artistic buildings."[186] Ironically Mrs. Rockefeller's obsessive preoccupation with ridding the landscape of unsightly images of commerce and industry seemed to be at great odds with her family's source of financial wealth. This wealth undoubtedly came in part from "unsightly" gas stations that advertised their wares and services along the American highway system using the same sorts of signs that she derided. For her and other members of the highway beautification movement, neon appeared to detract from nature due to its then ultra-modern appearance and unapologetically brash appearance.

Others criticized neon less as a matter of taste and more out of practical concern. Some motorists feared that highway signage could distract them from safely operating their vehicles. Critics such as Californian Harry G. Ridgway, of the Redwood Highway Beautification Committee, argued that neon signs not only proved to be an eyesore, they "blocked the vision of motorists."[187] Ridgway claimed that brightly illuminated signage could lead to automobile collisions because of its distracting visual qualities. The work of individuals such as Ridgway may have curtailed the spread of neon in some rural areas, though to what extent remains unknown.[188] Regardless of the criticism levied against this new technology, it quickly took hold in the American landscape right before the

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[186]"Highway Beautification," *Signs Of The Times* (April, 1930): 91.
[187] "Highway Signs," *Signs Of The Times* (February, 1930): 79.
[188] "Roadside Signs," *Signs Of The Times* (May, 1930): 98.

Depression. Its growth proved to be explosive in the ensuing decade before World War II.

ADVERTISING PSYCHOLOGY AND NEON LIGHTING

Part of neon's growing popularity during this period can be attributed to the growing field of commercial psychology – a discipline that had become an established academic subfield by the 1920s. Dr. E. E. Free, a psychologist studying this medium, described the "eye as a portal to the brain, a door that could be unlocked by prominent lighted displays."[189] Apparently, many advertisers took this to heart in the 1930s, striving to build the biggest and brightest signs possible, much like their predecessors in the 1890s. To them, light and color represented quantifiable elements that could purposefully manipulated to create an intended subconscious message or effect. The 1928 handbook *Outdoor Advertising—The Modern Marketing Force,* published by the Outdoor Advertising Association discussed such issues in a full chapter entitled the "Psychology Of Outdoor Advertising." This chapter emphasized the power of suggestion in advertising, something that operated below the threshold of one's conscious awareness: "Suggestion is…an appeal to the reasoning faculty, but much less so than to the senses, the imagination, or the emotions…It is sometimes said that the effect of Suggestion is

[189] E.E. Free, "Psychology In Electrical Advertising," *Signs Of The Times* (November, 1931): 25-26, 91-93.

first subconscious, rising therefrom into the full consciousness."[190] The task of neon advertisers, then, would be to plant the seeds of suggestion in their displays – subtle and repetitive allusions to a given product or service that would instill a subconscious need and desire for it.

There remains little in the way of quantifiable evidence to evaluate the direct impact of advertising psychology on neon sign-makers and advertisers. Yet this chapter provides evidence of a growing sense of interest within the sign-making community in academic studies of commercial psychology. At the very least, there existed a growing awareness of this discipline among sign makers. This chapter on the "Psychology Of Outdoor Advertising" states: "The subject [of advertising psychology] is a large one and a study of existing texts on this branch of psychology will repay any advertising man."[191] An asterisk at the end of the sentence refered to a table listing works by prominent advertising psychologists such as Walter Dill Scott of Northwestern University and Boris Sidis of Harvard University. Walter Dill Scott's widely known book *Psychology Of Advertising In Theory And Practice* (1908) argued that most human actions occurred without conscious volition.[192] Advertisers apparently had the opportunity to influence human desire vis-à-vis color, striking imagery, and novelty – elements that characterized neon signage's visual effects.

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[190] *Outdoor Advertising – The Modern Marketing Force: A Manual for Business Men and Others Interested in the Fundamentals of Outdoor Advertising* (Washington, D.C.: Outdoor Advertising Association of America, 1928): 37.
[191] Ibid., 40.
[192] Walter Dill Scott, *Psychology Of Advertising In Theory And Practice: A Simple Exposition Of The Principles Of Psychology In Their Relation To Successful Advertising* (Boston: Small, Maynard, And Company, 1921): 187.

In a somewhat related vein, the study of color proved to be another influential element within the sign-making and illuminating industries. Matthew Luckiesh – a General Electric physicist and engineer – studied the impact of color and light on human cognition beginning in the 1910s. His books *Color and Its Applications* (1915), *The Lighting Art* (1917), and *The Science of Seeing* (1937) suggest that different colors of light have the capacity to impact ones' mood and cognitive state even without conscious recognition. Light could also have deeply symbolic meanings for its viewers according to Luckiesh. This concern with color, light, and visual perception would be a driving force in the American neon industry as evolved and matured during the Great Depression – a theme that the next chapter will examine

CONCLUSION

In spite of Claude Neon's failed attempts to monopolize the neon industry, their work helped to make neon a commercially viable endeavor in the United States. The diffusion of knowledge and handcraft related to the production of neon would evolve based on a technological and aesthetic template pioneered by this French enterprise. Neon would reach its peak of popularity during the 1930s while the country trudged through one of its lowest economic nadirs. In the greater New York City region, the installation of neon signs grew more than twenty percent between 1933 and 1934 despite the bleak realities faced by many other industries.[193] Neon became a hallmark of

[193] Miller and Fink, 1.

streamlined design, the art deco movement, and industrial design – themes that Chapter 4 will explore in depth. Independent neon shops would help to cultivate a sense of diversity and visual innovation throughout the country, imbuing a despondent cultural environment with bright color and light.

FIGURE 1: Loft Candy Company neon sign installation by Claude Neon, NYC, 1924. Image from: "Luminous Gas Lights New Electric Sign," *Signs of The Times* (September, 1924): 47.

FIGURE 2: Overland neon sign by Claude Neon, NYC, 1924. Image from: "Luminous Gas Lights New Electric Sign," *Signs of The Times* (September, 1924): 47.

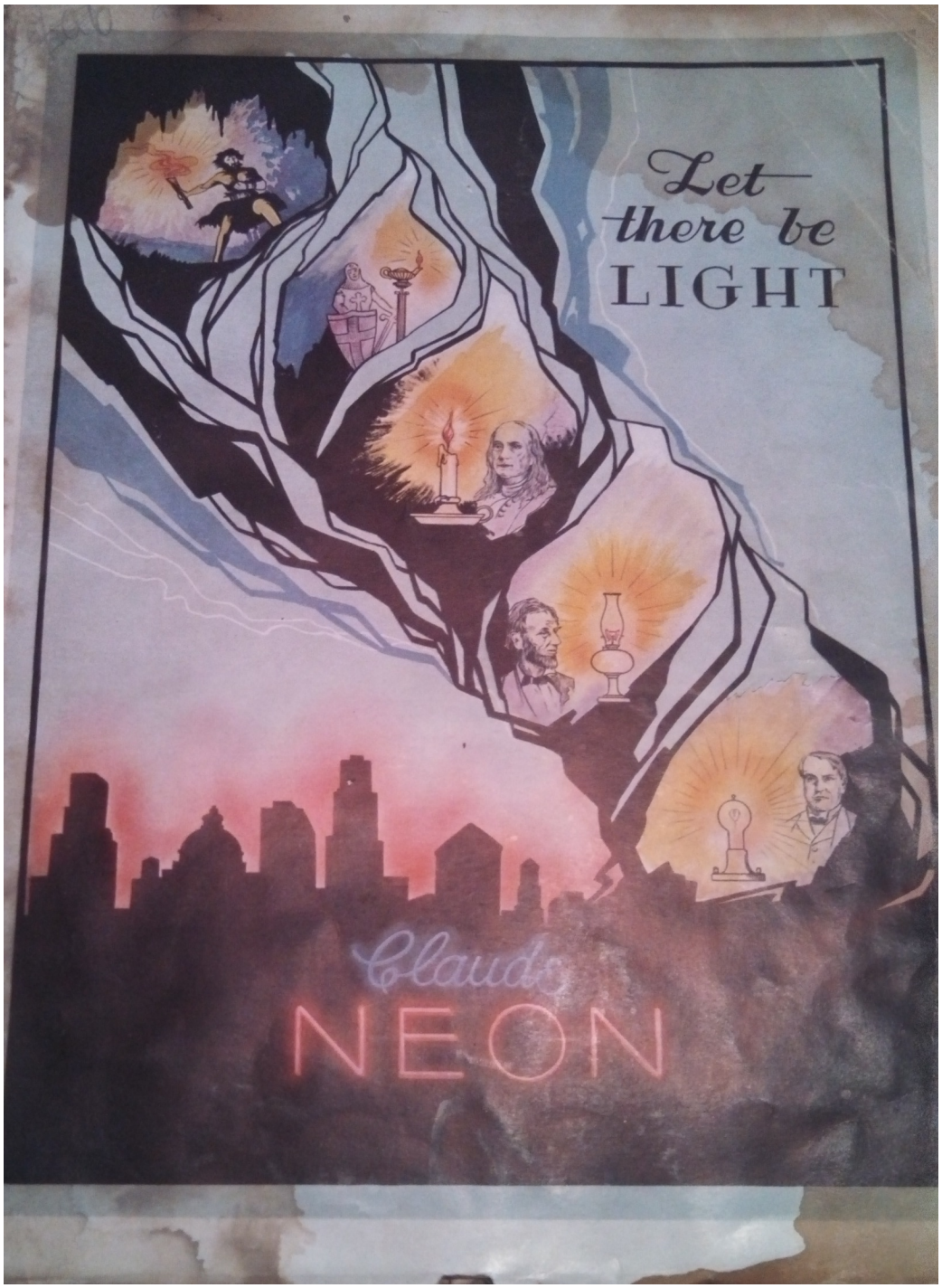

FIGURE 3: Cover of 1930 Claude Neon catalog entitled *Let There Be Light.* Courtesy of The American Sign Museum, Cincinnati, Ohio.

CHAPTER 4
THE CROSSROADS OF COMMERCE, SPECTACLE, AND CREATIVE EXPRESSION: AMERICAN NEON DURING THE GREAT DEPRESSION

This chapter examines the sense of novelty and diversity cultivated by designers and makers of neon signage during the 1930s. It argues that individuality and uniqueness became significant hallmarks of this craft during the Great Depression. Much of this medium's capacity for fulfilling a variety of visual functions – everything from streamlined advertising signage on theater marquees to its use on floating dirigibles – stemmed from its reliance upon customization rather standardization. As *Signs Of The Times* suggested in 1931: "An electric [neon] sign is a made-to-order article that standardization would surely kill…Therefore, a customer's electrical advertising service should keep pace with, if not exceed, the individuality and snappiness shown in his other advertising."[194] Neon quickly became the preferred mode of advertising for small businesses and national advertisers that used the medium on a national scale in myriad point of sale displays.

Neon signage had an almost homogenous acceptance within American roadsides and cities in the 1930s; yet it exhibited tremendous variation in its intended meanings. Neon signs could convey anything from local vernacular designs to the most cutting-edge nationally recognized advertising symbols. Choices in color, shape, phrase, and movement could greatly affect the meaning and intended message of this medium. Neon signage took on a deep symbolic importance during the Great Depression. Neon signs conveyed a sense of technological and economic revitalization to onlookers and business

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[194] *Signs Of The Times* (September, 1931): 46.

owners. Many new neon installations took place as part of the National Recovery Act's storefront modernization program that offered grants to struggling businesses.[195] Colored light served as a beacon of economic hope and architectural modernization during a bleak time period in American history. This helped to cultivate a closer sense of collaboration between architects and neon sign makers that had never existed before. Neon became an intrinsic part of 1930s art deco and streamlined design; its flexible tubes could perfectly match the curvilinear bends and tight angular forms that these two modes of design required. Modernization and neon became closely linked on a visual and metaphorical level.

This chapter further suggests that neon served as a commercial venue for artistic innovation and visual spectacle. Competition among advertisers to create unique and eye catching forms of signage led to a great diversity of stylistic forms. Its role within programmatic architecture, for example, led to an emphasis upon creative visual approaches. Neon signage did not gain acceptance as fine art during this period, but rather as a commercial form of visual communication that allowed for a tremendous creativity and personal expression. Neon's use as a medium of fine art would not occur until the postwar era. But the levels of aesthetic inventiveness that occurred among neon sign makers of the Depression drew upon many of the same visual elements used by Modernist artists of the same period: colored geometrical forms, a stark emphasis on angularity, and a bright color palette. One need look no further from the work of artists

[195] Esperdy, Ibid.

such as Piet Mondrian for evidence of these visual themes that had at the least a minute impact on neon.

Neon's capacity to create an unbroken pattern of colored light in a wide variety of hues and forms enabled a greater sense of artistic freedom than that of earlier incandescent signs that generated a pixilated form of light. Rather than being bound to the surface of a metal sign, neon sign benders could create three-dimensional designs that expanded far beyond the constraints of prearranged light bulbs or prefabricated sign panels. 1930s sign journalist David Reisz remarked that "Neon Displays have given fluency and uninterrupted continuity into electrical advertising…This is often a very great advantage, as some displays illumined by other means [such as incandescent bulbs] are at times nearly illegible because of the spotted light from badly spaced lamps that hinder rather than aid readability".[196] Neon's amorphous nature enabled it to create the illusion of cursive human handwriting – in effect using a synthetic medium to imitate a more organic visual phenomenon. Reisz noted that neon's capacity for diverse visual expression extended far beyond illuminated script: "It affords a continuous line of blazing light which may be used to execute script, odd-shaped letters, outline of trade-marks, or even a picture of the product, or for decorative and attention-compelling borders and strip lighting."[197]

The use of flashers and switches that could illuminate different portions of a sign at different moments also simulated the effects of movement within some neon signs. As

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[196] David Reisz, "In Defense Of Neon Script," *Signs Of The Times* (November, 1931): 35.
[197] Ibid.

Signs Of The Times noted in 1931, "If the proper personality and individuality of construction has been carried through to completion, then with the addition of light – bright, shaded, colored, moving, flashing – any combination, or all if necessary – the consumer's electrical advertising becomes almost a living personality."[198] Modulation of these different variables enabled an almost limitless array of visual combinations intended to distinguish one neon sign from another. This sense of visual diversity gave neon a number of new functions during the Depression, not least of which involved its role within mass communication.

NEON SIGNAGE AS AN ARCHITECTURAL ELEMENT AND A FORM OF MASS COMMUNICATION

Neon signs served as visual symbols of modern mass communication. Like the medium of radio, neon quickly communicated information to consumers across vast distances via electricity beginning in the 1920s. Automotive passengers, pedestrians, and those traversing the nation's railway system served as neon advertisers' target audience – a demographic that did not always have access to the medium of radio. The Minneapolis Journal used neon's powerful communicative capacity beginning in 1931. Their erection of a "sky-flash news" sign on the top of the 1929 Foshay skyscraper enabled them to digitally flash out news headlines to motorists and pedestrians from the lofty height of 430 feet above street level **(FIGURE 1).**

[198] *Signs Of The Times,* (September, 1931), Ibid.

Their construction proved to be the highest illuminated "visual broadcasting sign in the world." It transformed a building's facade into an ever-changing broadcast medium, straddling the boundaries between sign-making, architecture and broadcasting. This "telesign" – produced by the Telesignwriter Company of Minneapolis reached thousands of viewers on a daily basis.[199] The obelisk-shaped, vertical form of the Foshay building created a focal point within the Minneapolis skyline as the city's highest structure. The telesign occupied the highest point on this already noticeable building of faceted art deco construction. Its bright flashing neon lights enabled the Minneapolis Journal to draw attention to their building as a visual landmark and assert their role as users of a dynamic advertising technology.[200]

This sign's noticeable placement within the cityscape spoke to the geographical distribution of neon signs during the 1920s and 1930s. Urban areas had higher populations concentrations and access to cheaper and more plentiful electricity than rural areas. Accordingly they offered greater opportunities for large-scale sign installations like the telesign that reached both pedestrian and automotive traffic. Neon signs first developed within urban centers in the mid-1920s and gradually expanded outward along the nation's highway systems in the later 1920s and 1930s -- a response to growing automotive traffic. This medium reached a more racially and socio-economically diverse audience within cities than it did within rural contexts, in part because of the makeup of

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[199] "A Lofty Moving-Message Sign: First Installation of Ten-Unit Display of Luminous Tubing Is Made on Top of Foshay Tower in Minneapolis," *Signs Of The Times* (July, 1939): 22-23.

[200] G. R. Magney, "Display Device For Tall Buildings" Patent Number 1,806,634. Application Filed February 1, 1929. Patent Granted May 26, 1931.

automotive users and also because of the more ethnically and racially diverse populations of America's urban areas.

The placement of the Foshay sign revealed the growing sense of collaborations between architects and neon sign-makers. For perhaps the first time ever, architects collaborated closely with sign-makers to create neon sign installations that worked in accord with their façade designs. Many critiques of neon signage in the 1920s and 1930s derided them as visually unharmonious, haphazard additions to building exteriors.[201] C. A. Atherton – the author of the 1925 sign-making design and construction text *Electrical Advertising* – spoke of this very issue in his text. He even went so far as to suggest that, "nearly all civic improvement societies and architectural associations are opposed to electrical signs…[because]…there has been too little effort in the past to make electrical displays beautiful".[202] Atherton further argued that a close collaboration between sign-makers and architects would alleviate this problem.

In his estimation, signage had to play an intrinsic role in the beautification of facades as an integral rather than ancillary element: "The display should be so designed as to enhance the architectural beauty of the building on which it is mounted…It should be so complete and so in harmony with the ornamentation of the building architecture that to remove it would be to destroy or hurt the integrity of the structure".[203] Despite this rallying call for a growing sense of collaboration in sign design between architects and sign-makers, Atherton's ideas fell upon deaf ears prior to the early 1930s. The almost

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[201] C.A. Atherton, Ibid., 19-20.
[202] Ibid.
[203] Ibid, 20-21.

viral growth of incandescent signage and neon signs in the later half of the 1920s led to a visual mishmash of signage along most of America's urban thoroughfares that appeared randomized and cluttered. Highway beautification groups and architects sought to regulate and even ban the use of neon and electrical advertising in some regions of the country as discussed earlier in this dissertation.

As a response to this situation, sign designers of the 1930s and 1940s began working with professional architects to better integrate custom-made signs into streamlined, art deco facades.[204] There exists no evidence to suggest that professional architects actively designed the majority of storefronts with integrated neon signage. Yet the growing popularity of art deco and streamlined architectural facades became a nationally accepted practice adopted by both vernacular and professional designers alike.

In much the same way as commercial block architecture became a geographically indeterminate building form that spanned the whole nation, so too did the integration of neon signs into building facades. The use of enameled metal panels and art deco-inspired sign shapes with block letters in blue or white fronted by neon tubing became a common practice throughout the United States by the Depression.[205] Such signs often coexisted alongside colored enameled metal building panels, glass vitrolite façade panels, streamlined aluminum accents, and curvilinear glass windows that served as key visual signatures of modernized 1930s storefront exteriors.[206] The presence of neon signs within

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[204] W.L. Schallreuter, Ibid., Image Page Facing Page 80.
[205] "Fadeless Publicity," Ibid..
[206] "Store Front Modernization: For Better Business Housing under the National Housing Act," *Signs Of The Times* (October, 1934): 7-8, 94.

these new facades revealed an increasing sensitivity among sign-makers for creating harmony and balance among existing architectural elements. Professional architects such as Morris Lapidus and Vahan Hagopian of New York not only installed neon signage on their exteriors, they wrote extensively about this practice in trade journals such as *Signs Of The Times*.[207] One may surmise that this familiarized many American sign-makers with the practice of melding architectural façade design with neon signage **(FIGURE 2)**.

NATIONAL ADVERTISING CAMPAIGNS

The large-scale production of point of sale signs advertising such nationally recognized products as Kelvinator refrigerators or General Motors cars had a homogenizing effect on the built environment. These signs helped to physically cement corporate slogans and iconography into the visual mélange of the American roadside and cityscape. They lacked geographical specificity and often arrived from a large production batch at a distant factory such as Neon Products of Lima, Ohio. Sam Kamin, president of Neon Products and publisher of one of the earliest and most well known neon sign-making pattern books *Electrical Advertising Sketch Portfolio*, wrote about this very theme in the March 1933 edition of *Signs Of The Times*. In his estimation, neon signs not only identified sales outlets for specific national chains, they made their advertising a semi-permanent visual element within the built environment: "Advertisers and manufacturers of nationally-known products, in the last few years, have made many

[207] Treu, 133-134.

exhaustive researches in order to discover the most effective means of permanently brand-marking every dealer location and tying-in the dealer with extensive national advertising…National Advertisers have found that effective and attention-compelling neon displays and window signs are in great demand by dealers who are looking for more forceful selling assistance…They…add an air of distinction and modernism to their windows and their stores."[208]

Kamin produced thousands of these relatively austere Kelvinator signs in his factory **(FIGURE 3)**. This gave him firsthand experience in large-scale sign production that would serve him well as his enterprise grew into the nation's largest producer of neon signs and later plastic signs that would eclipse exposed neon signs.[209] Kamin's simple, vitreous porcelain enameled sign spelled out the word Kelvinator in a white enamel block font against a dark blue background. At just three feet in length, this sign relied upon bright red neon tubing to spell out Kelvinator and a bright blue neon border on its top and bottom.[210] This sign lacked extraneous ornament and had been manufactured with a standardized template specifically for its production. Although its neon components would not have existed without the skilled handwork of individual tube benders, its semi-standardized production made it a more cost-effective sign than a custom piece.

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[208] Sam Kamin, "Identification Neons In Kelvinator's Advertising Program," *Signs Of The Times* (March, 1933): 31-32, 97.
[209] "They Killed A Golden Goose That Laid Golden Eggs: these Ohio sign makers risked their business when they converted to a new line—but the gamble paid," *Kiplinger's Magazine* (November, 1950): 39-40.
[210] Ibid.

Most nationally recognizable brands as Schlitz Beer or Coca-Cola relied upon small point of purchase signs under ten feet in length and height that could be produced in quantities ranging from the hundreds to the low thousands. The relatively large advertising budget of such corporations also enabled them to create custom-made neon spectaculars that dwarfed virtually every smaller company's signs in size, color, illumination, and visual complexity. These signs used scale and the factor of popular recognition to more boldly assert their presence than that of signage advertising local businesses or brands that lacked the same capital backing. Major urban centers – Chicago, New York, Los Angeles, Atlanta, and St. Louis for example – became the primary locations for these types of neon signs just as they had for the placement of incandescent spectaculars in the previous decades. Spectacular served as something of a codeword for "spectacle." In the realm of neon sign making, spectacle referred to a very narrow set of visual implications: any installation that had great scale, bright colors, and a tremendous sense of luminosity intended to attract the attention of onlookers.

Chevrolet, one of the nation's leading car companies, erected a neon spectacular in Chicago in 1934 that proved to be largest North American neon sign constructed that year **(FIGURE 4)**. Located on the north end of Grant Park, this spectacular consisted of a 153-foot long and 148-foot tall neon and incandescent composite sign that spanned two driveways and six railroad tracks. It rose 257 feet above street level. The sign cast its flashing light all the way from Chicago's "Skyline Of Signs" business district to the 1933 Century of Progress World's Fair grounds, some two miles away. Chevrolet's sign consisted of their iconic bowtie shaped trademark bounded by illuminated concentric

circles that rhythmically flashed. A square neon display clock with illuminated hands and numbers stood in the lower right corner of the display above the slogan "Offering The Great."[211] *Signs Of The Times* described this as the world's largest clock as of 1934.

The combination of the instantly recognizable Chevrolet symbol, a popular corporate advertising slogan, and an ornamental clock positioned within close proximity to Chicago's busiest streets created a striking impression with consumers especially in the nighttime hours.[212] The monumental scale of this sign made it a focal point amidst its architectural surroundings, giving it a sense of visual power even amidst Chicago's skyline of skyscrapers. The Chevrolet logo became a semi-permanent and dominating visual element within the line of vision of pedestrians and motorists, a hyperbolic and unavoidable visual spectacle for all who visited downtown Chicago. Chevrolet conceptualized this sign as but one of many elements in a larger advertising campaign that relied upon radio, newspaper, magazine, and smaller point of purchase displays.[213]

A DIVERSE CRAFT: STREAMLINING, REGIONAL VERNACULARS, AND EXPRESSIONS OF ETHNICITY IN NEON SIGNAGE

Despite the great popularity of nationally recognizable advertising signs, local vernacular styles and regionally specific aesthetic preferences also informed the design of many neon signs during the Depression. Different design languages rooted in the

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[211] "World's Biggest Sign Ready To Advertise Chevrolet on Chicago's Skyline of Signs," *Signs Of The Times* (May, 1934): 90.
[212] Ibid.
[213] Ibid.

individual preferences of business owners and sign designers also impacted the stylistic appearance of neon signs.

The growth of programmatic or themed architecture in the 1930s encouraged the development of a whole new genre of neon signs that favored novelty above all else. Human individuality and creativity played a paramount role in these designs. Owners of programmatically themed businesses often relied upon novel visual forms such as bars in the shape of beer kegs outlined in neon[214] or signs shaped like dirigibles that advertised establishments with an aviation theme. Neon accentuated the visual impact of the fantasy inspired architectural forms and sculptural modes of signage found in this new genre of 1930s roadside construction. Illuminated signage worked in concert with oversized, brightly colored and often whimsical sculptural forms to create a set of fantastical visual mechanisms that caught the roving eyes of motorists. Neon served as an intrinsic element in creating this sense of visual hyperbole and its promoters placed high value on artistic innovation and business savvy.

A mid-1930s Morris Bread Company neon sign installed by the independently owned Agnoli Sign Company of Springfield, Massachusetts used the once common image of the air ship to advertise its products **(FIGURE 5)**. Positioned high above the rooftops of surrounding businesses, this neon sign appeared to take flight and float above other signs and sources of light. A neon outlined Zeppelin spelled out the phrase "Morris

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[214] G. R. LaWall, "Luminous Structures As Beer Merchandisers," *Signs Of The Times* (June, 1933): 21.

Zeppelin Bread…Sliced – Ready To Serve".[215] Glowing neon rudders and the phrase "Above All" spelled out in neon above the Zeppelin form tapped into a growing popular interest in aviation and streamlined airships – a symbol of sophistication and fantasy during the 1930s. The appearance and language used in this advertisement framed something as seemingly mundane as bread within the rhetoric and imagery of technological progress. Directly or indirectly, neon installations of the 1930s symbolized technological savvy and modernity to business owners – a theme likely reinforced by the extensive use of neon illumination at both the 1933 and 1939 Worlds Fairs.

The plain block letters of the common art deco neon signs of the 1930s appeared staid and conservative when compared to the hyperbolic forms of programmatic signage. This genre of signage did not make up the majority of neon signs produced during this time period. Yet programmatic signs offer clear evidence of the desire for visual innovation that characterized the American sign industry prior to World War II. Programmatic architecture's influence on neon sign making could be felt throughout the country, especially when used in settings that emphasized the need for novelty.

Visitors to the July 1936 Centennial Industrial Exposition at the University of Wisconsin-Madison field house encountered a use of neon signage that highlighted the regional economy and vernacular advertising language of the nation's dairy state **(FIGURE 6)**. The Gardner Bread Company, a business that continues to operate in Madison as a subsidiary of Sara Lee, erected a neon display that advertised their line of

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[215] Agnoli, Agnoli Sign Company Promotional Or Salesman Sample Photographic Portfolio (Springfield, Massachusetts: Agnoli, Circa 1935): Photographic Plate 10.

"Purity" sliced bread.[216] Neon letters positioned above a hand painted diorama showing cows in a pastoral backdrop on a Wisconsin dairy farm spelled out the phrase "Today – AMERICA'S FINEST BREAD". The simple neon block letters spelling out the three capitalized letters and the cursive script word "Today" illuminated the diorama and created a focal point within the dimly-lit field house. A cutout shape forming the state of Wisconsin held a pale that endlessly poured a stream of milk into a freshly wrapped loaf of pre-sliced Purity bread. In front of the loaf stood a three dimensional sculpture of a calf resting contentedly on a small bale of hay.

This display, although used within an interior space, spoke to the growing use of neon in regionally specific advertising contexts. The use of dairying images, farms, cattle, and a white backdrop indicative of purity promoted positive stereotypes of Wisconsin's most famous industry. This diorama riffed upon this wholesome imagery and used neon to help distill its message into a simple, communicative, and easily decipherable text. Gone were the realities of manure filled pastures and the sweltering heat of an industrial bakery, replaced instead with a shorthand caricature of Wisconsin agriculture and the glow of a then modern neon sign. Local imagery and vernacular modes of advertising became wedded to the nationally pervasive spread of neon signs in this and numerous other instances.

The impermanent status of the Gardner Baking Company display called for a rather simplistic and rudimentary display of neon. The 1930s witnessed a tremendous

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[216] Photography by Melvin E. Diemer Of the Gardner Bakery Company Booth At The Wisconsin Centennial Industrial Exposition, The University Of Wisconsin-Madison Field House (Madison, WI, 1936).

growth in the complexity and variety of neon signage as a standalone form of art that often existed outside of the realm of programmatic architecture. In addition to neon's growing formal sophistication, its complexity in message and content became even more multilayered during this period – especially in the realm of ethnically or racially themed businesses. Just as neon's flexibility enabled it to function well as a means of expressing regional stylistic impulses, so too did it convey imagery and themes associated with a given cultural group. Decisions as seemingly banal as choosing the type of script or lettering used in a neon sign could differentiate a business that intended to convey an overt ethnic subtext rather one that did not.

An undated 1930s portfolio of work from the Artkraft Sign Company of Lima, Ohio features a prominent display of ethnically themed neon in the form of their Steuben Tavern sign installation **(FIGURE 7)**.[217] This New York-based chain billed itself as an authentic German eatery that upheld age-old culinary traditions such as cooking handmade beef rouladen – a commodification of the past for the 1930s American palate that yearned for the old world.[218] The neon sign custom made for this business emphasized the past. In contrast to virtually all of the other signs featured in this portfolio that relied upon a streamlined or art deco design, the Steuben Tavern featured a Germanic-inspired script reminiscent of Fraktur or Gothic typeface.[219]

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[217] Artkraft, Salesman Sample Photographic Book Of Neon Sign Installations By The Artkraft Sign Company (Lima, Ohio: Artkraft, Circa 1934): Plate 23.
[218] "Steuben Taverns" In Lost City Blog. Accessed February 2014. http://lostnewyorkcity.blogspot.com/search?q=Steuben+Taverns
[219] "Steuben Tavern Well-Identified at Busy Intersection," *Signs Of The Times* (September, 1934): 10.

Neon outlined the intricately designed central and inner portions of font spelling out the words "Steuben" in a large-scale vertical format that extended for roughly four floors of a commercial block building. A less intricate form of Fraktur spelled out the word "Tavern" on a much more minute scale. The portion of the sign closest to the street lacked the Germanic-inspired aesthetics of the sign's upper portion, perhaps a conscious decision to emphasize the visual novelty of the sign only in its most overtly visible top portions that could be seen many blocks away. This smaller, block script spelled out the phrase "Made Famous By Its 55 Cent Six Course Meal" – an overt appeal to the cost conscious Depression-era consumer. Below that a final phrase read "Ruppert's Draught Brew" – a New York brewery. This intermingling of ethnically themed script, hard sell bargain oriented advertising, and the regionally recognized Ruppert beer name revealed an odd juxtaposition between the past and present as well as consumerism and the preservation of ethnic identity. Neon's formal flexibility enabled it to shape-shift from a cutting edge representation of modern design to a form more evocative of the past than the present.

The Germanic style script of the Steuben tavern proved to be one of many different typefaces used to create ethnically charged messages. In 1935 sign maker E. W. Reblitz of Fond du Lac, Wisconsin's Jaeger Sign Company created an illustration of a Chinese restaurant sign advertising Shubert's Chinese Chop Suey for his portfolio of work to show potential clients.[220] A sense of contrast between the two different types of

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[220] E.W. Rebitz, *Suggestions for electric sign designs* (Fond du Lac, WI: Jaeger Sign Company, 1935).

typeface in this sign reveal the ethnic associations that form and script may connote. Reblitz spelled out the word “Chinese” in a manner that can best be described as a Western caricature of the Congi form. Forms evocative of Chinese lanterns spelled out “Chinese” and “Chop Suey” in a more streamlined, art deco-influenced script. The name “Schubert’s” appeared in a distinctly western or non-Asian style of script that emphasized block letters and a curvilinear s font shapes. A form based upon a pagoda or the roofline of a historical Chinese palace contained the words “Schubert’s” and “At All Hours” spelled out in the popular art deco style. The synthesis of popular art deco styles and stereotyped Asian motifs revealed the strong sense of novelty evident in neon signage of the Great Depression.

These brief sign analyses reveal the great diversity of form, use, and meaning among Depression-era sign makers. The constants of commodification and the need for a visually extravagant medium that would be an unavoidable presence for passerby encouraged the “neonification” of American cityscapes. The ceaseless pursuit of visual spectacle led to the massive growth of this industry – an industry that unabashedly encouraged a sense of competition among advertisers to outdo one another in scale, grandiosity, and novelty. But none of this would have been possible without the growth of educational programs and materials intended to familiarize sign-makers with the handcraft of neon.

NEON TRAINING AND EDUCATIONAL MATERIALS IN THE 1930s

The expansion of the neon industry and its growing diversity of uses in Depression-era America resulted in part from the growth of neon trade journals, pattern books, sales training programs and sign-making schools. The National Electric Sign Association (N.E.S.A.) held sign making programs throughout the 1930s sponsored by their electrical advertising education committee. N.E.S.A. conducted a series of five electrical advertising schools in Ohio in 1931.[221] These emphasized sales techniques intended to persuade business owners to adopt neon and other types of electrical advertising that would increase the sale of electrical power. Utility companies and electrical lighting manufacturers throughout the United States collaborated with N.E.S.A. to promote these programs, ever seeking to increase their sales of power and related products.

One of the five N.E.S.A. schools held in Ohio even staged a play entitled "Charge Of The Light Brigade" to promote this theme. Electrical advertising executive Jim Armitage of Elyria, Ohio wrote this play to dramatize the potentially mundane drudgery of selling signs. The New York Edison Company also provided their motion picture "Selling With Electricity" designed to help salespeople hone their skills as promoters of neon and incandescent advertising.[222] These educational seminars provided little in the way of hands on training in sign manufacture or design. But they did foster a proactive

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[221] "Five Schools On Electrical Advertising Among Activities Planned By N.E.L.A.," *Signs Of The Times* (May, 1931): 83.
[222] Ibid.

culture of sign salesmanship that relied upon the cooperative efforts of sign makers, sign designers, sign companies, architects, salespeople, electrical utilities, and the makers of the components used in sign production (electrodes, metal backing, porcelain enamel, transformers, wiring, etc.). These multifaceted chains of supply and manufacture within the neon industry grew greatly during this period as the Claude Neon monopoly gradually lost market share.

Although the neon industry relied upon a skilled work force that honed their craft in a cottage industry-like setting, promoters of this medium still touted it as a symbol of modernity. Perhaps this may be attributed to the close relationship that developed between the neon sign industry and the art deco movement. The art deco movement's origins in Europe in the 1920s and its eventual adoption within the United States by the early 1930s can be seen in the various sign-making pattern books of the time. Block letters, stark geometrical shapes, colorful enamel surfaces, and radiant glowing light in any imaginable color accentuated the modernist and art deco appearance of this medium. Unless one closely examined the tubulations or the slight plateaus between the bent portions of the glass in neon tubes, evidence of neon's handmade origins would be difficult to discern – concealed within a streamlined art deco construction.

Philip DiLemme's 1936 neon pattern portfolio entitled *Luminous Advertising Sketches* helped to disseminate the popular art deco style to numerous sign-makers.[223] First printed some seven years after Sam Kamin's popular 1929 sketchbook on neon *Electrical Advertising Sketch Portfolio Number 1*, the DiLemme text emphasized a more

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[223] Philip DiLemme, *Luminous Advertising Sketches* (Cincinnati: Signs Of The Times, 1936).

pronounced art deco style **(FIGURE 8)**. The art nouveau influenced curvilinear flourishes and intricate ornamentation of Kamin's first neon portfolio **(FIGURE 9)** had been replaced with a more streamlined aesthetic – one that emphasized linearity, simple block letters, and unadorned surfaces that lacked the ornamentation found along the borders of pre-neon incandescent signs.[224] Philip DiLemme also offered a rudimentary guide to creating popular color schemes and the effective integration of tubing design into the "can" or metal body of a sign. These two books and others helped to fulfill an increasing need for instructional materials on neon design and production.

NEW MEANINGS AND USES OF THIS TECHNOLOGY DURING THE GREAT DEPRESSION

Realities of wartime materials rationing, development of cheaper plastic signage, and the forces of de-urbanization had yet to check the growth of this booming industry – one of the nation's few industries that actually grew during this period of economic decline. The unusual growth of neon during the Great Depression attracted publicity from the press. As the popular general interest magazine *Literary Digest* noted in 1936, "Neon…helped brighten a business outlook which for six years has contrasted sharply with the cheerful product which the industry sells."[225] These ramifications had symbolic value as well: for pedestrians and observers of neon signs, light symbolized economic rebirth and according to this article had "illumine[d] recovery in [the] nation".[226]

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[224] Sam Kamin, *Electrical Advertising Sketch Portfolio No. 1.,* Ibid.
[225] "Bright Lights," 37-38.
[226] Ibid.

Executives of neon companies even suggested this medium could impact ones' mood in a beneficial manner when used as a form of interior illumination. Green, yellow, or pink neon supposedly helped to alleviate depression whereas blue neon helped to soothe tense nerves.[227]

The Claude Neon franchise in Norfolk, Virginia capitalized on this theme in 1932 window display created for the national advertising event known as Sign Week sponsored by *Signs Of The Times*. The phrases "Claude Neon" and "Beacons of Prosperity" overlaid a photographic montage of various neon sign installations by this Claude franchise that included a Chevrolet dealership sign, a tea room, and a bus depot conceptualized by Dutch art student Ena Von Hoboken **(FIGURE 10)**.[228] This installation emphasized the symbolic import of light that the sign-making press and business owners promoted during the Great Depression.

Douglas Leigh of New York City recognized the value of light as a symbol of prosperity and built signs of even more hyperbolic visual presence than any previous sign-makers. He brought a heightened sense of spectacle to an already visually extravagant form. Times Square and Broadway served as a canvas for many of Douglas Leigh's more innovative projects.[229] Some of them incorporated musical sounds and gigantic smoke emitting devices such as his iconic 1941 Camel sign with the image of a man blowing a real ring of smoke **(FIGURE 11)**. From the early 1930s well into the postwar period, Leigh arranged for a constantly changing array of signage throughout

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[227] Ibid.
[228] "Sign Week Idea," *Signs Of The Times* (March, 1932): 77.
[229] Peter Blake, *God's Own Junkyard: The Planned Deterioration of America's Landscape* (New York: Holt, Rinehart, and Winston, 1964), 12-13.

New York City – much of which occupied the area formerly known as the Great White Way.

Some of Leigh's colleagues also came up with new and original uses for neon tubing, though not in the realm of inventive spectaculars. Red neon became a popular light for warning beacons due to its significant visibility amidst inclement weather such as fog.[230] Neon beacons became common sights on the top of the nation's skyscrapers and airports by the 1930s, warning planes of a potential impediment in the sky. Neon's long reaching visibility also made it a suitable technology for use in mobile advertising devices. Advertisers attached neon signs to the undersides of dirigibles and to the tops of automobiles to spread messages far beyond the locations of the brick and mortar businesses that they usually advertised.[231] Neon technology also became a popular lighting medium once white tubes could be manufactured in the 1930s. Cold cathode tubing relied upon similar technological principles and production methods as neon. It became a mainstay of commercial interior lighting and served as a visual predecessor for fluorescent tubing.[232] Its white glow complemented the white washed appearance of commercial interiors that became popular among modernist designs of the era.

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[230] "American Neon – Pathfinder of the Air," *Signs Of The Times* (August, 1928): 67.
[231] "Making Auto Neons," *Signs of the Times* (October, 1932): 55.
[232] Henry A. Miller, *Cold Cathode Fluorescent Lighting* (Brooklyn: Chemical Publishing Company, 1949): 15-18.

CONCLUSION

The rapid popularization of neon signage during the 1930s encouraged a healthy sense of competition among sign-makers to create a visual culture that favored novelty, spectacle, and a fervent commitment to capitalist advertising agendas. The desire to reach an ever-expanding audience of consumers promoted a desire to infiltrate the human psyche and its subconscious with messages intended to stimulate consumer desire. The growth of neon as a response to the expansion of tourism, automotive travel, and highway systems helped to make it a nationally recognizable element throughout all states in the union. The 1930s served as a high point in the formal diversity and creativity of neon sign-makers.

Despite neon's huge growth during this period, its inability to be mass-produced would prove to be its Achilles heel, a major factor in its rapid decline over the next two decades. The high cost of training neon benders as well as its bespoke nature would eventually curtail its growth. The adoption of more cheaply made backlit colored plastic signs would render neon obsolescent in the postwar era. World War II and the rationing of materials and fuel would be the first catalyst for neon's decline in the postwar years – a theme that the next chapter will examine. The loss of individuality and the independent neon bender's penchant for novelty would be casualties brought about by the adoption of mass produced plastic signs.

FIGURE 1: Postcard showing the scale and location of the Foshay Skyscraper, Minneapolis, Minnesota, 1929. Image from: http://www.ebay.com

FIGURE 2: Integration of neon and storefront design in a 1930s grocery store. Image courtesy of The American Sign Museum, Cincinnati, Ohio.

FIGURE 3: Kelvinator signs produced by Neon Products, Lima, Ohio, Circa 1933-35. Courtesy of The American Sign Museum, Cincinnati, Ohio.

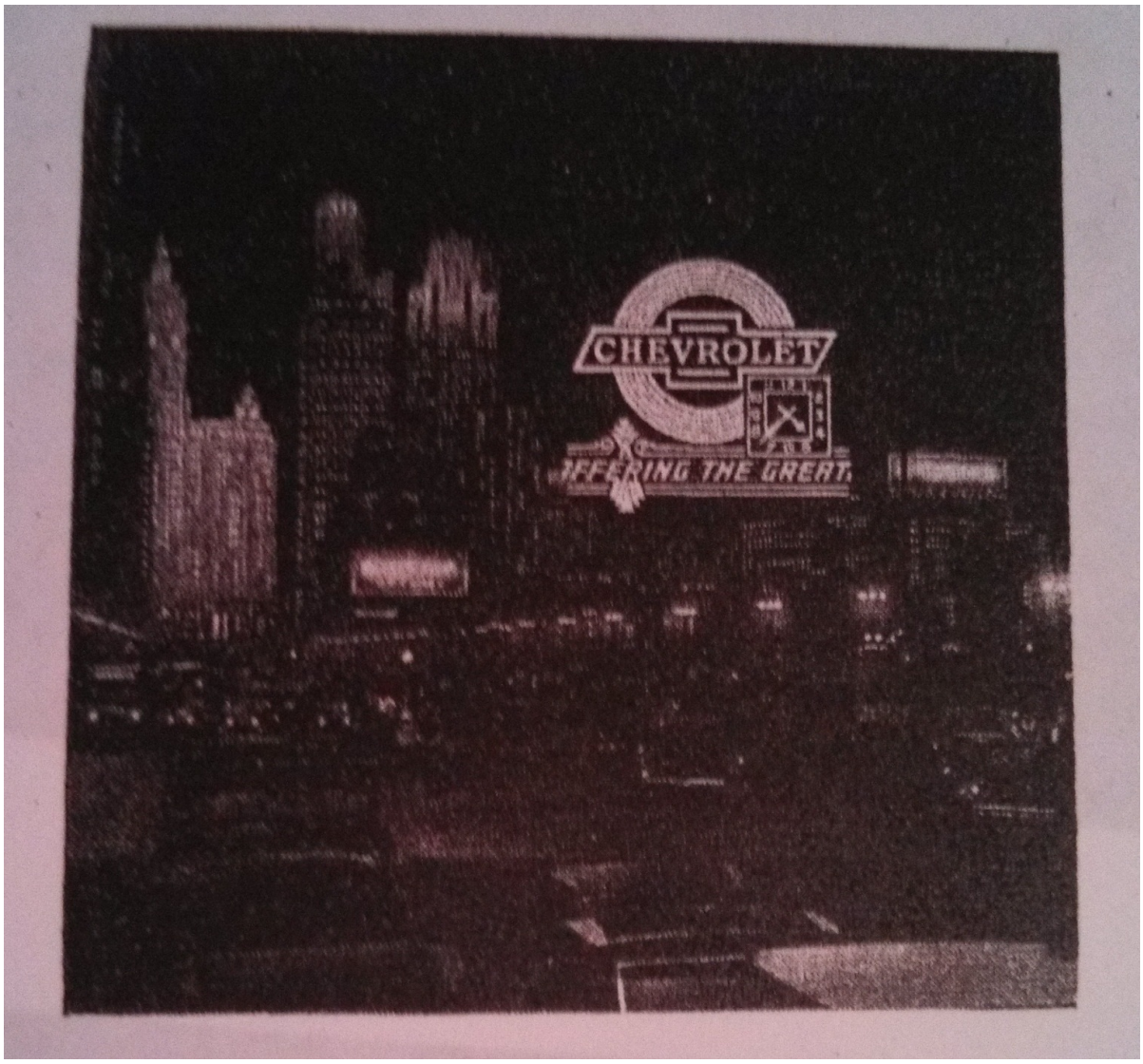

FIGURE 4: Chevrolet neon spectacular and clock, Chicago, Illinois, 1934. Image from "World's Biggest Sign Ready To Advertise Chevrolet on Chicago's Skyline of Signs," *Signs Of The Times* (May, 1934): 90.

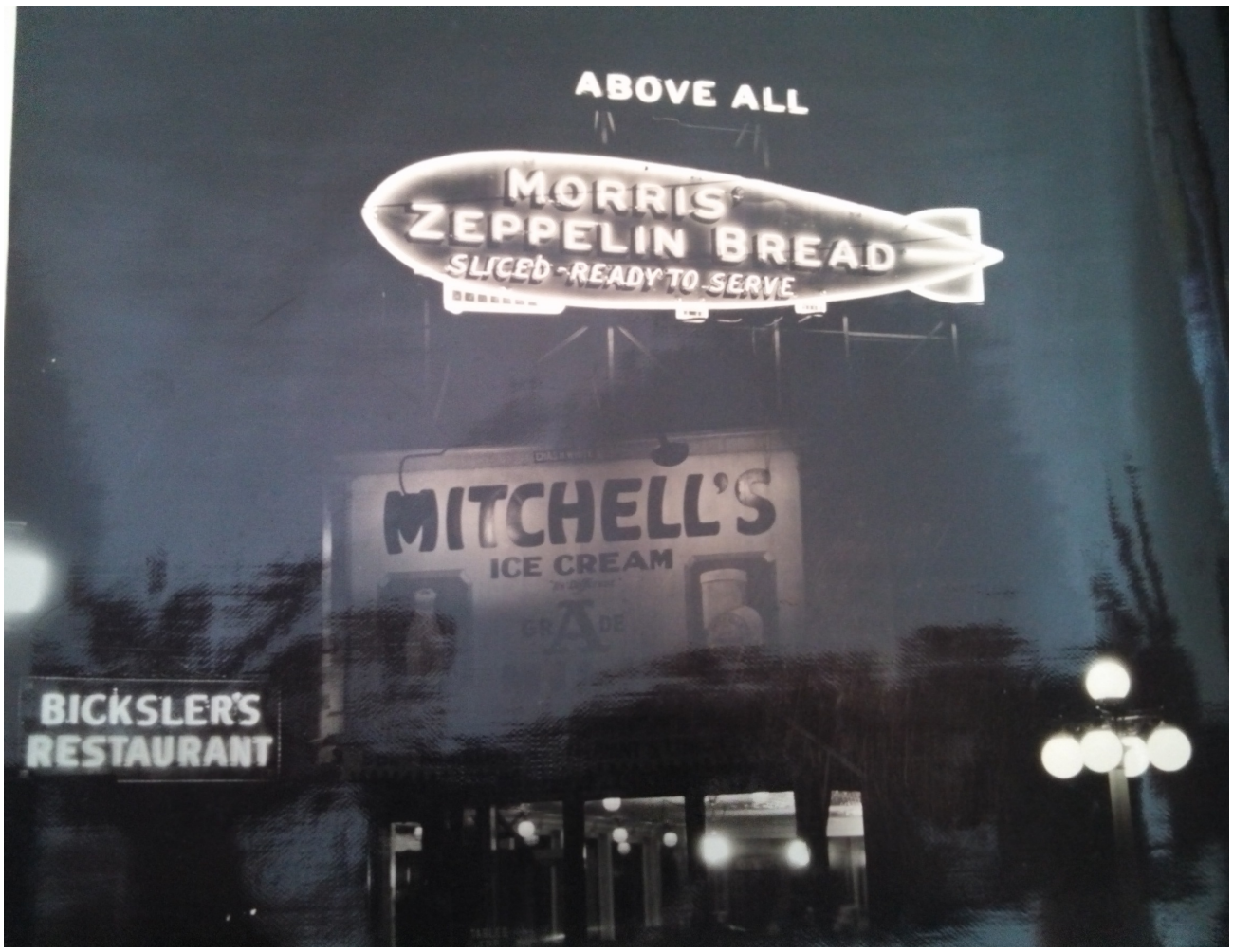

FIGURE 5: Circa 1934 Morris bread sign installation by Agnoli Signs of Springfield, Massachusetts found in an Agnoli signs picture book. Courtesy of The American Sign Museum, Cincinnati, Ohio.

FIGURE 6: 1936 Gardner Bread Company display and neon sign at the University Of Wisconsin-Madison field house, Madison, Wisconsin. Courtesy of The Wisconsin State Historical Society.

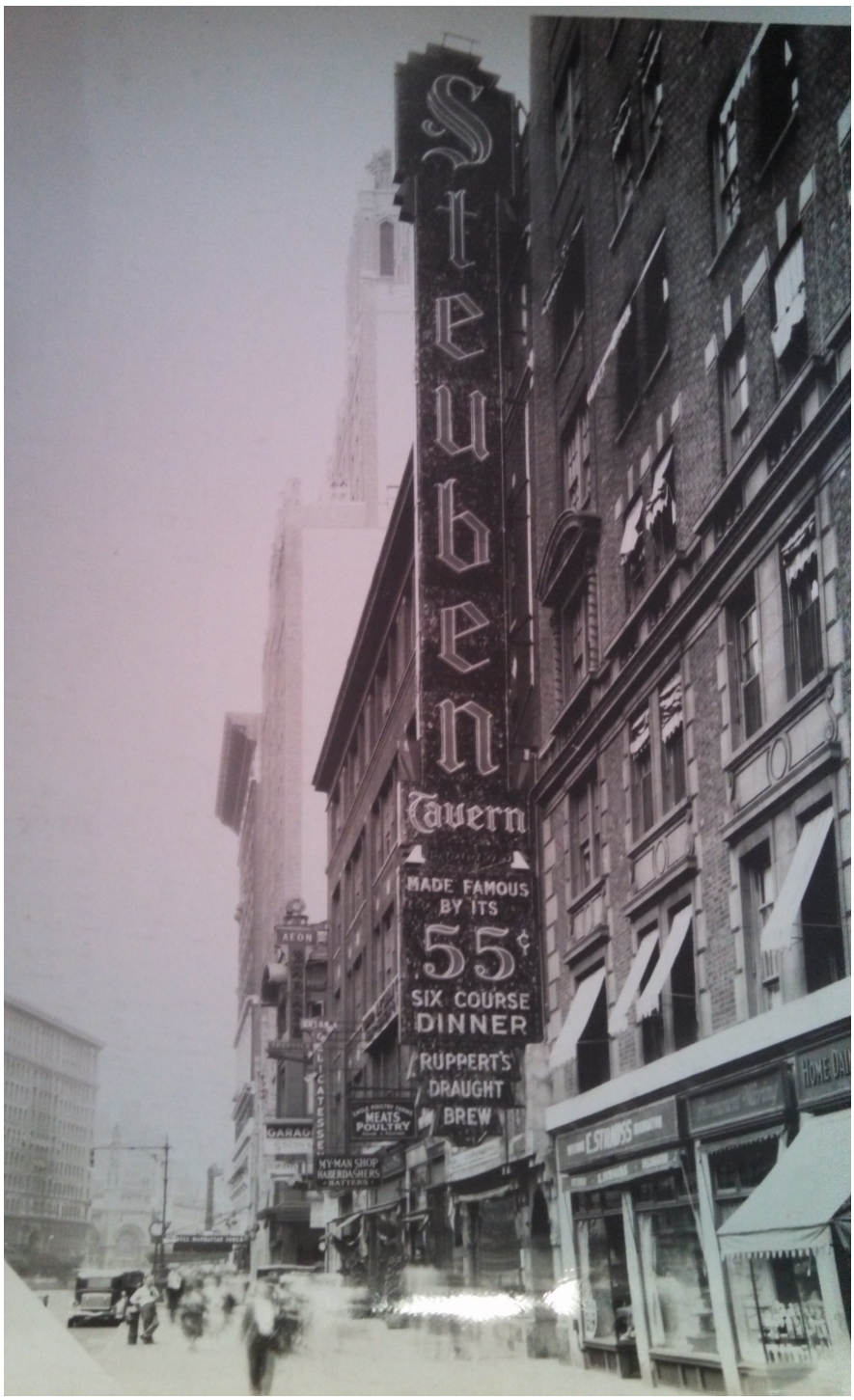

FIGURE 7: Steuben Tavern neon sign, New York, Circa 1933-34, Produced by Artkraft Signs and shown in an Artkraft Photo Booklet. Courtesy of The American Sign Museum, Cincinnati, Ohio.

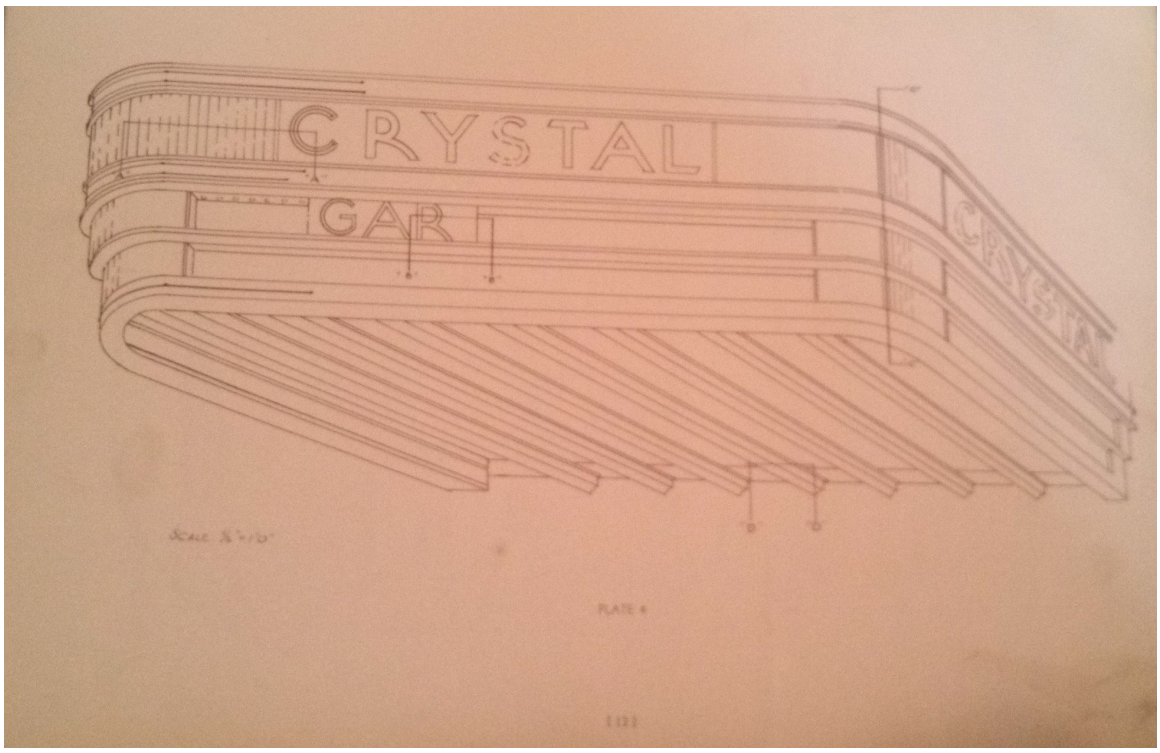

FIGURE 8: Design for a neon theatre marquee by Philip DiLemme from his text *Luminous Advertising Sketches*, 1936. Courtesy of The American Sign Museum, Cincinnati, Ohio.

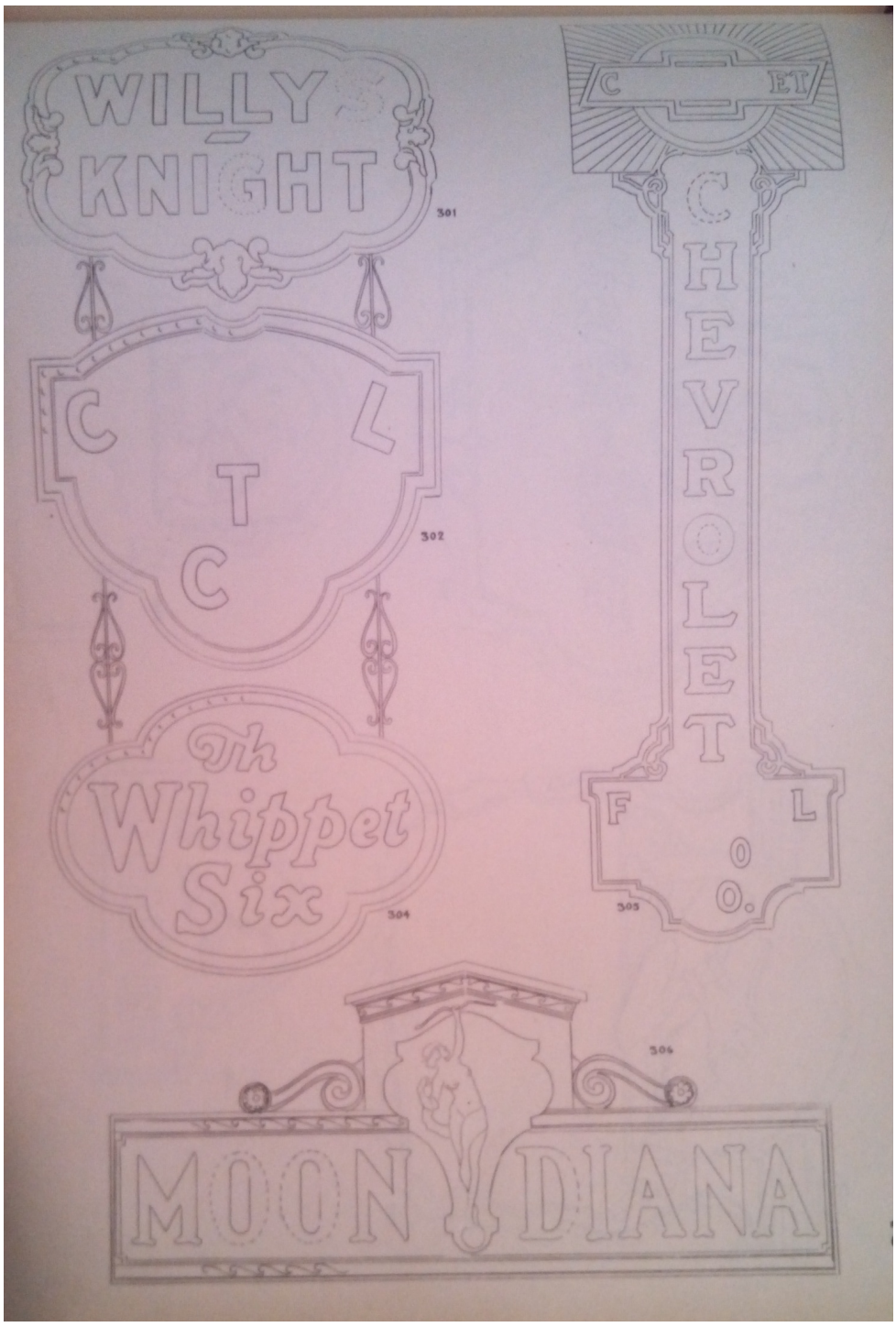

FIGURE 9: Design for neon automotive signs by Sam Kamin from his *Electric Advertising Sketch Portfolio*, 1929. Courtesy of The American Sign Museum, Cincinnati, Ohio.

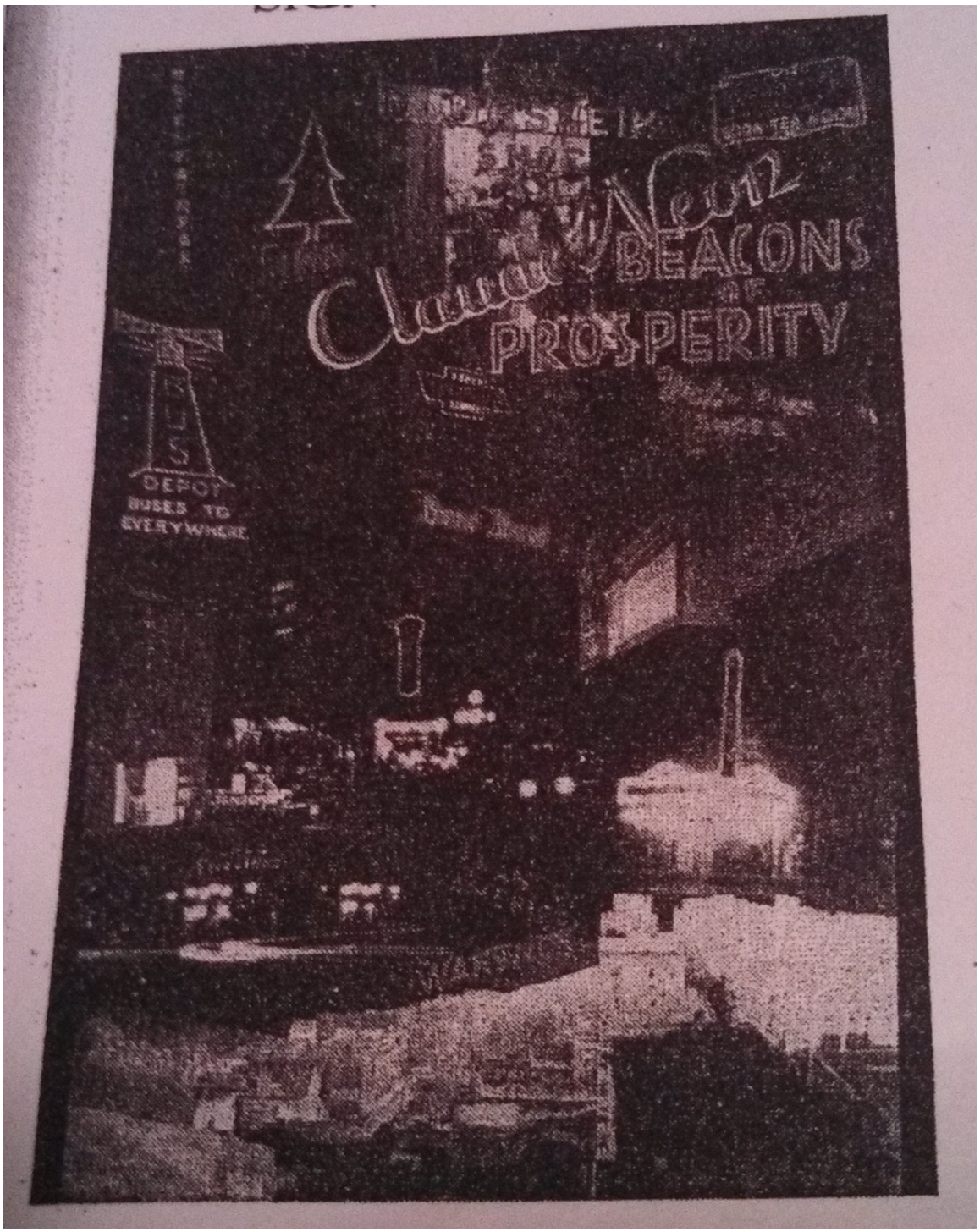

FIGURE 10: Claude Neon window display, Norfolk, Virginia, 1932. Image from: "Sign Week Idea," *Signs Of The Times* (March, 1932): 77.

FIGURE 11: 1941 Camel Cigarette spectacular installed by Douglas Leigh in Times Square, NYC. Note the real smoke rings emitted by the sign. Image from: http://timessquarestudio.tumblr.com/post/405384821/camel-smoke-ring-billboard-designed-by-douglas

CHAPTER 5
DARKNESS ON THE HORIZON: NEON'S DECLINE DURING WWII & THE POSTWAR PERIOD, 1941-1970

Neon's position as the preeminent form of electrical signage in scale, complexity, artistic creativity, and popularity came to an abrupt halt with the advent of World War II. Materials rationing, the shift to wartime munitions production, and blackouts designed to save electricity and ward off invaders hindered this medium's growth between 1941 and 1945.[233] Large numbers of American men also served in the military, partially depleting the available workforce that had produced neon during the Great Depression. Less people also apprenticed to learn the craft of neon in the postwar era.[234] Although these factors diminished neon's capacity for growth in the short term, they presaged the medium's decline. The need for new materials during the war – particularly acrylics such as Plexiglas – encouraged the growth of plastic fabrication on a much larger scale than ever before. This new material would irrevocably shape the direction of the American sign industry, forever diverting its emphasis from neon.[235] This technology, more than any other factor, would transform the social, cultural, and visual roles of American neon. The historical narrative of plastic signage's development will be a key focus of this chapter.

This chapter suggests that the development of new plastics and new methods of production encouraged the growth of an electrical sign industry that favored prefabricated plastic signs over exposed neon and metal signage. Backlit plastic signs proved not only

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[233] Stern, 28.
[234] "These Help Wanted Signs Forecast A Growing Problem," *Signs Of The Times* (July, 1958): 60.
[235] Rinaldi, 38-39.

colorful and bright in their illuminative capacities day or night, they cost far less to produce than neon signs and proved to be more robust when exposed to the elements **(FIGURE 1)**.[236] These signs could be produced in massive quantities using a system of stamping presses that obviated the need for skilled neon tube benders – dramatically reducing the costs of producing illuminated electrical signage.[237] As this medium took hold in the 1940s and 1950s, neon tube benders still found work in the production of simple shapes of tubing that could be used as a source of internal illumination or backlighting for these signs. Fluorescent lighting and incandescent bulbs would eventually supplant neon tubing in most of these applications, but the necessity of using transformers and ballasts in backlit signs did not make neon that much more expensive than these other forms of lighting prior to the 1960s.

Although neon's gradual decline began in the 1940s, this chapter does not imply that exposed neon simply vanished from sight after WWII. Rather, sign makers of the postwar era created some of the largest and most iconic exposed neon signs that had ever been seen yet in smaller quantity than previously. Las Vegas' Stardust Casino neon sign from 1958 **(FIGURE 2)** and the often-copied "Welcome To Fabulous Las Vegas Nevada" neon sign from 1959 **(FIGURE 3)** represent two of the more legendary exposed neon and light bulb signs erected in the postwar era.[238] The continuing growth of postwar highways and vacation destinations such as Miami and Las Vegas created a strong market for exposed neon signs where movement, scale and novelty proved more

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[236] "They Killed A Goose That Laid Golden Eggs…", Ibid.
[237] Ibid.
[238] Su Kim Chung, *Las Vegas: Then and Now* (San Diego: Thunder Bay Press, 2002), 90-91, 120-121.

important criteria than cost.[239] The increasingly tawdry associations of neon with after-hours nightlife and partying rather than economic prosperity made neon an excellent fit for locations such as Las Vegas that unabashedly promoted activities that many regarded as morally dubious: gambling, strip clubs, pawn shops, and drinking establishments. Las Vegas also had relatively lax zoning laws in regards to freestanding signage. This made the erection of large-scale neon signs a popular phenomenon that also represented a desire among casino owners to outdo one another in terms of size and visual extravagance.[240] Plastic signs of the 1940s, 1950s, and 1960s could never attain the scale and complexity of the gigantic neon and incandescent illuminated Casino signs that stood out so starkly along the Las Vegas strip. For this reason, Las Vegas served as an oasis that cultivated the growth of neon as it gradually fell out of favor in other parts of the country.

This chapter argues that exposed neon signs coexisted alongside plastic signs for many years after their initial construction in the prewar era. Only gradually would newer forms of plastic signage supplant these existing exposed neon signs. The dynamics of urban renewal also helped to make much of the once cutting-edge Depression era neon signs a visual hallmark of obsolescence that made them prime targets for sledgehammers or wrecking balls.[241] Suburbanization and the emergence of shopping districts outside of

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[239] Karen E. Claus and R. J. Claus, *The On-Premise Sign Industry: Present Status and Future Potential* (Palo Alto: Signage Research International, 1976), 7.
[240] *A Legacy Of Light: The History Of Young Electric Sign Company* (Salt Lake City: Young Electric Sign Company, 2001), 34-35.
[241] John A. Jakle and Keith A. Sculle, *Remembering Roadside America: Preserving The Recent Past as Landscape and Place* (Knoxville: University Of Tennessee, 2011), 95.

urban centers did little to encourage the maintenance of existing signs; nor did the designers of suburban stores or businesses have much incentive to use this older and more costly technology when a backlit plastic sign could effectively stand out with color and clarity both day and night.[242] Neon became relegated to the role of an antiquated advertising medium – something that by the 1960s and 1970s signified shabbiness rather than modernity and cutting edge design.[243] The development of Light Emitting Diode (LED) technologies in the 1980s further hindered the growth of neon in all contexts except for those that emphasized nostalgia above all else.[244] LED lighting could effectively mimic neon's diverse color palate and unbroken patterns of light.[245] Moreover LED lighting remained virtually indestructible unlike the fragile glass tubing that had been a defining characteristic of neon as a material.

The well-known Richmond, Virginia sign company Talley Neon began replacing neon tubing on older signs with LED lighting to mimic the appearance of neon.[246] The locally iconic 1957 sign for the Chinese-American Restaurant Joy Garden served as a template for one of these contemporary reconfigurations **(FIGURE 4)**. The Joy Garden sign had been one of Talley's more ornamental installations in the city of Richmond and even during its inception represented something of an anachronism with its exposed neon

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[242] "They Killed A Goose That Laid Golden Eggs…", Ibid.
[243] Judy Natal, *Neon Boneyard: Las Vegas A-Z* (Santa Fe, NM and Staunton, VA: The Center For American Places, 2006), 56-57.
[244] Rich Griset, "Neon Me," *Style Weekly Magazine* (March 4, 2014). http://www.styleweekly.com/richmond/neon-me/Content?oid=2040536
[245] "Flexibrite Flexible LED Tube Lighting (Advertisement)," *Signs Of The Times* (September, 2004): 32.
[246] Griset, Ibid.

and painted metal sign body **(FIGURE 5)**.[247] It showcased the prototypical imagery of Chinese American restaurant signs that had been a mainstay of the neon industry since the 1920s: pagoda forms, Kanji inspired script in the English language, jade green neon, and bright red neon. The high costs of restoring all of the original neon lettering on this sign made backlit LED lighting a cheaper facsimile that would simultaneously convey the original colors of the tubing without destroying the integrity of the sign body. Talley, like so many other American sign companies, began to downsize its neon division in the 1970s because of a growing dearth of skilled tube benders and neon's comparatively greater expense than plastic signage. Ironically, the popularity of their original neon installations helped the Talley Company to grow into the largest sign company in the Richmond area. The case of Talley's declining neon sales continues to be a widespread phenomenon throughout the American sign-making community. This narrative of decline does not represent anything new. It has been underway for over seventy years.

This chapter will trace the gradual decline of neon between 1941 and the present day. It will focus mostly on signage in order to provide a clear historical trajectory of neon's decline as a form of advertising. The next and final chapter will examine the rebirth of neon as a medium of nostalgia, its portrayal within popular culture, and its role within the visual arts.

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[247] Len Davidson, *Vintage Neon* (Atglen, PA: Schiffer Publishing, 1999), 26.

THE AGE OF PLASTIC OF SIGNAGE

The American poet and former WWII military captain Seymour Gordden Link emerged as one of many postwar critics that slighted neon for its failed utopian promises. Link published in such well-known magazines as the *Saturday Review of Literature* – a magazine that originally began as a supplement to *The New York Evening Post*. He published a poem entitled "Neon Sign" in the now obscure literary journal *Forum* in December 1948:[248]

They tell me you are animate of gas
prisoned in bending tubes that let you spell
lurid words against the sky. The glass
that forms your angry orthographic cell
seems frail device to make a shaken race
wince in nostalgic wish for ancient peace
among the quiet stars. There was a grace
touching the world at eventide when trees
could lean their hieroglyphs upon the moon
and make a poem of silence. You shattered this.

You turned the dark into a brazen noon,
Making a visual italicis
Wherever the tortured eye may dart in flight.

Does you designer, man without a name
Who dared invade the privacy of night,
Read his doom in curving words of flame?

In Link's mind, neon represented the culmination of an unnatural and unsightly phenomenon that clashed with the beauty of natural environment. He echoed many of the same sentiments that members of the highway beautification movement voiced in the

[248] Seymour Gordden Link, "Neon Sign," *Forum* (Philadelphia: Events Publishing, December, 1948): 355.

1930s. They critiqued neon for distracting motorists from the pastoral beauty of the natural environment and like Link derided it for its ineluctably manmade appearance. For Link, neon upset the natural order of the diurnal cycle all for the sake of commerce: transforming night into day with its crass, brash light. Those exact visual characteristics of neon endeared this medium to American advertisers of the Depression. Yet in this poem they appear only as negatives.

Creating a semi-permanent and deeply embedded source of light that would be an unavoidable presence in the nightscape irritated Link. He likely reeled from the shock of the manmade horrors that he witnessed during the war. The destructive potentials of technology aroused his suspicions and did not endow him with an abiding sense of confidence in manmade marvels: even something as banal as neon took on an apocalyptic quality. In his poem, neon serves as a symbol of mankind's destructive and laissez faire attitude towards modern technology. It also conceals the humanity and identity of the neon sign maker, a figure that presumably hides behind a façade of commercialism and compromises his artistic individuality. Technology's promises for a better world with increasing levels of socio-economic prosperity belied its dark realities when used for military purposes – one of the overarching themes of this poem.

The same dynamics that led to the development of new military technologies – the quest for versatility, the use of new and often synthetic materials, increased speed/efficiency in manufacturing, and a heavier reliance on automation – significantly impacted Postwar American sign-making. Rohm and Haas' invention and eventual mass production of Plexiglas for use in WWII military aircraft created manufacturing

precedents that the sign industry quickly recognized.[249] The production of contoured plastic shapes – such as the clear Plexiglas turrets used on B-26 bombers that Neon Products made in their Lima, Ohio, neon plant during the war – demonstrated that preformed plastic products could be made rapidly and cheaply **(FIGURE 6)**.[250] They could also be manufactured with high levels of consistency in product quality. Stamping machines and presses played as much of a role in this process as human hands – the antithesis of the skilled handcraft necessary to make neon. These aspects of plastic production made it an appealing alternative to neon work for the owners of many sign shops.

The Neon Products Company – previously the nation's largest neon manufacturer – shifted its focus to plastic sign fabrication in the mid-1940s and by 1955 had grown into the world's largest maker of plastic signs.[251] Using plastics enabled Neon Products to decrease production costs while also increasing their profit margins. Not only could they reduce their need for skilled neon tube benders, they could bring a greater sense of standardization to their product line. The mass production of rectilinear sign shapes and interchangeable back lighting systems allowed them to create standardized sign templates that could be customized with screen printing and heated embossing – processes of customization that proved far less intensive in time and cost than the manufacture of

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[249] Jeffrey L. Meikle, 87-88.
[250] Hans Houshower, "Neon In Lima: A Brief History," History Paper Found In The Archives Of The American Sign Museum (Blufton, Ohio: Hans Houshoower, Circa 1989), 12.
[251] "Largest Sign Plant Is Producing At Record Pace," *Signs Of The Times* (July, 1955): 24-25.

neon.[252] The once bespoke process of electrical sign making became a more standardized endeavor by the 1940s that had begun to emulate the model of mass production wherever possible.

Although a great number of the backlit plastic signs made by Neon Products continued to use neon as a source of light, the tubing would no longer would be something exposed to the elements and the visual scrutiny of the general public. More simplistic circles or rectangles of neon provided the illumination for these signs. The intricate, expensive, and arduously crafted double bends and curvilinear script in multiple colors of tubing had become a thing of the past at Neon Products. The skill level necessary for producing these more rudimentary forms of neon tubing did not demand the same level of handcraft that had been a requisite among Depression-era tube benders. The intricate handcraft had retreated from view in a majority of offerings from this once industry-leading neon manufacturer, hidden behind a plastic façade.

Large corporations with a nation-wide marketing presence turned to Neon Products for many of their point of sale displays. Companies such as Philco Radio, Sherwin-Williams Paint, and Firestone Rubber had become major clients of Sam Kamin's growing sign enterprise by 1950. Kamin – who had previously risen to prominence as a neon sign designer and manufacturer in the 1920s and 1930s – marketed his new Plexiglas signs under the "Plastilux-500" trademark and sold them for one-third of the cost of exposed tube neon signs.[253] A brief discussion of the manufacturing process

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[252] Ibid.
[253] "They Killed A Goose That Laid Golden Eggs…", Ibid.

and formal attributes of the 1955 Plexiglas Westinghouse point of sale sign produced by Kamin's company will illustrate the differences between exposed neon signs and backlit plastic signs **(FIGURE 7)**.

To make hundreds of identically sized signs, Neon Products would first design a metal housing of uniform size and shape that would hold one or two backlit Plexiglas panels. In the case of their double-sided appliance signs that read "You Can Be Sure…If It's Westinghouse", they would calibrate their metal stamps and presses to make a run of these sign bodies.[254] Much like an automotive factory, the metal sign bodies would be spray-painted in a booth using white paint that would be somewhat resilient to rust and the outside elements. Electrical hardware – ballasts and wiring for fluorescent tubing – would then be added to the metal framework. Sheets of rectangular acrylic plastic would then be ordered from manufacturers such as Rohm & Haas or Dupont. They would arrive at the Neon Products factory where they would be screen printed and/or embossed with imagery and words such as this well-known Westinghouse slogan and logo. Workers would heat the plastic sheet and then place it into a press to form it into a sign facing – a facing that would fit perfectly into its prefabricated metal box.[255] The sign would then be crated and shipped out for placement on an outside pole or building facade, occupying the same location as neon signs of the previous decades.

The Westinghouse sign represented an exercise in visual restraint. A square box emitted light from its center and illuminated two symmetrical panels that could be changed at will if damaged. No ornamentation adorned the surface of the sign or its metal

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[254] "Largest Sign Plant Is Producing At Record Pace", Ibid.
[255] Ibid.

encasement. Dark script stood out legibly amidst an illuminated backdrop, drawing attention only to a simple font that spelled out a corporate name and logo. This sign represented the visual inverse of neon.[256] Instead of using lighted script against an un-illuminated backdrop, the background or negative space became the source of illumination. This emphasis on minimalism in design became a defining attribute of most small point of sale signs designed and manufactured in the postwar period.

The laborious and expensive work of the neon sign bender had been eliminated from the production of this Westinghouse sign. Fluorescent lighting, like plastic, would by the later 1950s change the course of the American sign industry. It too would supplant neon as a more favorable medium for backlighting applications that demanded a neutral white light. When fluorescent lighting first appeared on the commercial market in the mid-1930s, this technology proved costly. Backlit plastic and fluorescent signs first appeared at the 1939 World's Fair in the displays of the General Electric Company.[257] Yet they did not became a mainstream phenomenon until companies such as Neon Products could obtain fluorescent tubing at a reasonable cost. By the 1950s, fluorescent lighting had also become a completely standardized medium that came with an array of prefabricated sockets, ballasts, and uniform lengths/shapes of tubing. Fluorescent tubes could be machine made, greatly undercutting the costs of handmade neon tubing that could never be mass-produced.[258]

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[256] Ibid.
[257] James A. Cox, 69-70.
[258] Ibid.

In addition to the sweeping changes in materials and production methods that characterized the American sign industry of the postwar era, significant changes also occurred in the aesthetics of neon and backlit plastic signage. Thomas Rinaldi notes that the 1950s witnessed an increasing use of standardized typefaces – including Helvetica that first appeared in 1957.[259] This standardization of typefaces and the increasing popularity of screen-printing on plastic created less demand for actual designers that would work on bespoke projects. The increasing popularity of point of sale signs that displayed corporate logos also compounded this situation. Sign companies would receive design mandates directly from in house designers that worked for their corporate clients.[260] This effectively cut the sign designer out of the equation in a great number of instances.

MID-CENTURY MODERNISM AND ATOMIC AGE NEON DESIGN

In spite of this growing sense of standardization that predominated within the sign industry after World War II, independent neon shops and designers still brought about a number of significant changes in their design vocabulary. Many rejected the intricate multi-colored porcelain enamel surfaces of the previous decade as well as the rigid art deco forms and script that had been an intrinsic part of Depression-era neon. Forms of signage also became more organic in shape and far less linear or rectilinear. Much of this change can be attributed to the growth of a postwar design movement that has variously

[259] Rinaldi, 38.
[260] Ibid.

been called atomic age, Googie, mid-century modernism, and futurism. The Cold War period's fixation on rocketry, space travel and nuclear technologies filtered down into the design language of sign makers. They often attempted to mimic this style in the form of boomerang shapes, starbursts, rocket-like forms, pylons, and abstracted amoeba or kidney-like forms. The design language of individuals such as Charles and Ray Eames, Frank Lloyd Wright and Eero Saarinen impacted everyone from vernacular sign makers to professional architects.

Las Vegas served as one of the major locations for the development of this new aesthetic: one that unabashedly blended high style design with popular forms such as fast food restaurants that catered to a broad demographic. Neon sign designers and manufacturers – such as the Young Electric Sign Company (YESCO) – did not wholly reject neon in favor of plastic signage. Rather they viewed plastic as an important adjunct that could enrich the appearance of their neon installations.[261] The wide variety of colors available in plastics by the 1950s-60s, their emphasis upon backlit or channel letters that demanded bespoke neon, their use of contoured shapes, and their need for bright colors made a combination of neon and plastic their preferred medium as seen in their 1968 installation for Dee's Hamburgers in Utah **(FIGURE 8)**.

The Stardust Casino proved to be the largest electrical sign in the world at its time of construction in 1958, with a height of 27 feet and a length of 216 feet **(PLATE 2)**. YESCO installed 6 miles of wiring, 7000 feet of neon, and 11,000 lamps in this single

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[261] *A Legacy Of Light: The History Of Young Electric Sign Company,* Ibid., 36-37.

installation.[262] Las Vegas' tremendous growth as a vacation destination in the postwar era called for signage that drew attention to the newness and futuristic aesthetic dimension of its casinos. The Stardust sign epitomized atomic age design in its visual attributes and use of materials. Multiple starbursts outlined in neon jolted outward at viewers from the bluish negative space surrounding the words "Stardust". Rays of light made of neon tubing radiated outward from a gigantic sphere representing earth that had been embellished with a highly stylized element evocative of outer space: a lighted ring much like the Jovian rings of Jupiter. Multiple three dimensional plastic forms in the shape of planets or moons could be interspersed between the stars and the channel lit words Stardust in an angular and asymmetrical script that evoked the star forms surrounding it. Jagged edges along the outer perimeter of the sign overtook the whole façade of this building in their sharp angularity.

This installation represented a blending of sign-making and architectural façade design – a theme common in the 1930s yet in this case executed with plastics and a different aesthetic aim. To complement this googie-esque sign/architecture combination, YESCO also erected a large outside sign separate from the main building. This construction mimicked the starburst motifs of the larger yet also featured backlit acrylics panels for interchangeable script – a design feature commonly used on marquees for movie theaters. The YESCO installation at the Stardust represented something of a highpoint in the blending of neon and plastic signage. It encapsulated the aesthetic direction of the Sputnik era. Popular architecture and signage of this period mirrored a

[262] Ibid., 32-33.

public fascination with space travel and forms intended to signify outer space as a motif of modernity. This use of hyperbolic caricatures of outer space would continue to inform American sign making well into the 1960s. But by the 1970s and 1980s, plastic had overtaken exposed tubing even in neon-loving Las Vegas.[263]

A 1991 book entitled *Pylon Design* by sign designer James Dix of YESCO illustrates the decline of neon in Las Vegas in the 1970s and 1980s. Out of the sixty-two designs in this book, only one features exposed neon.[264] A gigantic pylon sign in the shape of a Gibson Les Paul electric guitar for the Hard Rock café features an outline of exposed neon ribs along the outside of its body, presumably to flash in a sequence that would imitate movement along the guitar's contoured edges **(FIGURE 9)**. This sign – made almost completely of plastic – represented the evolution of electrical sign making in the post-neon era. Plastics could be shaped into larger forms than sign-makers had been able to create in the 1940s and 1950s. Neon existed as little more than a minor element in these constructions – a visual accent within a vast landscape of plastic.

In spite of neon's retreat from public view in the postwar era, a great majority of signage erected in this period still used many of the same visual tactics as the originators of neon signage. Using plastic letters or patterns to create a seamless continuum of light that stood out against darkened negative space indicated an affinity for the same visual tactics by prewar neon manufacturers. Moreover, the use of backlit colored plastics also created a visual effect similar to that of neon at night, though less bright and less well defined than a thinner gauge exposed neon tube. James Dix's design of the pylon sign for

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[263] James L. Dix, *Pylon Design* (Las Vegas: Brower Printing, 1991), 36-49.
[264] Ibid., 50.

the Los Angeles restaurant, the Prime Rib Inn on Garvey Avenue, strongly referenced neon in its appearance **(FIGURE 10)**. A double-sided ovular form on the top of a pole evoked the shape of porcelain metal-backed, exposed neon signs common in the prewar and early postwar era. More strikingly, however, the plastic backlit script of this sign contained large segments of contiguous joined wording – similar to the conjoined letters that formed a word in a neon sign. The darkened backdrop against which these letters appeared also served as negative space much like the porcelain enameled or painted backings of an exposed neon sign. Based on the shape and contours of the letters found in this sign, there appears to be a strong likelihood that hand bent neon tubing backlit these channel letters – obscured from public view and the possibility of breakage.[265]

The transition of the American sign industry from exposed neon tubing to backlighting helped to generate a new genre of signs that represented a simulacrum of neon. LED lighting helped to make this aesthetic and technological transition even more pronounced. Exposed neon became a historical artifact – a remnant of yesteryear that by the 1970s seemed out of sync with modern sign-making techniques in both its appearance and intensive emphasis on handcraft. Ironically exposed neon developed a strong presence in eastern bloc countries during the 1970s – a decade that witnessed a greater decimation of exposed neon signs in this country than any other. Neon developed so quickly in countries such as Poland because they lacked access to the contemporary plastics that had shaped the trajectory of America's sign industry. The relative absence of transnational corporate branding in communist Europe also discouraged the mass

[265] Ibid., 47.

production of standardized signage emblazoned with well-known logos and slogans known in the West **(PLATE 11)**. Photographer Ilona Karwinska documents the postwar rebirth of handcrafted exposed neon in her 2011 book *Polish Cold War Neon* (2011).[266] In an accompanying essay in this book, art historian David Crowley of London's Royal College of Art argues that postwar Polish neon represented a reconciliation of capitalist inspired advertising agendas (i.e. the desire to communicate with a large body of consumers) and communist social initiatives (i.e. the intention of creating visual evidence of social, political, and economic prosperity in a Soviet satellite nation).[267]

Neon took hold in countries like Poland and faded from prominence in the U.S. for another very important reason that we have yet to discuss: postwar critics of light pollution and visual clutter in the architectural environment. In societies such as Poland where a strong of governmental control permeated all aspects of city planning and public discourse related to such issues, critics of neon remained all but silent. In the United States, critics of neon signage made even greater inroads in their efforts to curtail this medium's expansion beginning in the 1960s and 1970s.

CRITICS OF NEON

The longstanding antipathy between architects and sign-makers took on new life at the same time as the shockwave of urban made its way to almost every American inner city. Just as many architects of the prewar period had derided neon signs on account of

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[266] Ilona Karwinska, *Polish Cold War Neon* (Brooklyn, NY: Mark Batty, 2011).
[267] Ibid., 4-6.

their unharmonious integration with architectural surroundings, so too did this new generation. Advertising theorists R. James Claus of the University of British Columbia and Karen E. Claus of the University of California, San Francisco discussed this rampant criticism of the sign industry in their 1971 text *Visual Environment: Sight, Sign And By-Law.* This book examines everything from the psychology of color and its impact on consumers to the theme of zoning. The Klauses make a number of astute observations about the issue of "visual pollution" caused by cluttered displays of signage.[268]

Negative public attitudes towards neon signage reflected an obvious dislike of its unharmonious interaction with its architectural environment and its cluttered appearance. Yet as the Clauses argue, these value judgments went far deeper. A fetishization of the new and distaste for visual evidence of antiquation drove the engine of urban renewal, a brutal machine that pulverized neon signage in its ruthless conquest. They invoke Marshall McLuhan to make this point: "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."[269] This quote promoted the Clauses' argument that newer technologies destroyed the contexts of their predecessors. In other words, critics of vintage neon signs derided them as ugly and old without taking into account their original uses/functions. With an understanding of their original and even contemporaneous contextual value, such signs appeared to be non-functional sources of visual pollution rather than helpful aids in

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[268] R. James Claus and Karen E. Claus, *Visual Environment: Sight, Sign And By-Law.* (Don Mills, ON: Collier-Macmillan Canada, 1971).
[269] Ibid., 60-61.

the dynamics of advertising.[270]

Architect and architectural critic Peter Blake emerged as one of the most well known critics of signage the United States had ever known. His 1964 text *God's Own Junkyard: The planned deterioration of America's landscape* espouses the same sentiments that American architects had voiced some thirty years prior. Blake regarded signage as an unpleasing viral entity – a voraciously replicating entity with a short life cycle that quickly rendered useless and antiquated. Blake went so far as to describe signage as maleficent force, something that distracted drivers and even resulted in their deaths.[271] Not only did this sentiment echo the same ideas promoted by the highway beautification movement of the 1930s, it helped to promote a blanket statement that all signage had a negative impact upon humanity. Blake expounded upon this idea by suggesting that signage represented the capitalist dream gone awry. He regarded it as a symptom of "aesthetic vandalism" – the result of an unmitigated sense of freedom for expression that could only take place in an overly affluent society. For him, like his predecessors, signage clashed with the beauty and harmony of the pastoral environment and the harmonious aims of architects.[272]

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[270] Ibid.
[271] Blake, Ibid.
[272] Ibid.

CONCLUSION

These critiques of signage have an eerie similarity to the logic of those figures that spearheaded urban renewal. Robert Moses, for example, argued that razing large swaths of antiquated tenements in NYC benefited humanity by creating a clean slate for architectural and economic development.[273] The erasure of mass quantities of signage took place during these destructive endeavors. The allure of the new propelled this movement forward. The trajectory of neon's rise and fall can be seen in a similar light. As this technology grew old and no longer symbolized modernity, it lost its original context, meaning, and function. As the next chapter will suggest, this void in the neon sign-making community would eventually be filled by a new movement that celebrated the medium as something of historical, nostalgic, and artistic value. These new uses and purpose for neon would endow this handcraft with a renewed sense of momentum.

[273] Robert Caro, *The Power Broker: Robert Moses and the Fall of New York* (New York: Knopf, 1974).

FIGURE 1: Backlit plastic Lennox Heating Equipment sign trade journal advertisement by Neon Products, Lima, Ohio, 1951. Note that this advertisement touts the fact that the sign has great legibility at night and during the day. Image from: http://www.ebay.com

FIGURE 2: Stardust Casino Sign as photographed in 1962, Las Vegas, Nevada. Image from: http://retireforthefunofit.com/tag/stardust/

FIGURE 3: Welcome To Fabulous Las Vegas neon sign, Las Vegas, Nevada, 1959. Image from: http://en.wikipedia.org/wiki/Welcome_to_Fabulous_Las_Vegas_sign

FIGURE 4: 1957 Joy Garden neon sign photo taken by Dean Jeffrey in 1992, Richmond, Virginia. Image from: https://www.flickr.com/photos/29276830@N02/4379944171/

FIGURE 5: Joy Garden neon sign prior to its restoration. Picture taken circa 2005. Image from: https://www.flickr.com/photos/21505757@N05/6979668081/

FIGURE 6: Plexiglas turret on a B-17 bomber plan, Circa 1944. Image from: http://www.lonesentry.com/blog/bendix-chin-turret.html

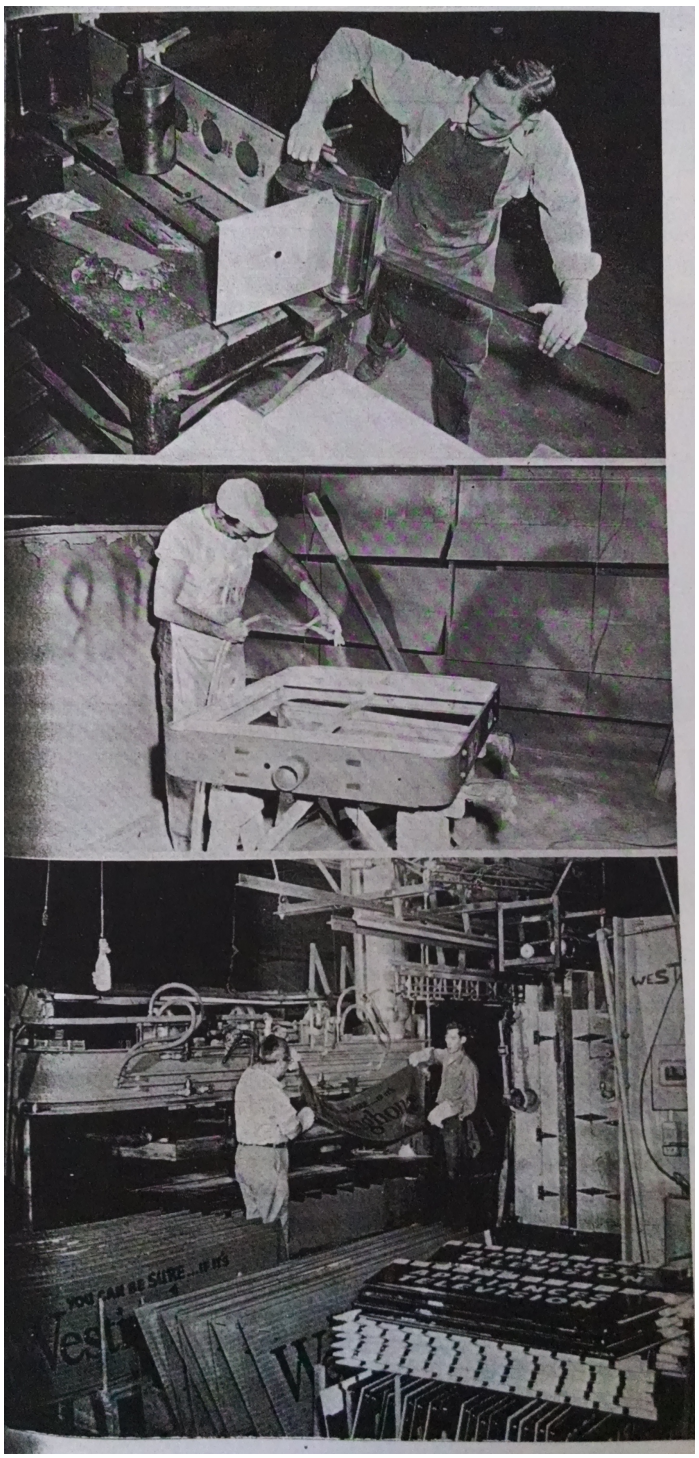

FIGURE 7: Westinghouse Plastic sign production, Neon Products, Lima, Ohio, 1955. Image from: "Largest Sign Plant Is Producing At Record Pace," *Signs Of The Times* (July, 1955): 24-25.

FIGURE 8: Dee's Hamburgers sign, neon and plastic, installed by YESCO, Utah, 1968. Image courtesy of YESCO Electric Signs, Ogden, Utah.

FIGURE 9: Hard Rock Café Sign, Las Vegas, Nevada, Circa 1987. Designed by Shirley Overley and manufactured by YESCO. Image from: http://www.artonfile.com/detail.aspx?cat=architecture&id=LV-14-01-01

FIGURE 10: Prime Rib Inn plastic sign installation by YESCO, Los Angeles, California, Circa 1988. Image Courtesy of YESCO Signs, Ogden, Utah.

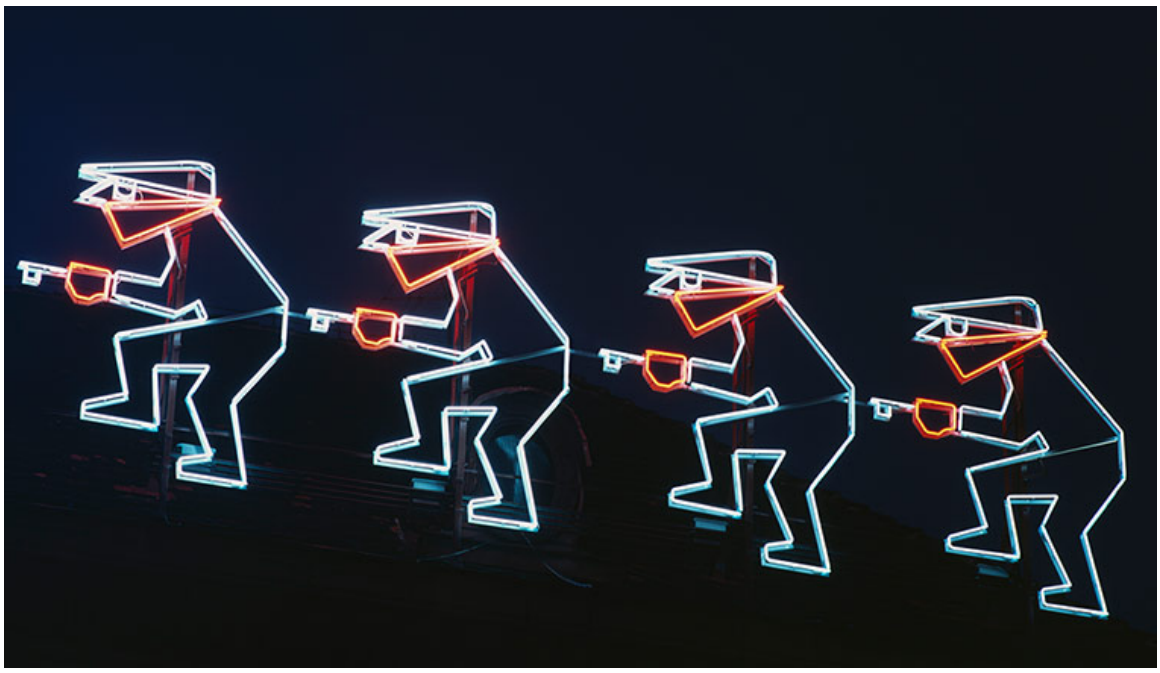

FIGURE 11: PZU Insurance Sign, Wroclaw, Poland, Circa 1968. Notice the imagery of burglars picking locks. Image courtesy of Ilona Karwinska, Circa 2005.

CHAPTER 6
CULTURAL UNEASE, POPULAR NOSTALGIA, ARTISTIC REINTERPRETATION, AND PRESERVATION

David Lynch's provocative and surreal 1986 film *Blue Velvet* presents an image of neon that simultaneously evokes nostalgia and seediness. The Slow Club – the director's reinterpretation of a nostalgic 1950s jazz spot – displays an eerily glowing pink neon sign that spells out the club's name amidst an all-enveloping visual and psychological darkness.[274] Although the interior and exterior of the club idealize the American roadside and its nostalgic beauty, this neon sign beckons patrons into a den of iniquity reminiscent of a strip club in its exterior design **(FIGURE 1)**. Sexual perversion, self-indulgence, and after-hours debauchery run rampant amidst Lynch's characters. Dennis Hopper portrays a methyl-nitrate addicted drug dealer that keeps Isabella Rosselini prisoner under his sadistic control. The voyeuristic yet naïve character played by Kyle MacLachlan finds himself caught up in Lynch's version of the American dream gone awry, beckoned to the wrong side of the tracks by the film noir inspired glow of a neon sign – a symbol of urban decay and faltering moral values.[275]

Lynch taps into the negative social and psychological potential of this medium. Neon signage became associated with the cultures of dancing, drinking, Jazz and after hours leisure long before his expose of its debased cultural meanings in 1980s America. Neon had been used for some of the largest cigarette and alcohol displays in places such as Times Square beginning in the 1930s and also became a mainstay of Las Vegas'

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[274] David Lynch, *Blue Velvet* (Wilmington, NC: De Laurentiis Entertainment Group, 1986).
[275] Ibid.

gambling culture by the postwar period. Sex shops and strip clubs in New York City also relied exposed neon signage well past its age of popularity with more "reputable" businesses.[276] The growing connections between neon and tawdry or subversive cultural elements would only be superseded once the medium had shed the economically and socially positive image cultivated by many of its promoters in the prewar period. By then neon became an afterimage: a decaying remnant of lost hopes and aspirations in provincial, out of the way places like Lumberton, North Carolina, the setting for *Blue Velvet*.

Neon signage fell pray to the cultural and economic dynamics of urban renewal and new patterns of population movement that halted its growth in the postwar period. Its predominance within the central core of cities placed it in an especially precarious situation once suburbanization and white flight took full effect. The decaying inner cities became a showcase of ancient neon signs that did not belie their age and hard life. Broken tubing, failing electrodes, and rusty metal frames covered in layers of peeling paint connoted an air of shoddiness and shabbiness rather than the sense of modernity and vibrancy that they once symbolized. The original neon "Pat's King of Steaks" cheese steak sign in Philadelphia, Pennsylvania, almost became one of these casualties before a lovingly executed restoration of its porcelain enamel exterior. By the 1980s, it had lost all of its neon and rust stains marred its once bright and multicolored surfaces **(FIGURE 2)**. Its metal backing and structural framework had also become askew, bent out of their linear symmetry. The large crown on the top of the sign perhaps conjured up associations

[276] Rinaldi, 36-37.

with a fallen kingdom of neon sign making rather than an operative and successful advertising medium.

The Mariachi-esque Indie Rock Group Calexico of Tuscon, Arizona alluded to this theme in their 1998 "The Ride Part 2." This song portrays neon as a ghost of the urban past – something both ephemeral and melancholic in its blighted state: "Beneath the neon hub of downtown…The local ghosts of downtown blow back around…Descend on those drugstore cowboy nights…Cling to the bar, then disappear from sight…stranded out, on the other side of town."[277] The deserted urban corridors of a once thriving urban center filled with vintage neon had become the other side of town by the late 1990s. This now desolate and antiquated realm had once been a land of utopian potential – a realm of brightly colored lights intended to signify modernity and progress – but now little more than a passing dream that had faded from view.

NOSTALGIC YEARNINGS FOR YESTERYEAR AND ARTISTIC REINTERPRETATIONS OF NEON

In spite of these cultural depictions of neon as a dying visual form that slowly slogs along with a repertoire of images as sad as they are sordid, neon has resurged as a symbol of the nostalgic past since the 1970s. Outside of the contexts of urban squalor, neon has maintained a more wholesome image. This dissertation argues that neon has carried a set of cultural meanings as flexible and diverse as its visual forms. Like a human character, it embodies the good and the bad in its cultural depictions and

[277] Calexico, "The Ride, Part II," *The Black Light* (Chicago: Quartersick Records, 1998).

meanings. The 2006 children's movie *Cars* by director John Lasseter depicts neon in a manner that represents the polar opposite of David Lynch's vision. This Disney-Pixar cartoon delves into the core of these nostalgic musings for a simpler time when neon signs served as friendly guideposts along rural highways. Neon signs have become a symbol of a collective yearning for yesteryear in this film – that now intangible experience of the American cultural landscape that had been superseded by a faster pace of life and new technologies such as LED lighting. The protagonist of the film – a cocky racecar by the name of Lightning McQueen voiced by Owen Wilson – turns his nose up at the desolate appearance of Radiator Springs.[278] This town represents a facsimile of the towns that once dotted Route 66 but quickly became forlorn after the expansions of major highways that bypassed them. Their slower pace of life could not keep up with the hectic patterns of transportation and commerce that characterized major east to west arterial interstates such as Highway 70.[279]

The many neon signs that line the main street of Radiator Springs – including Flo's V8 Café sign that evokes the Ford V8 logo of the 1930s – remain dark during the first part of the movie **(FIGURES 3-4)**. With a lack of clientele, the businesses of Radiator Springs have little incentive to light their neon signs and exist on the verge of shuttering their doors forever. Lightning McQueen gradually endears himself to the townsfolk following his arrest for speeding and property damage. He brings a new sense of life and vitality to the town and encouraged them to relight their neon signs. Shortly

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[278] John Lasseter, *Cars* (Emeryville, CA: Disney-Pixar, 2006).
[279] Arthur Krim, *Route 66: Iconography of the American Highway* (Santa Fe, NM: Center For American Places, 2005), 130-135.

before he leaves town, all of the businesses in Radiator Springs light their neon signs. The classic 1950s Coasters doo-wop song "Sh-Boom Life Could Be A Dream" pipes throughout the town as the automotive characters slowly cruise under the reassuring glow of the neon signs. The illuminated neon imbues Radiator Springs with a sense of revitalization and life that seemed to be so lacking, turning to the past as a source of inspiration.[280]

The nostalgic representations of place and signage in Cars helped to spawn a real world place that materialized only after the movie's creation. As part of their Disneyland amusement park in Anaheim, California, Disney built a full-scale model of Radiator Springs in 2012 replete with custom neon signs that carefully recreated the ones found in the movie.[281] Disney also transformed this space into a real world location for commerce, an array of neon ensconced stores and restaurants designed to emulate the feel and experience of shopping in the 1950s. This recreation of an idealized that never actually as found in Disney's portrayal may be described as a Hyperreality or simulacra – a conflation of signs and reality that occurs within processes of simulation. French philosopher Jean Baudrillard described this phenomenon in works such as *Simulacra and Simulation* (1981).[282] He argued that society's obsession with representation and symbols

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[280] Lasseter, Ibid.

[281] Tom Staggs, "Taking a Tour of Cars Land, Buena Vista Street and Carthay Circle Theatre – Opening June 15 at Disney California Adventure Park,"*Disney Parks Blog* (2012-03-07). http://disneyparks.disney.go.com/blog/2012/03/taking-a-tour-of-cars-land-buena-vista-street-and-carthay-circle-theatre-opening-june-15-at-disney-california-adventure-park/

[282] Jean Baudrillard, *Simulacra and Simulation* (Ann Arbor: University Of Michigan, 1994), 1-4.

voided all sense of history and meaning within the human experience, generating false referents that do not relate to anything real. The town of Radiator Springs and its neon signs, although based on idealized image of the past, does not and will not ever refer to a tangible place that ever existed.

This same sense of yearning for the historical past has helped to spawn a whole genre of modern neon signs designed for "man caves" – male spaces within homes that represent a dichotomy to feminized or gender neutral spaces throughout the house.[283] Neon signage has become an iconic feature of these spaces, perhaps evoking memories of beer signs from ones' drinking days before such responsibilities as marriage, home ownership, and parenthood became major concerns. Neon clocks emblazoned with the logos of ones' favorite professional sports team, college alma mater, automotive brand, or beverage of choice have emerged from China as one of the most common forms of this new genre. Although some of these clocks serve as reproductions of original designs from the 1950s and earlier, most represent a completely new iteration of highly personalized neon signage that never existed in the past.

They most often consist of interchangeable screen-printed faces bounded by a simple hand-bent neon ring in a chrome-plated plastic case. One recent Ebay search, conducted in April of 2014, revealed over 6000 different neon clocks available for purchase. This auction search turned up neon clocks displaying such notable images of Route 66 **(FIGURE 6)**, a circa 1967 Pontiac G.T.O. muscle car **(FIGURE 7)**, the work of tattoo artist Ed Hardy **(FIGURE 8)**, and a Flying V Guitar reminiscent of a Gibson

[283] Leigh Belanger, "Man land: More homes have a room just for him, and you'll know it when you see it," *The Boston Globe*. (February 3, 2005).

(FIGURE 9). Taken as a whole, these predominately Chinese-made clocks pander to an interest in a once popular American aesthetic as well as a highly personal expression of ones interest such as their subject matters, teams, or athletes. Unlike the neon clocks of the prewar and early postwar era that advertised to an external audience when placed on public view, these objects often remain a domestic artifact relegated to the man cave. Neon signs of the 1950s and prior did fit within the male-dominated cultural framework of automotive travel; but the gendered implications of these nostalgic remakes offered by companies such as "Mancare Accessories" on Ebay makes their masculine implications even more overt as seen in Plate 7.

The issue of nostalgic neon has also factored into the visual arts. American hyperrealist painter Davis Cone traversed the country since the 1970s, searching out subject matter for his paintings. Art deco movie theater facades covered in neon have long been one of Cone's favorite subjects. He captures the warm hues of illuminated neon as well as the encroaching decay that lurks in the background threatening to subsume these old signs and buildings. Cone relies upon the hyper-realistic approach of Chuck Close, apparently painting from photographs. But Cone's focus on the vernacular American built environment conjures up subject matter more associated with artists such as Edward Hopper.[284] One of Cone's most well known paintings, entitled *Bad Axe in Snow* from 1992, captures the essence of his nostalgic visual leanings **(FIGURE 10)**. The visual warmth of a, circa 1935 neon theatre marquee, stands out as the focal visual element within a darkened wintry nightscape in Bad Axe, Michigan. Curvilinear

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[284] Michael D. Kinerk and Dennis W. Wilhelm, *Popcorn Palaces: The Art Deco Movie Theatre Paintings of Davis Cone* (New York: Harry N. Abrams, 2001), 9.

flourishes and art deco angularity create an image at once stark and also alive with its brash light and color. A missing segment of tubing on one of the two axe shaped pieces of neon speaks to the precarious and antiquated nature of this and other historical neon signs. Cone has no qualms about preserving such flaws in his photo-realistic style of painting. Cone provides an honest visual depiction of existing visual signage from the detached perspective of a viewer.[285] He emulates the objectivity of the camera that captures these images before he paints them.

The advent of minimalism and pop art in the 1960s brought neon into focus as a widely accepted sculptural medium. American artists such as minimalist sculptor Richard Serra, conceptual artist Bruce Naumann, abstract sculptor Stephen Antonakos, and post-minimalist sculptor Keith Sonnier helped to popularize the use of this medium as an expressive artistic device.[286] In contrast to commercial neon signs that almost always offered an overt message related to the act of consumerism, these artists rejected neon's use as a clear-cut system of communication. When taken out of the contexts of advertising, neon became a new venue for handcraft that emphasized individuality and visual novelty though not for explicitly commercial ends. Many of these works existed only within the realm of interior gallery spaces, hidden from the nation's thoroughfares and city centers. The glowing aura of neon as a form of illumination, its capacity for abstract visual forms, and its wide array of colors endeared it to this new generation of

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[285] Ibid.

[286] Christian Schiess, *The Light Artist Anthology: Neon and related media* (Cincinnati: ST Publications, 1994).

artists – a group of individuals that sometimes apprenticed in a neon shop to learn the skills necessary to make handcrafted light sculptures.

Neon artists of the 1960s and 1970s brought new blood to the once dying craft of neon tube bending. They built upon the popularity of light artists such as Dan Flavin who transformed the appearance of architectural space with the addition of sculptures that emitted light and color beginning in the early 1960s. Richard Serra's 1967 sculpture of neon and rubber entitled *White Neon Belt Piece* **(FIGURE 11)** did not emphasize the same economy of form that Flavin used in stacked fluorescent light wall installations such as *Monument 1 For V. Tatlin* from 1964 **(FIGURE 12)**. A more organic rather than symmetrical form of abstraction took root in Serra's work: he skillfully blended industrially made artifacts such as belts with neon in a seamlessly flowing presentation that unabashedly showcased neon's handcrafted forms rather than obscuring it as many sign-makers of previous decades had done. Neon sculpture continued to expand markedly into the 1970s and 1980s with a number of public installations completed by Antonakos and Sonnier that often highlighted the architectural features of a given space with colored light.[287]

Bruce Nauman used neon from the 1970s to the 1980s as a didactic medium, communicating with words in much the same way as an advertising sign.[288] But when taken out of an advertising context, works such as the 1970 piece *None Sing Neon Sign* took on altogether different meanings **(FIGURE 13)**. Two stacked pieces of neon script

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[287] Ibid.

[288] Joseph D. Ketner II, *Elusive Signs: Bruce Nauman Works with Light* (Milwaukee: Milwaukee Art Museum, 2006 in collaboration with the MIT Press), 6-8.

reminiscent of the cursive font used in early Claude neon installations read “None Sing” in white neon on top and “Neon Sign” in red neon on the bottom. When presented in a dark space, this piece created a visual linkage to hanging neon window signs used in storefronts – devices that created a striking impression against the darkened negative space of a non-illuminated space or curtain directly behind the sign. Naumann – ever the conceptual artist – played around with syntax and semiotics by mixing up these phrases, potentially tricking a viewer into a misreading of his signage.

In recent years, neon art has itself become something of a dying form. Just like neon signage, it has lacked a strong contingent of glass benders interested in pursuing this genre of art. Its popularity within the art world has risen and crested much like that of abstract expression, giving way to a more postmodern approach among American artists that does not always emphasize craft as its primary motivation. In spite of this further decline in American neon, this country has witnessed a great resurgence of interest in preserving and restoring antique neon signs. The efforts of museums, collectors, historic preservations, and photographers have helped to breathe new life into neon signage’s continuation as a visible medium.

HISTORIC PRESERVATION

The American Sign of Cincinnati, Ohio has dedicated itself to the preservation of historical neon signs for more than a decade **(FIGURE 14)**. Tod Swormstedt, former editor and writer for his family’s publication *Signs Of The Times,* has been the driving

force behind this museum. He has worked tirelessly to establish a permanent museum in 2012 for the 2000 plus pieces of signage in the museum's collection, quite possibly the largest and most diverse museum of neon signage in the world. Tod's interest in neon signage stemmed from his work at a sign-making trade journal – an experience that gave him a great sense of appreciation for the role of handcraft in all facets of sign making. Creating a museum proved to be the logical extension of Tod's efforts as a collector and connoisseur of neon signage.[289]

His museum not only offers an extensive collection of artifacts that details the aesthetic and technological evolution of neon and American sign making in general, it contextualizes them within a historical continuum. Displays such as the "Signs of Main Street" offer a linear approach to the history of sign making **(FIGURE 15)**. Visitors to this display begin their guided tour of early incandescent signage at the far end of the street. The facades of the buildings in this section create a visual impression evocative of the early 1900s; this serves as a suitable background for the myriad selection of early exposed and backlit incandescent bulb signs on display. As visitors move down the street, they move through time in a linear fashion. Soon after encountering these early incandescent signs, they have the opportunity to examine early neon signs from the 1920s and the 1930s. The close proximity of these early neon signs to their incandescent predecessors enables viewers to grasp the nuanced visual and technological transition from one medium to another.

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[289] Informal Conversations with Tod Swormstedt conducted by the author, Cincinnati, Ohio, 2003-2014.

The further one walks down this miniaturized main street, the more likely he or she will notice signage that appears at least somewhat familiar. Streamlined art deco signs of the 1930s and 1940s – still extant in small number throughout the country – prominently factor into this display. After encountering these signs, one transitions to the gigantic exposed neon signs used by businesses such as Howard Johnson or McDonald's, logos still found along the nation's highways. The "Signs of Main Street" eventually segues into the realm of plastic signage, emphasizing the abrupt change of neon to plastic signage throughout much of the American sign industry in the 1950s, 1960s, and 1970s.

In addition to this main display, the museum also houses a number of other gallery spaces that showcase specific eras of sign-making and different elements of signage such as channel letters. One of the most popular features of the museum has been its in-house neon shop: a glass windowed venue where patrons can witness all facets of neon production. The neon shop not only restores signs for the museum's collection, it serves a repair and fabrication center for contemporary and historical neon signage used throughout the country. This sign-shop helps people to understand the skill, intricacy, and process necessary for the manufacture of this medium.

Las Vegas' Neon Museum and Boneyard represents a somewhat different approach to sign preservation than that of the American Sign Museum. Many of the signs in this collection remain in more of an un-restored state, left in this outside display that emphasizes patina and age **(FIGURE 16)**. The tight historical framework that serves as a guidepost for visitors to the American Sign Museum remains conspicuously absent from this display. The location of the Boneyard in a fenced-in, gravel parking lot-like space

(FIGURE 17), enables viewers to witness the nocturnal appearance of these signs when illuminated. The Neon Boneyard serves as a resting place for many of Las Vegas' most iconic casino signs including the Stardust neon installation. Since these signs lack any architectural background for their placement, one can closely observe their metal construction and remaining neon tubing. This affords an unusual opportunity that one cannot find anywhere else.

The existence of these two public museums dedicated specifically to neon signage speaks to the growing acceptance of neon as an important historical element worthy of preservation.[290] As John Jakle and Keith Sculle note in their 2011 book *Remembering Roadside America: Preserving the Recent Past as Landscape and Place,* artifacts such as neon signs risk removal and demolition because of their many critics and individuals that feel they are not truly old enough to represent a historical phenomenon. Jakle and Sculle rightfully suggest that these signs provide insight into how our cultural landscape and built environment has changed in relation to economics, consumerism, and cultural taste. The growing work of organizations such as National Trust For Historic Preservation and their Main Street initiative continue to raise public awareness as to the historical, cultural, and aesthetic value of things as seemingly banal as neon signs. The efforts of private collectors and public collections will hopefully continue to make the preservation of neon signs a key agenda for preservationists across the country.

[290] Los Angeles' Museum of Neon Art predates both of these museums but signage has never been its exclusive focus.

CONCLUSION

This chapter has argued that neon signage's meanings have changed greatly over time. Even though neon no longer enjoys as much acceptance in mainstream sign making as it once did, there still exists a strong community dedicated to preserving its legacy. The act of collecting, restoring and producing neon art has helped to keep this medium alive for almost one hundred years. Neon still emphasizes a distinctly American experience, something that the Neon Boneyard and the American Sign Museum emphasize in their displays. Neon has factored into the American imaginary as both a medium of visual artistry and as an element that informs our literary and cinematic creations. In spite of its oppositional meanings as something simultaneously tawdry and beautifully nostalgic, it continues to permeate American culture and define our understanding of place in this country.

FIGURE 1: The exterior of Slow Club in David Lynch's provocative 1986 film *Blue Velvet*. Image courtesy of David Lynch, 1986.

FIGURE 2: Pat's King of Steaks neon sign in Philadelphia prior to its enamel restoration. Image taken circa 2005. Image from: http://hiddencityphila.org/2013/09/neon-or-not/

FIGURE 3: Flo's V8 Café Sign in the 2006 movie Cars. Image courtesy of Disney-Pixar.

FIGURE 4: Original 1930s-1940s Ford V8 neon sign sold at Mecum's Automotive Auction in St. Charles, Illinois on October 3-5, 2008. Image courtesy of Mecum's Auctions, Walworth, Wisconsin.

FIGURE 5: Re-creation of Radiator Springs and its neon signs from the movie *Cars* at Disneyland, Anaheim, California, 2012. Image courtesy of Disney-Pixar.

FIGURE 6: Route 66 neon clock found in a recent Ebay search by author, April, 2014. Image from: http://www.ebay.com

FIGURE 7: Pontiac G.T.O. muscle car neon clock found in a recent Ebay search by author from seller "Mancare Accessories," April, 2014. Image from: http://www.ebay.com

FIGURE 8: Ed Hardy Tattoo art neon clock found in a recent Ebay search by author, April, 2014. Image from: http://www.ebay.com

FIGURE 9: Flying V guitar neon clock found in a recent Ebay search by author, April, 2014. Image from: http://www.ebay.com

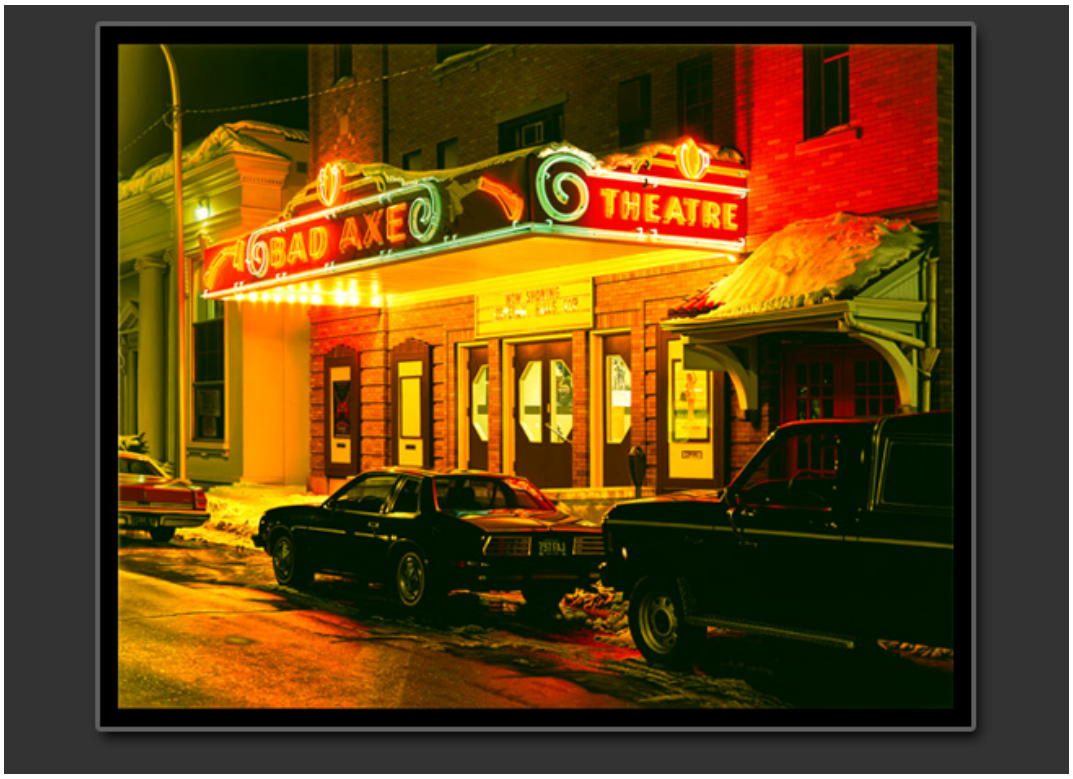

FIGURE 10: *Bad Axe in Snow* painting by Davis Cone, Acrylic on Canvas, 1992. Image courtesy of Davis Cone, Los Angeles, California.

FIGURE 11: Richard Serra, *White Neon Belt Piece*, 1967, neon and rubber. Image courtesy of Richard Serra.

FIGURE 12: Dan Flavin, *Monument 1 For V. Tatlin*, 1964, fluorescent bulbs and fixtures. Image courtesy of the National Gallery Of Art, Washington, D.C.

FIGURE 13: Bruce Nauman, *None Sing Neon Sign*, 1970, red and white neon. Image courtesy of the Guggenheim Museum, New York City.

FIGURE 14: Neon display at the America Sign Museum, Cincinnati, Ohio, Circa 2013. Image courtesy of The American Sign Museum, Cincinnati, Ohio.

FIGURE 15: "Signs of Main Street" display, The American Sign Museum, Circa 2013. Image courtesy of The American Sign Museum, Cincinnati, Ohio.

FIGURE 16: Neon Museum and Boneyard, Las Vegas, Nevada, Circa 2012. Image courtesy of The Neon Museum and Boneyard, Las Vegas, Nevada.

FIGURE 17: An aisle in the Neon Museum and Boneyard. Image courtesy of The Neon Museum and Boneyard, Las Vegas, Nevada.

CONCLUSION

In spite of neon's decline within mainstream American advertising, this medium has continued to have a strong sense of staying power within our collective memories and visual environment. This has been one of the more subtle concerns of my dissertation and it relates to a key question I have posited throughout all stages of this study: What gives some objects such as neon signs a life course that extends far beyond their initial social, cultural, or economic functions? Neon had already become something of an obsolete technology by the 1950s, yet it continues to define American culture even if only as a nostalgic trace of its once predominant role. The formal analyses of signs within this project have shown that the sublime levels of craft and beauty in handmade neon have helped to make them a continuing part of the visual environment; so too have their unusually bright, colorful, and dynamic visual effects. The fact that L.E.D. signs often mimic the appearance of neon as a modern day simulacra brings to mind one of English cleric Charles Caleb Colton's most famous phrases: "Imitation is the sincerest form of flattery." Engineers have attempted to replicate the most desired visual effects of neon signage – color and continuous patterns of light – in part to maintain this sense of continuity with the past.

The underlying aim of this project has been to understand the visual, technological, material, social, economic, and cultural evolution of neon signage. Rather than merely using signs and other artifact case studies as guideposts, this dissertation has emphasized that the objects themselves should dictate the trajectory of an argument in any project that claims to be material culture. How, for example, could one possibly

grasp the visual and technological continuities shared between backlit plastic signage and neon signage without carefully considering the technological, and visual aspects of these two distinct genres of signage? It would be impossible without close artifactual engagement and scrutiny. My dissertation has argued that objects add to our understanding of historical processes in ways that would prove impossible to obtain purely from textual analysis.

Neon signage can be thought of as something of an anomaly in that it dually relies upon artistry and an unwavering commitment to commercial aims. Few other advertising mediums embody these seemingly contradictory dynamics. This underlying tension, I argue, has been one of the most important factors in neon signage's continuing life cycle. Its niche role as something that straddles the realms of commerce and artistry has made it one of this country's most bombastic and diverse forms of advertising. Understanding neon signage's historical evolution provides important clues about changing patterns of consumer desire, aesthetics, and technological advancement within everyday American life. Neon signage has served as a reflection of these cultural forces, mirroring back to us illuminated images and representations of those products, services, and experiences we have most desired. This medium's malleability in meaning and form has enabled it to serve as a barometer of changing cultural, aesthetic, and economic preferences. Neon signage has symbolized a changing industrial order that involved the growth of new transportation networks and increasingly higher levels of disposable income. It provides a significant vantage point for assessing the impact of modernization on mass marketing and design in the United States.

This dissertation represents eleven years of study and research into the history of neon signage. One of the greatest difficulties of this study has been locating sources on this medium other than trade literature, instructional manuals, and most of all *Signs Of The Times.* This journal provides the most comprehensive historical appraisal of neon signage's historical development but reflects the inherent biases of a publication dedicated to promoting it rather than critiquing it. An abundance of visual images documenting views of cities and roadways with neon signs can be found in most historical societies throughout the country; yet finding accompanying documentation has been difficult. Most newspaper articles that describe the installation of new neon signs lack the detailed and nuanced descriptions of the technology and visual features that *Signs Of The Times* almost always features. In spite of these shortcomings in the primary documents on neon signs, there still remains an abundance of historical signs attached to their original buildings or in the hands of private collectors.

Future iterations of this project will include a much greater emphasis on these existent signs rather than simply analyzing imagery found in primary documents or photographs. The more nuanced material features of this craft – especially the bends in the glass tubing that serve as signatures of the maker – will be given closer attention. This will bring the theme of handcraft to the forefront of this project in a manner that this dissertation has not emphasized. The next version of this project will also draw upon interviews with actual neon makers, a guiding principle in the current work of cultural geographer Dydia DeLyser of Louisiana State University. Interviews will not be the main focus of this evolving project; but they will be an important adjunct that brings to light

the human dimension to these objects, quite literally the hands behind the artifact. Highly focused studies of a single object typology – in this case neon signage – enable one to look deeply into something seemingly insignificant and discern its potentially overlooked cultural impact.

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