TRANSNATIONAL MECHANICS: AUTOMOBILITY IN MEXICO, 1895–1950

by

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Abstract

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by

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This dissertation examines the rise of a particular way of moving through space in the form of motorized travel, and its political, cultural, and economic implications in Mexico during the first half of the twentieth century. It begins by tracing the origins of automobile use during the later years of the Porfirian era (1876–1911), followed by its curious expansion in the midst of armed revolution, world war, and a period of rapid innovation in the US automotive industry during the 1910s. When the country slowly broke free from the grip of national upheaval at the onset of the 1920s, post–revolutionary state builders, foreign and domestic business interests, and consumers joined forces in order to solve a challenging crisis in communications that had been brought about by the destruction and growing inefficiency of the nation's expansive but unevenly distributed railway system and network of urban tramways. Over the quarter century between the end of the Mexican Revolution and conclusion of the Second World War, as roads expanded from cities through the combined and at times competing actions of public and private interests, and automobiles flowed over the border from the United States, Mexican citizens became increasingly dependent on cars, buses, trucks, and gasoline for everything from getting around and between urban areas and maintaining the food supply of cities to leisure tourism. By mid–century, and through the forces of consumer preference, technological innovation, the pursuit of profit by automotive industry interests, and the promotion of motoring by a government intent on

hastening the modernization of Mexican citizens and the domestic economy, the character of space and mobility had been fundamentally altered. More than half of the country's passengers and as much cargo as that hauled on the railway were being shuttled around the nation in motorized machines, while foreign and domestic automobile tourism had become a major industry. During the following decades, the Mexican state would seek to consolidate this transformation by aiding in the establishment of an expansive national automobile industry, continuing the costly construction of roads, and subsidizing gasoline for the Mexican consumer.

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Introduction

Mobility in the Machine Age

During 1915, as WWI raged in Europe and Americans debated whether or not to intervene in the Mexican Revolution, automotive industry mogul Henry Ford offered his vision of how to solve the disconcerting situation south of the border. In an interview with Edgard Marshall of the *Los Angeles Times*, the "Sage of Dearborn" declared that he had discovered the key to the problem of revolutionary instability in the nation that one contemporary had termed "Barbarous Mexico."[1] According to Ford, a solution would never be achieved through military force, as some demanded. Instead Americans needed to "work it out." The country's problems, deemed to be "principally industrial," lay in the fact that the armed Revolution had robbed its citizens of the chance to work. Even the previous Porfirian regime, he surmised, had never provided Mexicans with a chance to labor "under decent self-respecting conditions," nor the opportunity to "receive a fair share of the proceeds of [their] toil." Instead of heading southward with the "rifle," Ford encouraged Americans to "go down there with the plow, the shovel, and the shop." More good could be done by sending industrial experts across the border—representatives of the "true American spirit"—in order to provide Mexicans with an education in the "holy gospel of get down to work." Through the use of techniques he had developed in Michigan, where he had done "fine things in the way of human savages," the country's problems "would disappear […] as steam fades from the window pane," and revolutionary leaders like Francisco "Pancho" Villa and Venustiano Carranza would soon find themselves transformed into foremen and timekeepers. As his comments reveal, the eccentric Ford embraced the tremendous, often misguided, hubris of an

[1] Edward Marshall, "'Twas Commercialism That Made This War, Says Henry Ford," *Los Angeles Times*, April 11, 1915, V16; John Kenneth Turner, *Barbarous Mexico* (Chicago: C.H.Kerr & Company, 1910).

age in which reformers in the Americas, Europe, and beyond, turned to the newly developing social sciences and embraced a host of new technologies in their quest to remake a world of poverty, inequality, and "backwardness" into one considerably more peaceful and prosperous.[2]

Over the following years the famed pacifist would attempt to execute his master strategy for Mexico. During July 1918, he revealed plans to build a tractor factory outfitted with the most modern equipment in order to produce agricultural machines as good if not better then in the United States.[3] Calling for an initial investment of one million dollars in order to build the first of a series of facilities, if all went as proposed, within a few years Mexican farmers would be able to purchase a package deal that included a tractor, a truck, and an automobile for 750 dollars. Yet the plan failed and a half-decade later he announced that that company might instead build an automobile factory in the northern state of Coahuila.[4] Again, this venture came to naught. Finally, in 1925, a full decade after having revealed his developmentalist strategy for the country, the company successfully established an automobile assembly plant in the nation's capital, this time earning a variety of tax incentives as well as the special assurance of President Plutarco Elías Calles (1924–1928) that the company would face no difficulties from its workers. The small-scale endeavor, however, paled in comparison to the expansiveness of earlier plans,

[2] See Daniel T. Rodgers, *Atlantic Crossings*: *Social Politics in a Progressive Age* (Cambridge: Harvard University Press, 1998), 237 and Thomas Bender, *Intellect and Public Life: Essays on the Social History of Academic Intellectuals in the United States* (Baltimore: Johns Hopkins University Press, 1992), 49–50. For an account of social scientific exchanges between Mexico and the United States see Mauricio Tenorio Trillo, "Stereophonic Scientific Modernisms: Social Sciences between Mexico and the United States, 1880s–1930s." *The Journal of American History* 86.3 (December 1999): 1156–1187.

[3] "México Tendrá una Gran Fábrica de Tractores," *El Informador*, July 18, 1918, 1; "Ford to Make Farm Tractors for Mexicans," *Wall Street Journal*, August 6, 1918, 2; "Motor Cars, Trucks and Tractors Hastening to Assist Uncle Sam," *Los Angeles Times*, August 11, 1918, VI1; "Ford Tractor Plants for Mexico," *New York Times*, August 18, 1918, 27; "Gesta de Millonario," *El Informador*, August 19, 1918, 2; "Lo que Significa para Jalisco Contar con una Fábrica de Tractores," *El Informador*, August 23, 1918, 2; "Llegó a México un representante de la Fábrica Ford," *El Informador*, September 20, 1918, 1; "Vendrá a México el Industrial Mr. Ford," *El Informador*, September 21, 1918, 1; "El Colono Extranjero Frente al Ciudadano Mexicano," *El Demócrata*, October 29, 1918, 3.

[4] "Ford Considers Plans for Mexican Plants," *Wall Street Journal*, August 15, 1922, 3.

and indeed, domestic production of automobiles would remain limited until well into the second half of the twentieth century.[5]

The making of Mexican citizens into "Fordist" worker-consumers, capable of purchasing the industrial products of their labor proved exceedingly difficult and would not take place until the state aggressively pursued domestic automotive production during the 1960s. In its absence came a transformation of a different sort. By the end of the 1910s, innovations in automotive production in the United States had placed hundreds of thousands of motor vehicles on the world's still quite poorly maintained and often practically non-existent roadways. Prices, meanwhile, had declined dramatically and an extensive trade in used and even stolen vehicles and parts meant that during the following decades the automobile would begin to penetrate both physical and social spaces unimaginable just years earlier. Quickly, these "mobility machines" began to flow southward, and in 1921 Mexico became the world's largest importer of US-made automobiles.[6]

As the United States emerged as the first motoring nation, a "Republic of Drivers" in one historian's estimation, Mexican policymakers and intellectuals, from around the outbreak of WWI through the years of post-revolutionary reconstruction, proposed the use of these products of the machine age in alliance with new roadways in order to hasten modernization of the country.[7] No longer the playthings of a decadent elite, the motorcar, the bus, and the truck promised to deepen economic development and act as collaborators in the social improvement of

[5] Teresa Healy, *Gendered Struggles Against Globalisation in Mexico* (Aldershot: Ashgate Publishing, 2008), 41–2; Steven J. Bachelor, "'We Speak the Same Language in the New World': Capital, Class and Community in Mexico's 'American Century'," in *Workers Across The Americas: The Transnational Turn in Labor History*, ed. Leon Fink (New York: Oxford University Press, 2011), 85.

[6] While Mexico had imported only 35 passenger cars and 235 commercial vehicles during 1913, by 1921 these figures had increased to 6,510 (5 million dollars) and 1,154 (1.2 million dollars), respectively. Meanwhile, the trade in auto parts grew from under 47,000 dollars per year to more than 1.5 million over the same years. See *Foreign Commerce and Navigation of the United States* (Washington: U.S. Government Printing Office, 1922), 329–333.

[7] Cotten Seiler, *Republic of Drivers: A Cultural History of Automobility in America* (Chicago: University of Chicago Press, 2008).

the nation's citizenry. In the meantime, automotive industry interests eyed Mexico as a promising export market, while they aggressively forged relationships with local importers as well as government itself.

The story that follows reveals how the activities of a diverse, transnational network of public and private motoring advocates, bound together by formal and informal alliances as well as common concerns over what contemporaries termed the "question of communications," transformed Mexico into a nation profoundly dependent on motorized travel. Dependence, however, was not accompanied by the democratization of automobile ownership, as it had been in the United States and, though to a lesser extent, in Western Europe. Well into the second half of the twentieth century, the ability to purchase a motor vehicle for personal use remained confined to a miniscule minority of the country's citizens. For most Mexicans, their country remained a "republic of riders" as they continued to travel as passengers, exchanging trains and trolleys for buses, jitneys, taxis, and adapted trucks. In the meantime, however, the privileged minority of freedom-seeking private motorists left an indelible mark on twentieth century mobility as they successfully lobbied public officials to address their particular needs and desires.

Although the state rears its head throughout this study as a major actor, it could not be otherwise, the transition to the motorized vehicle is examined as a process initiated and extended not by the political leaders alone but by business, workers, and consumers as well. Tracing the development of "automobility" from its origins in the country during the final years of the nineteenth century through the end of World War II and the onset of the Cold War, it argues that these years constituted the foundational period of Mexican motorization, shaping both later industrialization initiatives and patterns of mobility within the country for years to come. The

term "automobility" is used here and throughout to describe the larger socio-technological system associated with the use of motorized vehicles, including the services and knowledge they require, the fuel that propels them, the roads and highways that allow for their effective employment, the socio-cultural practices that shape their use and develop around them, and the business networks and political decisions that promote, shape, and at times limit their deployment.[8] Rather than a narrow examination of a material artifact, this study examines the "production" of Mexican automobility as a large-scale and transnational socio-technological endeavor.[9]

Technology, Globalization, and the Porfirian State

The popularization of the motor vehicle formed part of a decades-long "revolution" in mobility that had its origins in the establishment of railroads in Mexico during the late 19th century and was facilitated by the globalization of machine-age devices and methods that began the work of lessening what geographers have termed "the friction of distance."[10] During the decades surrounding 1900 alone, an era of striking "technical discontinuity," the automobile and the airplane were invented, modern road-building was honed and expanded, "virtual" travel was advanced by the development of wireless communications, and the railway, the telegraph, the

[8] John Urry, for example, has suggested "sociologists abandon their idea of the car as a thing, a simple object of production and consumption, and look at it as a system of interlocking social and technical proactices that has reconfigured civil society." David Gartman, "Three Ages of the Automobile: The Cultural Logics of the Car," in *Automobilities*, eds. Mike Featherstone, Nigel Thrift, and John Urry (London: SAGE, 2005), 169. See Jim Conley and Arlene Tigar McLaren, eds., *Car Troubles: Critical Studies of Automobility and Auto–Mobility* (Surrey, UK: Ashgate Publishing, 2009).

[9] On writing transnational histories of technology, see Erik van der Vleuten, "Toward a Transnational History of Technology: Meanings, Promises, Pitfalls," *Technology and Culture* 49:4 (October 2008): 974–994; For the classic study of "large–scale technological systems," see Thomas Hughes, *Networks of Power: Electrification in Western Society, 1880–1930* (Baltimore: Johns Hopkins University, 1983).

[10] See David Harvey, *Spaces of Global Capitalism* (London: Verso, 2006), 100–101.

steam liner, and electric tram became everyday features of many people's lives.[11] Suggesting the rapidity with which not only travel and communications were mechanized, but other activities as well, from 1870 to 1929 machinery imports to Mexico grew from 300,000 (nominal) dollars to 28 million by 1929, an increase of over 90 fold.[12]

The proliferation of novel transportation and communications technologies brought in its wake new spatial configurations and radical alternations in the flow of people, goods, and ideas.[13] Soon many observers began speaking of an impending integration of the world and the diminishment of international difference. Ford himself affirmed that the "universal language" of cinema, the speed of the airplane, and the "complete understanding" produced by radio, presaged the emergence of a United States of the World.[14] Others like Jules Verne and H.G. Wells captivated the imagination of readers through their representations of space annihilating technologies from balloon-flying adventurers to peace-carrying airmen. Meanwhile, in Mexico, poet Amado Nervo envisioned a future in which travel by "aircab" was common and politician Felix Palavicini imagined a Mexico City visited daily by a "Gran-Zepelín" carrying 200 passengers along a route between Buenos Aires and New York.[15]

The privilege of hindsight reveals, of course, the romanticism and erroneousness of many of these predictions. Instead of world unity, the globalization of communications and transportation technologies coincided with a period of mounting nationalism, some incarnations

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[11] Vaclav Smil, *Creating the Twentieth Century: Technical Innovations of 1867–1914 and Their Lasting Impact* (New York: Oxford University Press, 2004), 4.

[12] Sandra Kuntz Ficker, *El comercio exterior de México en la era del capitalismo liberal, 1870–1929* (Mexico: El Colegio de Mexico, 2007), 278–9.

[13] Kevin H. O'Rourke and Jeffrey G. Williamson, *Globalization and History: The Evolution of a Nineteenth–Century Atlantic Economy* (Cambridge: MIT Press, 1999); Edward Beatty, "Approaches to Technology Transfer in History and the Case of Nineteenth–Century Mexico," *Comparative Technology Transfer and Society* 1:2 (2003): 171; Thomas Bender, *A Nation Among Nations: America's Place in World History* (New York: Hill & Wang, 2006), 247.

[14] David Edgerton, "The Contradictions of Techno–Nationalism and Techno–Globalism: A Historical Perspective," *New Global Studies* 1.1 (2007): 1–32.

[15] Amado Nervo, "Dentro de cincuenta años: Diálogos hipotéticos," in *Cuentos y Cronicas de Amado Nervo* (Mexico: UNAM 1993), 151–152; Félix Palavicini, *Castigo! Novela mexicana de 1945* (Mexico, 1926), 213–4.

more belligerent than others, but all founded on notions of territorial differentiation and national distinctiveness.[16] Indeed, the compression of space through time-reducing technologies was quickly exploited by nation-states intent on shoring up the allegiance of their inhabitants and defending borders from commercial, cultural, and military penetration.[17] Even under Mexico's authoritarian President Porfirio Díaz, accused by later Revolutionaries of having handed the country over to foreign interests, the state had begun to establish a variety of protections for domestic industry and would eventually nationalize the nation's railroads.[18]

The speed of the railway and the telegraph, which gave representatives of the state the ability to maintain contact over distant spaces and thus act on some level in unison, coincided with the development of Mexico's first stable post-colonial central government. Indeed, the train provided the Porfirian government with the capacity to quickly deploy troops and thus crush regional insurgencies and other antagonists, while the clocks installed on railway stations and the light-speed of telegraphic exchanges had even given rise, at least officially, to Mexican "national time."[19] Cognizant of the meaning of the train, President Díaz predicted that "the steel of the rails would complete the task begun by the steel of the bayonets: national unity."[20]

These were no small accomplishments given the country's unfortunate luck to be plagued by a notoriously treacherous terrain, hugged by mountains that ran along the eastern and western

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[16] The relationship between globalization of technology and nationalism is forcefully argued by David Edgerton in his essay "The Contradictions of Techno–Nationalism and Techno–Globalism: A Historical Perspective," *New Global Studies* 1:1 (2007): 1–32.

[17] For a classic discussion of "time–space compression," see David Harvey, *The Condition of Postmodernity: An Enquiry Into the Origins of Cultural Change* (Cambridge: Blackwell, 1989), 260–283.

[18] On the development of an industrial policy under Díaz, see Edward Beatty, *Institutions and Investment: The Political Basis of Industrialization in Mexico Before 1911* (Stanford: Stanford University Press, 2001).

[19] Sergio Ortiz Hernán, "De estaciones, trenes y paisajes," in *De las Estaciones* (México: Secretaría de Comunicaciones y Transportes, Ferrocarriles Nacionales de México, y Museo Nacional de los Ferrocarriles Mexicanos, 1995), 40.

[20] Knight, "The Weight of the State," 227. John H. Coatsworth, "Railroads, Landholding, and Agrarian Protest in the Early Porfiriato," *The Hispanic American Historical Review* 54:1 (February 1974): 48–71. For a revisionist approach see, Teresa Van Hoy, *A Social History of Mexico's Railroads: Peons, Prisoners, and Priests* (New York: Rowman & Littlefield Publishers, 2008).

shores and encircled the central plateau, home to the national capital. As transportation and communications improved, a domestic market soon began to be forged from a host of isolated regions and rural hamlets.[21] Regional barriers began to break down, particularly the divisions between city and countryside, and rural people gained the ability to visit cities more frequently and with less difficulty. As Mexican exports became increasingly competitive globally, due to reductions in transport costs, old isolationist goals embodied in the phrase "between weakness (Mexico) and might (United States), the desert," began to give way.[22] Isolation no longer tenable nor desirable, a managed integration with the world became a critical concern of government as well as many domestic industrialists. Following the collapse of the Porfirian regime in 1910, this negotiated "globalization" would become a hallmark of all post-revolutionary regimes as they sought to forge new international relationships while protecting the domestic economy and affirming the loyalty of citizens.

Parallel transformations occurred within cities themselves, as use of the bicycle and the electric tram helped to remake urban space and mobility.[23] As tramlines proliferated, multi-class walking cities gave way to increasing spatial segregation. Streetcar suburbs soon sprang up to the west and south of Mexico City, while the center of town specialized in commerce and financial services and the poor were pushed eastward to low-lying areas prone to flooding. Following innovations in bicycle design, which transformed the new-fangled contraptions from awkward and dangerous instruments into low-wheeled "safety" bicycles, cycling grew among the wealthy. As hobbyists organized and lobbied local government, the potholed streets of Mexico City were

[21] Sandra Kuntz Ficker, "Mercado interno y vinculación con el exterior: el papel de los ferrocarriles en la economía del Porfiriato," *Historia Mexicana* 45:1 (1995): 39–66.
[22] The phrase is attributed to President Sebastián Lerdo de Tejada (1872–1876). See Friedrich Katz, *Nuevos ensayos mexicanos* (Mexico: Ediciones Era, 2006), 120.
[23] On bicycles see William H. Beezley, *Judas at the Jockey Club and Other Episodes of Porfirian Mexico* (Lincoln: University of Nebraska Press, 2004), 39–66. On electric trams see Georg Leidenberger, *La historia viaja en tranvía. El transporte público y la cultura política de la Ciudad de México* (México: UAM Cuajimalpa, 2011), 17–68.

quickly paved over and made into smooth avenues, later used by the capital's growing number of automobilists.[24]

For all the fantastic advancements achieved under the Porfiriato, however, modernization proceeded in a notably uneven fashion, particularly in the countryside where a massive transfer of land from small, often communal holders to powerful private interests took place. Indeed, railway construction had been paid for in large part through land grants to railroad companies and surveyors, as well as taxpayer-financed subsidies. As the profitability of agribusiness grew, the land grab continued and many small farmers were deprived of their lands during these years.[25]

In the meantime, the striking contrasts between the "modern" and the "traditional" drew the attention of both visitors and critics of the regime. Percy Falcke Martin, for example, noted the curious coexistence of rickety two-wheeled ox-carts and modern trashing machines in certain rural areas.[26] In the capital, although some wealthy residents had begun to install indoor plumbing in their homes, the poor often bathed and laundered their clothing in public fountains, one of the few available sources of water. Years later, when he looked back on the pre-revolutionary era, José Vasconcelos would criticize the Porfirian governing elite for having believed that progress had been achieved simply "because an automobile had arrived in Mexico" even as most city residents "continued cooking with charcoal like in the time of Moctezuma."[27]

By the time the Revolution had broken out in 1910, Mexico had become tightly integrated into the global economy, foreign investment had risen to unprecedented levels, and the

[24] James J. Fink, *The Automobile Age* (Cambridge: MIT Press, 1988), 3–4.
[25] Coatsworth, "Railroads, Landholding," 48–71.
[26] Percy Falcke Martin, *Mexico of the Twentieth Century. Vol. II* (New York: Dodd, Mead & Co., 1908), 174.
[27] Jose Vasconcelos, *Ulises Criollo* (Mexico: Ediciones Botas, 1935), 499; Pablo Piccato, "Urbanistas, Ambulants, and Mendigos: The Dispute for Urban Space in Mexico City, 1890–1930," in *Reconstructing Criminality in Latin America*, eds. Carlos Aguirre and Robert Buffington (Wilmington: Scholarly Resources, 2000), 113–48.

country had taken its first steps toward industrialization. As revolutionary leaders and their supporters toppled the Díaz regime, they would soon set about building a nation quite different than the previous one, but similarly committed to capitalist modernization, the consolidation of state power, improvement of communications and transportation, as well as the reformation of a citizenry perceived to be "backward," irrational, and insufficiently patriotic.[28] Before reconstruction could begin, however, Mexicans would be forced to withstand a decade of internecine struggle.

Mobility in Revolution and Reconstruction

When Frank Tannenbaum looked back upon the nation's revolutionary landscape, he saw a conflict deeply linked to changing patterns of mobility. Although a growing number of rural people had joined the ranks of a population of spatially mobile wage laborers during the Porfirian era, many others, particularly those in the center and south of the country, had remained tied to haciendas and plantations.[29] Yet as the former Wobblie and long-time Mexico observer found, the revolutionary upheaval had resulted in nothing less than the "freedom of movement" of the country's "debt peons" for the first time since the Spanish Conquest. "This liberation of approximately one-half of the rural population from serfdom," he argued, was not only the consequence of revolutionary-era legislation, "but more, perhaps" the result of "psychological and social change brought about by the conflict itself."[30]

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[28] Alan Knight, "Revolutionary Project, Recalcitrant People: Mexico, 1910–40," in *The Revolutionary Process in Mexico: Essays on Political and Social Change, 1880–1940*, ed. Jaime E Rodríguez O. (Los Angeles: University of California Press, 1990), 243.

[29] Friedrich Katz, *La guerra secreta en México: Europa, Estados Unidos y la revolución mexicana* (Mexico: Ediciones Era, 1998), 31–2; Friedrich Katz, "Labor Conditions on Haciendas in Porfirian Mexico: Some Trends and Tendencies," *Hispanic American Historical Review* 54:1 (1974): 1–47.

[30] Frank Tannenbaum, *The Mexican Agrarian Revolution* (New York: Macmillan Company, 1929), 404–5. On spatial mobility, see also Alan Knight, *The Mexican Revolution: Counter–revolution and Reconstruction* (Lincoln: University of Nebraska Press, 1990), 524.

The onset of Revolution would indeed do much to grease the friction of human and economic flows. The economy—which in fact expanded throughout much of the armed phase—became all the more reliant on the export of agricultural products, minerals, and, later, oil. Following a period of economic stagnation during the middle years of the decade—due in large measure to WWI restrictions on trade—commercial ties with the United States grew as few European countries could maintain a presence in Latin American markets during the immediate post-war era.[31] In the meantime, an exodus of elite and non-elite Mexicans took shape, as they fled northward, largely to the United States, following in the footsteps of Porfirian era migrant laborers.[32] Others ventured southward as individuals exiled during the Díaz regime returned home, while some of the world's first war correspondents headed into Mexico to cut their teeth reporting on the upheaval.[33]

The porousness of the border region concerned both the United States and revolutionary leaders. Fearing that violence might spill over into the US, National Guard troops were stationed along the international boundary and radio-equipped airplanes put on patrol from California to Texas, while warships patrolled the Gulf. In the meantime, Mexican military and political leaders prepared for invasion, and indeed, the US would eventually send troops into the neighboring country at both Veracruz and Chihuahua.

Although conditions had begun to improve in the years following passage of the progressive 1917 Constitution, during 1920 a faction of Sonoran leaders and former

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[31] Scholars have recently called into question to the economic impact of the Revolution. Rather than ten years of economic stagnation, growth seems to have been relatively strong except during the middle years of the conflinct. See Sandra Kuntz Ficker, "The Export Boom of the Mexican Revolution: Characteristics and Contributing Factors," *Journal of Latin American Studies* 36 (2004): 267–296. On US commercial expansion in Latin America, see Thomas F. O'Brien, *The Century of U.S. Capitalism in Latin America* (Albuquerque: University of New Mexico Press, 1999), 25–72.

[32] Robert McCaa, "Missing Millions: The Demographic Costs of the Mexican Revolution," *Mexican Studies/Estudios Mexicanos* 19:2 (Summer 2003): 367–400.

[33] For a study of one such journalist, see Eugenia Meyer, *John Kenneth Turner*, *periodista de México* (Mexico City: Ediciones Era, 2005).

Constitutionalists forced President Venustiano Carranza from power during a swift coup d'état. As their old ally fled the capital in an unsuccessful attempt to save his own life, these inheritors of the revolutionary state descended upon Mexico City where they would oversee the country's social and economic reconstruction for the next fourteen years. By the time the Sonorans took hold of the reins of national government, more than a million Mexicans had either lost their lives or emigrated, while massive amounts of infrastructure had been torn up or simply abandoned. Entire sections of railway track had been rendered useless, while many freight cars, passenger cars, and locomotives had deteriorated beyond repair. Over a thousand miles of telegraph lines had likewise been destroyed, and the inadequate road network of the Porfirian era had fallen into disrepair.[34]

In this context the new revolutionary authorities initiated an aggressive reconstruction of the country that centered on two intertwined objectives: economic development and reestablishment of political stability. The former called for the use of the state power to stimulate economic growth by, among other things, building new infrastructure and nationalizing resources, while the latter demanded centralization of power, pacification of the provinces, restraint of the military, and the encouragement of a common national identity.[35] In the meantime, Mexican leaders sought to "colonize" poorly settled regions in the northern borderlands as well as in distant Yucatan, a portion of the country orientated more toward the US and the Caribbean than Mexico City.[36] Yet even as affirmations of economic and cultural

[34] Héctor Aguilar Camín and Lorenzo Meyer, *In the Shadow of the Mexican Revolution*, trans. Luis Alberto Fierro (Austin: University of Texas Press, 1989), 71–72.
[35] Alan Knight, "Popular Culture and the Revolutionary State in Mexico, 1910–1940." *The Hispanic American Historical Review* 74:3 (August 1994): 399. On the arrival of the Sonorans in Mexico City and the decade of reconstruction, see Jean Meyer, "Revolution and Reconstruction in the 1920s," in *Mexico Since Independence*, ed. Leslie Bethell (Chambridge: Cambridge University Press, 1991), 201–240.
[36] During the 1920s the Federal Government sought to affirm control of Baja California through, among other things, establishment of radio stations and road building. See, for example, Álvaro Obregón to Subsecretario de Comuicaciones y Obras Públicas, AGN, SCT, Exp. 535/44, Feb 28, 1921.

nationalism abounded, national and state governments would forge new, often deeper alliances with US business interests eager to achieve a greater presence in Mexico.

As revolutionary authorities moved forward with economic and political reform they sought to bring about a cultural transformation as well. Men, women, and children were to become "sober, industrious, literate, and patriotic" citizens, as well as rational, individualistic creatures of the market.[37] To that end the federal government dramatically increased spending on mass education, aiming to suppress old vices and encourage new virtues, while "Mexicanizing" the country's many non-Spanish speaking indigenous people.[38] Yet policymakers were well aware that the country's challenging geography worked against their efforts and that poor communications and transportation facilities threatened to limit the effectiveness of this "cultural revolution." As soon as the 1920s began, road building, automobility, radio, and aviation emerged as critical tools for the larger task of breaking down regional isolation and increasing national interconnectedness.[39]

Along recently graded roads, adapted trails, and the ether of radio waves an incipient consumer culture spread from urban centers to rural enclaves, while cities themselves grew through migration from the countryside. Soon, many Mexicans were being swept into national life not so much as "new men," as some policymakers had hoped, but as new consumers. This embryonic "market revolution" was forged through the activities of such diverse participants as

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[37] Knight, "Revolutionary Project," 243–44.

[38] A central component of the post–revolutionary project was the integration and assimilation of indigenous people. Although the 1920s witnessed a growing interest in indigenous cultures, the goal of the state continued to emphasize modernization and assimilation, rather than multiculturalism. See Alan Knight, "Racism, Revolution, and Indigenismo: Mexico, 1910–1940," in Richard Graham (ed.). *The Idea of Race in Latin America, 1870–1940* (Austin: University of Texas Press 1990).

[39] Alan Knight, "The Weight of the State in Modern Mexico." in *Studies in the formation of the nation–state in Latin America*, ed. James Dunkerley (London: Institute of Latin American Studies, 2002), 233. On Radio, see Joy Elizabeth Hayes, *Radio Nation: Communication, Popular Culture, and Nationalism in Mexico, 1920–1950* (Tucson: University of Arizona Press, 2000); On Roads, See Wendy Waters, "Remapping Identities: Road Construction and Nation Building in Postrevolutionary Mexico," in *Nation and Cultural Revolution in Mexico, 1920–1940*, eds. Mary Kay Vaughan and Stephen E. Lewis (Durham: Duke University Press, 2006).

Bayer pharmaceutical distributors who attracted customers with Popeye movies, bus drivers who linked barely accessible towns to the nation's capital, and radio stations that broadcast popular music to remote locales.[40] In time, new songs appeared in the repertoires of community musical groups, and indeed, Eyler Simpson recalled listening to a rural brass band belt out the St. Louis Blues. Peasants, meanwhile, became "Ford-conscious" as they rode in rural jitneys, turned old tires into huaraches (sandals), and powered corn mills with adapted car engines.[41]

The slow but sure transformation in provincial life was all the more striking in urban areas. As rural people continued their migratory movements from countryside to city, by the end of the 1920s Mexico City's population had become a million strong. Construction of new structures along railways, tramlines, and roads by revolutionary-era refugees developed into a full-blown building boom during the first decade of reconstruction.[42] Real estate speculators carved new suburban colonies and subdivisions (*colonias* and *fraccionamientos*) from the city's agricultural hinterland, while automobiles, buses, taxis, service garages, parking lots, dealerships, autobody shops, filling stations, and billboards began to dot the capital. In the meantime, the remaining cobblestone streets, narrow, congested, and difficult to navigate, slowly gave way to a growing number of asphalted avenues, which chauffeurs, bus drivers, and mechanics, shared with the city's fifís and flappers, rural migrants and street vendors, the new and old elite, as well as military leaders and their subalterns.

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[40] On Popeye see Norman Sylvester Hayner, *New Patterns in Old Mexico: A Study of Town and Metropolis* (New Haven: College & University Press, 1966), 18.

[41] Eyler Newton Simpson, *The Ejido: Mexico's Way Out* (Chapel Hill: University of North Carolina Press, 1937), 108.

[42] Garza Merodio, "Technological innovation," 119; Olsen, *Artifacts of Revolution*, 35, 109; On the use of concrete see Matthew Fry, "Mexico's Concrete Block Landscape: A Modern Legacy in the Vernacular," *Journal of Latin American Geography* 7:2 (2008): 35–58 and Rubén Gallo, *Mexican Modernity: The Avant–Garde and the Technological Revolution* (Cambridge: MIT Press, 2005); See also Joanne Hershfield, *Imagining La Chica Moderna: Women, Nation, and Visual Culture in Mexico, 1917–1936* (Durham: Duke University Press, 2008).

Political innovation constituted one of the hallmarks of the early post-revolutionary period, and as the 1920s came to an end, Plutarco Elías Calles (1924–1928) established the National Revolutionary Party (PNR). Rather than a traditional political party, the PNR sought to broker the many competing interests unleashed by the Revolution and thus avoid destabilizing forms of political violence. For the next half-decade, although no longer acting president, Calles would continue to give the last word on many if not all significant government decisions, as he remained the "Jefe Máximo" of the "Revolutionary Family."[43]

The administration of Lázaro Cárdenas (1934–1940) produced a dramatic political transformation as the president initiated a program of massive redistribution of land to the rural poor, reaffirmed the state's commitment to labor by supporting the creation of large national trade unions, oversaw the (failed) introduction of a "socialist" model of public education, and eventually nationalized both the railways and the oil industry. In the meantime, General Motors (1935) and Chrysler (1937) followed the lead of the Ford Motor Company and set up assembly operations in Mexico City. By 1936 Cárdenas had forced Calles into exile and political irrelevance, and during 1938 he would reorganize the "official" party, the PNR, as the PRM (Party of the Mexican Revolution).[44] Mounting domestic and international constraints, however, forced Cárdenas to abandon his earlier radicalism during the final two years of the decade. Under his successor, Manuel Ávila Camacho (1940–46), the ideological realignment was confirmed

[43] On the Maximato, the era in which Plutarco Elías Calles maintained significant political influence after his presidential term, see Tzvi Medin, *El minimato presidencial. Historia política del maximato, 1928–1935* (Mexico: Ediciones Era, 1982).

[44] Scholarship on Cárdenismo is vast. See the influential essay by Alan Knight, "Cardenismo: Juggernaut or Jalopy?" *Journal of Latin American Studies* 26 (1994): 73–107. Other important studies that examine the regional response to Cardenista reforms include, Adrian A. Bantjes, *As If Jesús Walked on Earth: Cardenismo, Sonora, and the Mexican Revolution* (Lanham: Rowman & Littlefield, 1998), Marjorie Becker, *Setting the Virgin on Fire: Lázaro Cárdenas, Michoacán Peasants, and the Redemption of the Mexican Revolution* (Berkeley: University of California Press, 1995), and Ben Fallaw, *Cárdenas Compromised: The Failure of Reform in Postrevolutionary Yucatán* (Durham: Duke University Press, 2001).

and the state renounced its former endorsement of anti-clericalism and much of its support of trade unionism, while it excluded the radical left from electoral politics.

The 1940 presidential campaign had not been devoid of conflict, however, and Ávila Camacho's opponent, Juan Andrew Almazán, initially refused to recognize his defeat. As Franklin Delano Roosevelt's envoy to the inauguration, vice-president-elect Henry A. Wallace, made his way to Mexico City over the Pan American Highway, Almazán would fly in from Brownsville, Texas to "resign" as President-elect, citing fears of US military intervention.[45] With war sweeping through Europe once again, old hostilities between the US and Mexico were quickly put aside in favor of a deeper relationship motivated by the threat of world war.[46] In the meantime, the Mexican federal government adopted an official policy of Import Substitution Industrialization, protecting the domestic market in order to encourage the development of national industry. Finally, in 1946, PRM became the Institutional Revolutionary Party (PRI) and the country elected its first civilian president, who, as lore has it, promptly longed for all Mexicans to some day own a Cadillac of their own, as well as a cigar and ticket to the bullfights.[47]

The Transnational Mechanics of Automobility

The history of the automobile in Mexico as well as Latin America more generally, cannot be said to exist as a field of study in its own right. Scholarship, instead, remains minimal and uneven throughout much of the region. In contrast to the hundreds of volumes that have examined this

[45] Arnaldo Cortesi, "Mexicans Storm Embassy As Wallace Party Arrives," *New York Times*, November 29, 1940, 1; "Almazán Drops Presidency Claim in Mexico," *New York Times*, November 27, 1940, 1.
[46] Alan Knight, "State Power and Political Stability in Mexico," in *Dilemmas of Transition*, ed. Neil Harvey (London: Institute of Latin American Studies, University of London and British Academic Press, 1993), 52–53.
[47] In recent years the post–1940 period has received growing attention from scholars. See Gilbert M. Joseph, Anne Rubenstein, and Eric Zolov, eds. *Fragments of a Golden Age: The Politics of Culture in Mexico Since 1940* (Durham: Duke University Press, 2001). On President Miguel Alemán's comment, see Enrique Krauze, *Mexico: Biography of Power*, trans. Hank Heifetz (New York: HarperCollins, 1997), 543.

elemental artifact in the US and the countries of Europe, a recent monograph by the historian Joel Wolfe represents the only English-language treatment for a Latin American country.[48]

The character of automobility in the region offers, in part, an explanation for the remarkable dearth in scholarship. As general knowledge and a quick perusal of vehicle statistics reveal, the United States and Europe purchased many more cars during the past century than did the countries of Latin America. To the south of the US, private "auto-motoring" long remained the exclusive domain of the region's moneyed elite and politically powerful. When automobile use was "vulgarized" during the late 1910s and early 1920s, the poor and the middle classes boarded motor vehicles, in much less romantic fashion than their counterparts to the north, as passengers. A broad association between the automobile and individualism was difficult to replicate in societies where only a small fraction of the population had the means to purchase a vehicle for private use. Most people simply continued to travel alongside their fellow passengers, just as they had when riding trains and trolleys. The identification of the open road with freedom, similarly, made little sense in places where road travel often conjured up an imagery of laborious movement over poorly adapted paths. To be sure, the motorcar enjoyed the same associations with progress and upward social mobility, but its development into a veritable national institution, as occurred in the US, cannot be said to have taken place in the countries of Latin America until well beyond the mid-century.

Of course the absence of the romantic story of automobility, so ingrained in US culture, did not mean that the use of motor vehicles did not unleash significant transformations in the region. The exportation of automobiles to Latin America constituted a massive transfer of machinery that rivaled the installation of the railways during the late nineteenth century, and motor vehicles quickly became the largest single import for many Latin American countries. It is

[48] Joel Wolfe, *Autos and Progress: The Brazilian Search for Modernity* (New York: Oxford University Press, 2010).

no surprise, then, that the first studies to examine the globalization of the automobile were undertaken by government commercial affairs officers as well as manufacturers themselves. The US Department of Commerce, for example, became an early student of the trade in motorcars, as it gathered information and engaged in analyses of not only markets but the social and economic impact of motorization. In the meantime, a diversity of vehicle trade journals that emerged during the first decades of the twentieth century set about collecting information on budding foreign markets.

Part of the problem with studying automobility has to do with its diffuse character. While scholars have spent decades examining the economic and social impact of the railroad revolution of the nineteenth century in Latin America, road travel has largely been overlooked. A massive, centralized, and highly regulated endeavor, the railways have been much more forgiving to scholars. Researchers have long enjoyed access to the records of government and defunct companies, which are quite often located in centralized national archives. Road-building and auto transportation, on the other hand, were messy and decentralized activities, and have thus represented more cumbersome research subjects. Roads, for example, can include anything from dirt paths to beautifully asphalted highways, while auto transportation stretches along a continuum from private motoring to large-scale cargo and passenger transport. And whereas the railways depended on massive government subsidies and produced centralized unions, in contrast, authorities often did not even possess accurate records on roadways, nor detailed knowledge of their use. Even the trade in automobiles, as opposed the rolling stock of the railways, frequently took place through informal channels (note the expansive market for stolen vehicles) and long remained an activity dominated by a variety of small-scale importers.[49]

[49] Alan Knight, "The Weight of the State in Modern Mexico." In *Studies in the Formation of the Nation–State in Latin America*, ed. James Dunkerley (London: Institute of Latin American Studies, 2002), 233.

As has often been the case, journalists, literary figures, and artists became some of the first observers to contemplate the impact of automobiles on the countries and major cities of the region, while daily newspapers and magazines became clearinghouses for commentary on the emergent practice of motorized travel. Although *modernista* poets and writers would mourn the progressive death of walking cities—Jesús Villalpando for example lamented the fact that his introspective strolls around the Mexican capital had become less frequent due to the danger presented by buses and taxis—the emergent avant-garde enthusiastically embraced the automobile as an agent of modernization and cultural transformation.[50] In 1917, Martín Luis Guzmán would, for example, remark how the 10-cent-a-ride jitneys of Mexico City had allowed residents "the small satisfaction of riding on pneumatic wheels" throughout the capital,[51] while Arqueles Vela mused over the impact of headlights on, among other things, the legs of women.[52] Writing in the magazine *Vida Americana* during 1921, the painter David Alfaro Siqueiros called on Mexicans to welcome their "marvelous dynamic age. We must love modern machines, which give us new and unexpected plastic emotions."[53] In the meantime, poet Salvador Novo traced the impact of the motorcar and the jitney on the "City of Palaces," becoming a dedicated student of automobility.

Among others, however, mistrust remained and soon filled the pages of machine-age skeptics like José Vasconcelos and Samuel Ramos. The latter, for example, viewed "the universal invasion of machine civilization" as an impediment to the promotion of humanist values. Although he acknowledged that technology did hold out the possibility of freeing people from physical toil and thus might allow them to pursue "higher" goals, he feared that Mexicans

[50] Jesús Villalpando, "Apuntes de color de la ciudad," *El Nacional*, 10 Febrero 1918, n.p.
[51] Martin Luis Guzman, "Automóviles," *Pegaso*, May 4, 1917, 9.
[52] Arqueles Vela, "Las luces de los automóviles," *El Universal Ilustrado*, August 27, 1925, 25; Arqueles Vela, "Las mujeres y el automóvil," *El Universal Ilustrado*, March 4, 1926, 37.
[53] Quoted in Anita Brenner, *Idols Behind Altars* (New York: Biblo & Tannen Publishers, 1929), 242.

would be transformed into "automatons." Ramos, moreover, associated technology and its mastery with whiteness, specifically Angloness. Influenced by Oswald Spengler's racialized insights on modern technics, Ramos observed that many "men in Mexico" had erroneously come to believe that the Indian could be made to adopt modern machines under the false premise that science and technology were universal. Understanding, he argued, was not enough to bring about adoption, as users needed to "have the same spirit" as techincs' creators. An Indian could learn to drive an automobile, but would never experience the "same emotion" felt by "the white man."[54]

Coinciding with and superseding the avant-garde and humanist debates over the machine-age, a group of inter-American technological enthusiasts began to make their presence felt in government, academic circles, and media. They adapted the "techno-globalist" dreams of such figures as H.G. Wells and others to the scale of the western hemisphere. Automobiles and other novel transportation and communications technologies like aviation and radio became tools that would bring about the long-awaited unification of the Americas. These "techno-Pan Americanists" wrote extensively about the needs and advantages of closer cultural, political, and economic ties between nations of the region. They were convinced that improved transportation and communications were leading irrevocably toward greater hemispheric conviviality, while they put their faith in "machine magic" as the best way in which to render real the "nonplace of Pan-America."[55] Although their emphasis on machine power and engineering know-how was frequently rearticulated by Latin American observers, most resided in the United States, and during their height in the 1930s and 1940s, many either formed part of the Rooseveltian New Deal coalition or advocated on behalf of its Good Neighbor Policy.

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[54] Gracia, Jorge J. E. *Hispanic/Latino Identity: A Philosophical Perspective*, 144–5; Samuel Ramos, *Perfil del hombre y la cultura en México* in Samuel Ramos, *Obras Completas I* (Mexico: UNAM, 1990), 153–4.
[55] Ricardo Donato Salvatore, "Imperial Mechanics: South America's Hemispheric Integration in the Machine Age," *American Quarterly* 58:3 (September 2006): 662–691.

The end of World War II gave way to a formal effort on the part of many Latin American nations to encourage large-scale industrialization. For the first time countries in the region moved beyond importation and local assembly of automobiles to fully integrated domestic production. With varying levels of success, Mexico, Brazil, Argentina, Colombia, Chile, and Peru all sought to establish national automobile industries from the 1950s through the late 1960s. Rather than financed by local capital, in most instances multinational corporations were encouraged to "jump over" recently erected tariffs on auto imports and establish domestic operations. These structural transformations in the automotive business, linked to a broader shift toward Import Substitution Industrialization, produced the first scholarly treatments of Latin American automobility, as economists, sociologists, and political scientists set out to examine the motivations and prospects of auto-making in the region.

In 1963 a doctoral student from the Harvard Graduate School of Business completed one of the earliest industry studies, a dissertation on the "procurement practices" of foreign automotive firms operating in Mexico that he based on a series of masked interviews conducted with automakers.[56] A few years later Rand Corporation researcher Leland J. Johnson examined government encouragement of auto production in the politically volatile region of Arica, in northern Chile.[57] Comparative studies also appeared during these years, such as Michael Marvin's *A Survey of Automobile Manufacturing in Latin America* (1967) and Jack Baranson's *Automotive Industries in Developing Countries* (1968).[58] Over the next two decades treatment of the auto industry would continue to emphasize questions of production, including Bernard

[56] Guillermo S. Edelberg, *The Procurement Practices of the Mexican Affiliates of Selected United States Automobile Firms* (Ph.D. Dissertation, Harvard Business School, 1963).
[57] Leland J. Johnson, "Problems of Import Substitution: The Chilean Automobile Industry," *Economic Development and Cultural Change* 15:2 (January 1967): 202–216; Jack Baranson, *Automotive Industries in Developing Countries* (Washington: International Bank for Reconstruction and Development, 1968).
[58] Michael Marvin, *Survey of Automobile Manufacturing in Latin America* (Austin: University of Texas at Austin, 1967).

Munk's work on the Colombian auto making and a dissertation by George Henry Westacott on the Peruvian industry.[59] Finally, in 1977, Rhys Owen Jenkins penned an influential synthesis that described the "dependent" quality of industrialization in the automotive sector.[60] Meanwhile, as Anglophone academics continued their work, scholars in Latin America dedicated similar attention to issues of production, efficiency, and domestic market size.[61]

Social scientific interest in the Latin American automobile industry did not, and for the most part has not, translated into significant research by business historians. Although the international ambitions of the Ford Motor Company were evident from its birth—its sixth car was sent beyond US borders, and during the company's second year of existence Ford established a plant in Canada—it would take until the 1960s for a scholarly examination of the company's international activities to be undertaken.[62] Yet as researchers turned out monographs, edited volumes, and academic articles on the activities and interworkings of Ford, General Motors, and other automakers, few examined the global activities of such firms. One early exception was the comparative study *American Business Abroad: Ford on Six Continents*, published in 1964 by Mira Wilkins and Frank Ernest Hill. Its recent republication (2011) by

[59] Bernard Munk, "The Welfare Costs of Content Protection: The Automotive Industry in Latin America," *Journal of Political Economy* 77:1 (January–February, 1969), 85–98; Bernard Munk, "The Colombian Automobile Industry: The Welfare Consequences of Import Substitution," *Economic and Business Bulletin* (Fall 1970): 6–22; George Henry Westacott, *The Peruvian Automobile Industry: A Socio–economic and Organizational Inquiry* (Ph.D Dissertation, Cornell University, 1970);

[60] Rhys Owen Jenkins, *Dependent Industrialization in Latin America: The Automotive Industry in Argentina, Chile, and Mexico* (New York: Praeger, 1977); See as well Rhys Owen Jenkins, *Transnational Corporations and the Latin American Automobile Industry* (Pittsburgh: University of Pittsburgh Press, 1987), and Russel M. Moore, *Multinational Corporations and the Regionalization of the Latin American Automotive Industry* (New York: Arno Press Inc., 1980) and *The Political Economy of the Latin American Motor Vehicle Industry*, ed. Rich Kronish and Kenneth S. Mericle (Cambridge: The MIT Press, 1984). Helen Shapiro's *Engines of Growth: The State And Transnational Auto Companies in Brazil* (Cambridge: Cambridge University Press, 1994) representes one of the more recent studies of the industry.

[61] J. Almeida, *A Implantação da Indústria Automobilística no Brasil. Da substituição de importações ativa à globalização passiva* (Rio de Janeiro: 1972); B. Heloiz, *Formaçao da Industria Automoliblistica Brasileira* (São Paulo: IGEOG–USP, 1976); B. Heloiz, *Política de Implantação da Indústria Automobilística na América Latina* (São Paulo: Instituto de Geografia – USP, 1975).

[62] Mira Wilkins and Frank Ernest Hill, *American Business Abroad: Ford on Six Continents* (Cambridge: Cambridge University Press, 2011).

Cambridge University Press, suggests not only the volume's continued relevance, but the fact that global histories of the auto industry remain few and far between. Norbert McDonald's examination of Henry J. Kaiser's involvement in the Argentine industry and Richard Downes' study of US dominance in the Brazilian auto market stand out as isolated exceptions.[63] Historian Greg Grandin's recently-penned book on the misadventures of Henry Ford in Brazil's rubber-producing Amazon and Joel Wolfe's study of Brazilian automobilism represent two of the more recent contributions to the business history of transnational automobility.[64]

During the 1980s and 1990s labor historians began to produce the first studies of Latin American autoworkers, in which they considered the development of labor relations and worker activities within the expanding but volatile industry. John Humphrey and Ian Roxborough published two early books on workers in the Brazilian auto industry and autoworker unions in Mexico, respectively. These were followed by additional studies on the automotive industry by Kevin J. Middlebrook, part of a larger examination of union democratization in Mexico, and another by James P. Brennan on the autoworkers of Córdoba, Argentina.[65] Following the "cultural turn" in labor history, Steven J. Bachelor published a variety of essays and articles on

[63] Norbert McDonald, " "Henry J. Kaiser and the Establishment of an Automobile Industry in Argentina," *Business History* 30:3 (July 1988): 329–45; Richard Downes, "Autos over Rails: How US Business Supplanted the British in Brazil, 1910–28," *Journal of Latin American Studies* 24.3 (October 1992), 551–583.

[64] Greg Grandin, *Fordlandia: The Rise and Fall of Henry Ford's Forgotten Jungle City* (New York: Metropolitan Books, 2009).

[65] John Humphrey, *Capitalist Control and Workers' Struggle in the Brazilian Auto Industry* (Princeton: Princeton University Press, 1982); Ian Roxborough, *Unions and Politics in Mexico: The Case of the Automobile Industry* (Cambridge: Cambridge University Press, 1984); Kevin J. Middlebrook, "Union Democratization in the Mexican Automobile Industry: A Reappraisal," *Latin American Research Review* 24:2 (1989): 69–93; James P. Brennan, "Clasismo and the Workers. The Ideological–Cultural Context of 'Sindicalismo de Liberación' in the Cordoban Automobile Industry, 1970–1975," *Bulletin of Latin American Research* 15:3 (1996): 293–308. John Peter Tuman and John T. Morris, eds. *Transforming the Latin American Automobile Industry: Unions, Workers, and the Politics of Restructuring* (Armonk: M.E. Sharpe, 1998).

Mexico's autoworkers that moved beyond the union hall and the shop floor into the homes and private lives of laborers.[66]

Between the industry studies of the 1960s and 1970s, and the labor and business histories that followed them, scant attention has been paid to the activities of consumers. Indeed, we know very little about the use of automobiles by the people who purchased or employed them, and only slightly more about the role of the state as a promoter of automobility.[67] How businesses and entrepreneurs moved these products from the factory floor or the import house to the buyer is also poorly understood. Consumers and small businesses, of course, tend to make unpleasant research subjects as they seldom leave behind well-organized records of their activities. In many instances archives that did exist at one point have long-since been relegated, very literally, to the ash heap. In Mexico, for example, the records of the state road commission, formed in 1925, have yet to be located and may well have been forever lost during various moments of administrative reorganization.

An emergent group of innovative scholars has, nonetheless, begun to venture beyond the site of production and write histories of this particularly pervasive technology "in use." While the first to do so were hobbyists, museums, clubs, and governmental offices and institutions,[68] a diversity of historians and social scientists from across the hemisphere has begun to study automobile users and advocates, road builders, as well as government's role as shaper of

[66] Steven J. Bachelor, "Toiling for the 'New Invaders': Autoworkers, Transnational Corporations, and Working–Class Culture in Mexico City, 1955– 1968," in *Fragments of a Golden Age. The Politics of Culture in Mexico Since 1940*, eds. Gilbert M. Joseph, Anne Rubenstein, and Eric Zolov (Durham: Duke University Press, 2001), 273–326.

[67] For a discussion on the importance of technology "in use" see David Edgerton, "From Innovation to Use: Ten Eclectic Theses on the Historiography of Technology," *History and Technology* 16 (1999): 111–136 and the same author's "Creole Technologies and Global Histories*:* Rethinking How Things Travel in Space and Time," *History of Science and Technology* 1 (2007): 75–112.

[68] H. M. Romero, *Historia del transporte en la Ciudad de México: de la trajinera al metro* (México: Secretaría General de Desarrollo Social, 1987); A. J. Schael (ed.), *Venezuela, 100 años en automóvil* (Caracas: Fundación Museo del Transporte, 2004); A. Casal, *El automóvil en el Uruguay. Los años heroicos 1900–1930* (Montevideo: Ediciones de la Banda Oriental, 1981); A. Casal, *El automóvil en América del Sur. Orígenes. Argentina, Brasil, Paraguay, Uruguay* (Montevideo: Ediciones de la Banda Oriental, 1996); J. Salazar, *De la mula al camión: apuntes para una historia del transporte en Colombia* (Santa Fé de Bogotá: Tercer Mundo Editores, 2000).

motorization.[69] The emergent field of tourism history, which has revealed a close association between automobility and leisure travel, has offered new accounts of motoring in the region. Of all countries, scholars in Argentina have led the way, producing dozens of studies on the origins and popularization of motoring among pleasure-seekers.[70] Road building, meanwhile, has received some attention in Argentina, Chile, Colombia, and Mexico.[71] One of the more striking gaps involves the history of urban motorization, although a series of recent articles by a young Chilean scholar suggest the topic may soon draw more interest.[72]

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[69] Wolfe, *Autos and Progress*; Ricardo Trumper and Patricia Tomic, "The Chilean Way to Modernity: Private Roads, Fast Cars, Neoliberal Bodies," in *Car Troubles: Critical Studies of Automobility and Auto–Mobility*, eds. Jim Conley and Arlene Tigar McLaren (Ashgate Publishing, 2009); G. Giucci, 'Amor sobre ruedas: el automóvil en los trópicos', *Cuadernos Hispanoamericanos* 601–602 (July–August, 2000): 27–38; G. Giucci, *La vida cultural del automóvil. Rutas de la modernidad cinética* (Buenos Aires: Universidad Nacional de Quilmes – Prometeo, 2007).

[70] Melina Piglia, "The Awakening of Tourism: The Origins of Tourism Policy in Argentina, 1930–1943," *Journal of Tourism History* 3.1 (2011): 57–74; Melina Piglia, "La incidencia del Touring Club y del ACA en la construción del turismo como cuestión pública: 1918–1929," *Estudios y Perspectivas en Turismo* 17:1 (March 2008): 51–67; Melina Piglia, "Ciudades de lona: el Automóvil Club Argentino y la construcción de los campings como lugares turísticos en la entreguerra (1926– 1939)," in eds. Carla Lois y Perla Zusman *Viajes y geografías. Exploraciones, turismo, migraciones y en la construcción de lugares* (Buenos Aires: Editorial Prometeo, 2007); Rodrigo Booth, "Turismo y representación del paisajela invención del sur de Chile en la mirada de la Guía del Veraneante (1932–1962)," *Nuevo mundo, mundos nuevos* 8 (2008); Rodrigo Booth, "'El paisaje aquí tiene un encanto fresco y poético': Las bellezas naturales del sur de Chile y la construcción de la nación turística," *Revista de Historia Iberoamericana* 3.N1.01 (2010).

[71] Anahí Ballent, "Kilómetro Cero: la construcción del universo simbólico del camino en la Argentina de los años treinta," *Boletín del Instituto de Historia Argentina y Americana Dr. Emilio Ravignani* 27 (2005): 107–136; Anahí Ballent, "Ingeniería y Estado: la red nacional de caminos y las obras públicas en la Argentina, 1930–1943," *Historia, Ciencias, Saude – Manguinhos* 15:3 (2008); Benjamin Fulwider, "Driving the Nation: Road Transportation and the. Postrevolutionary Mexican State, 1925–1960," Ph.D. dissertation, Georgetown University, 2009; Wendy Waters, "Re–mapping the Nation: Road–building as State Formation in Post–revolutionary Mexico, 1925–1940," Ph.D. dissertation, University of Arizona, 1999; Rodrigo Booth, "Automóviles y Carreteras. Movilidad, modernización y transformación territorial en Chile, 1913–1931," Ph.D dissertation, Pontificia Universidad Católica de Chile, 2009; R. García Heras, *Automotores norteamericanos. Caminos y modernización urbana en la Argentina 1918–1939* (Buenos Aires: Libros de Hispanoamérica, 1985).

[72] Tomás Errázuriz, "When Walking Became Serious: Reshaping the Role of Pedestrians in Santiago, 1900–1931," The Journal of Transport History 32:1 (June 2011): 39–65; Tomás Errázuriz, "El asalto de los motorizados: El transporte Moderno y la crisis del tránsito público en Santiago: 1900–1927," *Historia* 44:2 (2010): 357–411; Tomás Errázuriz, "Looking for Latin American Urban Mobility History," in eds. Gijs Mom, et. al. *Mobility in History. Themes in Transport* (Neuchatel, Switzerland: Editions Alphil, 2010), 193–198; N. García–Canclini, A. Castellanos, and A. Rosas, *La ciudad de los viajeros. Travesías e imaginarios urbanos: México, 1940–2000* (México, D. F.: Grijalbo, 1996); Tomás Errázuriz, "Santiago/Chile on Wheels," *ICON* 13 (2007): 125–134; Tomás Errázuriz, "La experiencia del tránsito. Motorización y vida cotidiana en el Santiago metropolitano, 1900–1931," Ph.D. dissertation, Pontificia Universidad Católica de Chile, 2010; E. J. Stann, "Transportation and Urbanization in Caracas, 1891–1936," *Journal of Interamerican Studies and World Affairs* 17:1 (1975), 82 –100; M. T. Ramírez, *La infraestructura de transporte en Colombia durante el siglo XX* (Bogotá: Ediciones Fondo de Cultura Económica, 2006).

Many questions, however, remain unanswered. The role of private business as a promoter of motorized travel is poorly understood throughout Latin America. The oil industry, which has long drawn the attention of scholars, has seldom been examined as a shaper of transportation and mobility in the region.[73] The relationship between automobility and US diplomacy in Latin America has also been poorly appreciated, even as scholarship on Pan Americanism has witnessed a revival in recent years.[74] Finally, while scholars have begun to consider questions related to the history of technology, the popularization of mechanics and technical knowledge through automobile use, repair, and production remains virtually unexamined.

Contributing to the growing fields of transnational history, business history, and history of technology, this dissertation represents the first critical examination of the first half century of automobility in Mexico. The first two chapters proceed in chronological fashion, beginning with the origins of motoring during the last decade and a half of the Porfirian era, followed by an examination of the impact of Mexican Revolution, technological change, and the First World War on the use and trade in motor vehicles, transportation infrastructure, and intellectuals and public officials' understanding of the "question of communications." The following five chapters largely center on the years between 1920 and 1950. In succession they address transformations in urban mobility, the role of international business in the commercialization and use of automobiles, the rise of road-building as a key policy of the federal government, the impact of

[73] In Mexico, for example, classic texts on the oil industry and the politics of oil have little to say about production and consumption of gasoline, or the role of private and public oil companies in the automobilization of the country. See Jonathan C. Brown, *Oil and Revolution in Mexico* (Berkeley: University of California Press, 1993); Linda B. Hall, *Oil, Banks, and Politics: The United States and Postrevolutionary Mexico, 1917–1924* (Austin: University of Texas Press, 1995); Myrna I. Santiago, *The Ecology of Oil: Environment, Labor, And the Mexican Revolution, 1900–1938* (Cambridge: Cambridge University Press, 2006).

[74] For innovative studies of inter–American relations see, Gilbert M. Joseph and Catherine LeGrand, eds. *Close Encounters of Empire: Writing the Cultural History of U.S.–Latin American Relations* (Durham: Duke University Press, 1998) and Gilbert M. Joseph, Daniela Spenser, eds. *In from the Cold: Latin America's New Encounter With the Cold War* (Durham: Duke University Press, 2008).

interstate motoring by national tourists, bus lines, and truckers, and the relationship between foreign tourism, motoring, and the politics of Pan Americanism.

Chapter One

The Eruption of Automobility in Porfirian Mexico

During 1895 the first self-propelled motorcar appeared on the streets of Mexico's national capital. Dubbed "El coche del Diablo" or the Devil's car by the daily *El Universal*, it had been imported by the "Agencia de Ingenieros Basave, Robles Gil y Zozaya" on behalf of local aristocrat Fernando de Teresa.[75] In the years before automobiles acquired a broader commercial and quotidian meaning, motoring remained little more than a recreational activity of the eminently affluent, as residents like de Teresa represented the major market for imported cars as well as some of the most active proponents of automobile-use in the country.

From 1895 to 1910, as the country became increasingly integrated into the global trade in consumer and productive technologies, Mexico City developed into the nation's primer motoring center.[76] Wealthy urbanites soon sped up and down the capital's flagship avenue, the Paseo de la Reforma, had tea at a new Automobile Club established on the shores of Chapultepec Lake, and went on excursions to outlaying suburbs and nearby towns like Pachuca, Toluca, Puebla, and Cuernavaca.[77] Compared to other cities around the world as well as those in Mexico, the use of these new mechanical devises expanded quickly and early in the capital. Indeed, as

[75] "El coche del Diablo," *El Universal*, January 16, 1895, 1.
[76] On technology transfer in Porfirian Mexico see Edward Beatty, "Approaches to Technology Transfer in History and the Case of Nineteenth–Century Mexico," *Comparative Technology Transfer and Society* 1.2 (2003): 167–197.
[77] "An Automobile," *The Mexican Herald*, July 1, 1898, n.p.; Nathaniel J. Mason, "The City of Mexico," *Overland Monthly and Out West Magazine*, November 1906, n.p.; "Nueva Mesa del Automóvil Club," El *Tiempo*, April 4, 1909, n.p.; "Festival en el Automóvil Club de México," *El Diario*, January 6, 1910, n.p.; "La moda y sus elegantes caprichos. Vestido para automóvil," *El Diario*, February 5, 1910, n.p.; "Automovilismo," *El Diario*, March 24, 1910, n.p.

anthropologist Frederick Starr recalled, his first encounter with a "horseless" carriage had not in fact been in his hometown, rapidly industrializing Chicago, but on the streets of Mexico City.[78]

During the first decade and a half of Mexican motoring, international manufacturers established local dealerships and contracted agents to market vehicles and a variety of accessories to consumers. The growing petroleum industry, which had established itself in the northeastern portion of the country, began to commercialize the use of petroleum products such as asphalt, gasoline, and naphtha, a heavy fuel suitable for certain motors. Garages and mechanical services proliferated in the city, locals discovered new work as chauffeurs, and entrepreneurial businesses slowly began to find commercial uses for motorized vehicles as taxis, buses, and to a lesser extent, as delivery trucks. Such developments were only incipient during the Porfiriato, and they hardly had begun to displace older forms of transit and travel by the time the Revolution broke out in 1910. They did, however, set in motion a variety of practices that would be increasingly consolidated during the following two decades.

Outside of the capital, in regional cities, consumers would only begin to purchase motor vehicles in significant numbers during the final years of the regime. Meanwhile, a small number of interurban roads, which extended beyond and between urban centers and were suitable for motorized travel, began to be built by federal and state governments as well as private promoters. This extension of an incipient road system and the initial spread of motoring throughout the nation's cities came about in no small part as the result of demands from motorists themselves. Yet the efforts of private business to expand the market for motor vehicles, fuel, and a host of derivative items, encouraged further growth, and, notably, the emergent oil industry became a

[78] Frederick Starr, *Mexico and the United States: A Story of Revolution Intervention and War* (Chicago: The Bible House, 1914), 358.

critical actor in the construction of necessary smooth surfaced roads, largely within cities themselves.

This chapter traces the early development of automobility in the nation's capital and its slow but steady expansion into regional Mexico. It begins by examining the business of marketing vehicles, as well as the commercialization of their necessary fuel, gasoline, and the development of smooth city streets. It considers a series of failed efforts to establish local automotive manufacturing, as well as the more successful establishment of offshoot industries and occupations like repair garages, delivery services, taxis and bus services, and the profession of chauffeur. It examines the expansion of the automobile beyond the confines of Mexico City, into regional cities, and the preliminary development of interurban roadways and travel beyond urban confines. Finally, the chapter concludes by tracing the early efforts by transnational motoring promoters to unite the embryonic road network of the United States with its southern neighbor.

Selling the Automobile

Throughout the last decade and a half of the Porfirian era virtually all automobiles purchased in Mexico had to be imported from abroad. To meet the demand of the country's small but prosperous group of consumers, sales agents and dealerships quickly sprang up around the capital, and from May of 1901, when Charles L. Seeger opened the nation's first dealership, to 1910, the city developed into a small but dynamic market.[79] By 1909, brands with local representatives included, among others, the French firms Renault, Lanhard, Mors, Bayard-Clement, Lorraine-Dietrich, Peugeot, Darracq, Brouhot, Gregoire, and Unic; the British

[79] Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington: Government Printing Office, 1912), 25; *Memoria del Ayuntamiento de México* (Mexico: La Europea, 1901), 396–7.

companies Napier and Humber; the American concerns Pope, Locomobile, Cadillac, Thomas, White, Chalmers-Detroit, Reo, Stevens-Duryea, Oldsmobile, Rambler, Ford, Haynes, Maxwell, Baker, Peerless, Packard, Buick, and Stoddard-Dayton; as well as Italy's Fiat and Germany's Mercedes.[80] One observer, struck by the diversity of vehicles, found that cars could be seen in "all the colours of the rainbow."[81]

Virtually all firms engaged in the commercialization of motorcars operated solely out of the national capital. Ten were large general agencies, while another 15 or so were no more than small offices. The large general concerns served the entire country and maintained well-equipped garages in the capital. The largest of these employed between two and four traveling salesmen who were kept on the road at all times.[82] Except for Fiat and Peugeot, few companies maintained salesrooms, and most were simply represented by local agents, who in many cases worked for more than one firm at a time and sold cars by simply aiding the consumer in selection from a catalogue.[83] By 1908, twelve agents or dealers were operating in the city, including H.J. Braschi (Rainier), Pedro Buch (Mitchell), Charles L. Seeger of the *Compañía Mexicana de Vehículos Eléctricos* (Locomobile, Mercedes, Panhard, Columbia, Pope-Toledo, Pope-Hartford, Cadillac, Atlas, Clement Bayard), the *Compañía Pan Americana de Vehículos* (Buick, Packard), T.M. De Rivas (National, Logan), *Fiat Lange & Compañía* (Fait), *Garage Metropolitano* (Daccarq, Triumph, Brasier, Itala, Cameron, Royal, Stearns), Gardner & Shearer (Franklin), *Mohler &*

[80] "Mexico as a Market for Motor Cars," *Motor Age*, April 8, 1909, 1.
[81] Percy F. Martin, *Mexico of the Twentieth Century. Volume 1* (New York: Dodd, Mead, & Co., 1908), 281; Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington: Government Printing Office, 1912), 25.
[82] Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington: Government Printing Office, 1912), 25.
[83] "Mexico as a Market for Motor Cars," *Motor Age*, April 8, 1909, 1.

DeGress (Rapid, Thomas, Monarch, Dragon, Stevens-Duryea, Pierce Arrow), William A. Parker (Elmore), *Sánchez-Juárez & Co.* (Pearless), and Eugene Vent (Royal).[84]

Vehicles tended to be sold at significantly higher prices in the country than in both Europe and the United States, the consequence of an import duty, freight charges, as well as elevated local commission fees. Although many agents demanded full cash payment, by the end of the decade, new arrangements had been introduced, and many purchases were made in one half cash followed by eight monthly installments. Prices ranged wildly from 2,000 to 20,000 pesos apiece, although demand was greatest for medium-priced cars, followed thereafter by luxury vehicles. Least popular were the low-price makes, largely produced in the United States, as ownership of European cars developed into a mark of distinction and the city's wealthy consumers tended to prefer vehicles imported from France, Italy, and Germany. Indeed, as the US consul stationed in Mexico City found, nearly every "prominent Mexican family" owned at least one of the more luxurious French or German cars, while President Díaz himself owned "one of the handsomest machines," a 28 horsepower Mercedes. By 1910, however, Fiat was the most popular brand among city residents.[85]

A notable expansion in the automobile business occurred during the final years of the Porfirian regime, encouraged in part by the growing presence of US dealers in the Mexican market, as well as the expansion of suitable roadways and the accessibility of affordable gasoline. Advertisements proliferated in newspapers and dealers sponsored public events that aimed to garner the attention of local consumers. During early 1910, distributors like *Fiat Lange*

[84] Motor Cyclopaedia, *Year Book 1908* (New York: E.E. Schwarzkopf, 1908), 221–223.
[85] Department of Commerce and Labor, Bureau of Manufactures, *Monthly Consular and Trade Reports, March, 1908, No. 330* (Washington: Government Printing Office, 1908), 20; "Mexico as a Market for Motor Cars," *Motor Age*, April 8, 1909, 1; Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington: Government Printing Office, 1912), 25; Percy F. Martin, *Mexico of the Twentieth Century. Volume 1* (New York: Dodd, Mead, & Co., 1908), 281; Harry H. Dunn, "Automobiling in Mexico's Capital City," *The Horseless Age*, April 27, 1910, 610.

& Co. marketed the three-seat 15 H.P. Spider (5,250 pesos) and the H.P. Doble Phaeton (11,000 pesos), while the firm *Korff, Honsberg, y Co.* promoted its Auto-Buggy to readers as "The ideal automobile for bad roads." Similarly, sellers like long-time participants in the industry *Mohler & De Gress'* advertised their 4,850-peso "Chalmers Detroit" as "The Great Automobile for bad roads."[86] By 1908 the country had become the third largest market for American vehicles as the trade had nearly doubled in two years, reaching 812,639 dollars in 1907.[87]

To enthusiastic observers Mexico represented a "promising field for the invasion of the American motor car manufacturer,"[88] and during April of 1910, American national Harry H. Dunn would suggest that Mexico City rivaled Paris and surpassed "any of the Western cities of the United States in its demand for modern cars."[89] Throughout the first decade of the twentieth century, however, motoring remained the almost exclusive domain of a wealthy minority, and by 1910, the capital could boast of little more than two thousand vehicles, while the demand for cars hardly surpassed 250 a year.[90]

Paving a Way Forward

The rapid though necessarily limited expansion of automobile-use in Mexico City benefited from the capital's quality as the first major population center in the country to develop a suitable network of smooth streets. Outside of the capital nearly all city thoroughfares were paved if at all with cobblestones, a method that made wheeled travel quite uncomfortable and automobile-use,

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[86] *El Diario*, January 24, 1910, 4; *El Imparcial*, February 10, 1910, n.p; *El Diario*, January 31, 1910, 6; "¿Por qué gastar tanto en automóviles?," *El Imparcial*, March 20, 1910, 4.
[87] Department of Commerce and Labor, *Summary of Foreign Commerce of the United States* (Washington: Government Printing Office, 1908), 20.
[88] "Mexico as a Market for Motor Cars," *Motor Age*, April 8, 1909, 1; "El 'Chalmers Detroit'," *El Imparcial*, January 11, 1910, 5.
[89] Harry H. Dunn, "Automobiling in Mexico's Capital City," *The Horseless Age*, April 27, 1910, 609.
[90] *Dun's Review International Edition* (September 1911), 49; Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington: Government Printing Office, 1912), 25.

when it developed, largely prohibitive. In the capital, however, authorities had spent the final two and a half decades of the Porfirian era experimenting with a variety of paving techniques as part of a broader municipal improvement program. As early as 1884, cobblestones were replaced with stone slabs, and again with wooden blocks five years later. In 1889, municipal engineers turned to coal-tar pavement, but ripped it up the following year, opting for asphalt blocks, which by 1899 covered 148,000 square yards of street.[91]

With the turn of the twentieth century, the use of asphalt became the preferred technique due to its availability, as well as efforts by domestic petroleum companies to find local uses for crude oil. On April 26, 1900, the city signed contracts with the Barbour Asphalt Company to pave 75 streets and direct all maintenance for a decade.[92] During the following year, the firm completed 55 streets (95,567 square meters), while another construction concern, the Neufchatel Company, paved 33 streets (45,200 square meters). Meanwhile, local contractors built 118,258 square meters of sidewalks with Portland cement along 205 streets, while in other cases builders employed asphalt, loose stones, or stone slabs.[93] The extensive paving effort had initially been inspired by local bicyclists who's hobby, like that of like their motoring brethren, demanded smooth surfaces.

On June 18, 1902, major oil industry investor Edward L. Doheny organized the Mexican Asphalt Paving and Construction Company, a business that included many of the same investors the Californian entrepreneur had worked with in the formation of the Mexican Petroleum

[91] George W. Tillson, *Street Pavements and Paving Materials. A Manual of City Pavements: The Methods and Materials of Their Construction. For the Sse of Students, Engineers, and City Officials* (New York, J. Wiley & sons; 1900), 8.
[92] "Asphalt Paving in the City of Mexico," in *Annual Report of the Director of the Bureau of the American Republics for the Year 1900, Part II* (Washington: Government Printing Office, 1900), 798.
[93] *Monthly Bulletin of the International Bureau of the American Republics, Vol. XII, January–June, 1902* (Washington: Government Printing Office, 1902), 314.

Company a year earlier.[94] As the *Los Angeles Herald* observed, the firm had been established with the initial purpose of finding "a use in Mexico" for the Mexican Petroleum Company's supply of asphalt, which it made from the country's characteristically heavy oil. The company soon became a major supplier of both asphalt for street pavement and oil for street petrolization. By the end of the decade, it had established one of the world's largest asphalt producing plants at Ebano and built paving plants in Mexico City, Guadalajara, Puebla, Chihuahua, and Tampico, while it planned additional facilities for Monterrey, Durango, and Morelia.[95] Soon, the company was sending Mexican-made asphalt abroad and quickly became a major provider of paving material for the United States.

Mexican Asphalt both encouraged and benefited from a boom in municipal improvements that took place during the last years of the Porfirian regime and coincided with efforts to prepare the country for the Centennial of Independence.[96] During 1910, the City of Mexico signed contracts with both Mexican Asphalt and the Compañía Bancaria de Fomento y Bienes Raíces de México, each for the pavement of 15 streets with asphalt supplied by the Ebano plant.[97] The latter company was headed by financier Fernando Pimentel y Fagoaga, a noted motoring enthusiast and founding member of the Automóvil Club de México. Outside of the nation's capital similar municipal improvement efforts spread rapidly, and paving activities took

[94] On Doheny and the Mexican Petroleum Company, see Martin R. Ansell, *Oil Baron of the Southwest: Edward L. Doheny and the Development of the Petroleum Industry in California and Mexico* (Ohio State University Press, 1998) and Brown, *Oil and Revolution in Mexico*.
[95] Ansell, *Oil Baron of the Southwest*, 62; "American Promoters in Mexico," *Los Angeles Herald Sunday Magazine*, December 19, 1909, 95; "Two Big Doheny Companies Will Pay Steady Dividends," *Los Angeles Herald*, November 17, 1910, 6.
[96] W.D. Hornaday, "Municipal Improvements in Mexico," *Municipal Journal and Engineer*, April 26, 1911, 575; On the 1910 Centennial of Independence see Tenorio Trillo, "1910 Mexico City," 75–104 and Michael J. Gonzalez, "Imagining Mexico in 1910: Visions of the Patria in the Centennial Celebration in Mexico City,"*Journal of Latin American Studies* 39.3 (August, 2007): 495–533.
[97] "Extensive Street Construction in Mexico City," *Municipal Journal and Engineer*, January 19, 1910, 95.

place during the final years of the regime in Guadalajara, Veracruz, and Monterrey.[98] As Revolutionary disturbances broke out in 1910, Mexican Asphalt continued to work away on the paving of streets in Tampico.[99]

By the end of the decade, the nation's capital had developed an international reputation as a superb motoring center due to its pleasant climate and smooth-surfaced roadways. Indeed, during early 1910, one observer would characterize the streets of Mexico City as "Particularly suited to auto driving," which he attributed to the fact that labor was cheap and asphalt, gravel, and cement were locally available in abundance.[100] Meanwhile, *Motor Age* magazine informed its readers that the roads around the city were "as a rule excellent," and predicted that following the extension of more roadways around the capital, Mexico City could easily become the "the ideal motoring town of Latin America."[101]

Fueling Up

The particular form of automobility that took hold in Mexico City was, from very early on, almost completely dependent on gasoline as a source of fuel.[102] Although the high altitude tended to reduce the horsepower of engines by as much as one third, during 1911 there were only around 35 or 40 steam cars and around 6 electric vehicles in the city, while the rest were gas-propelled.[103]

From 1880 to 1900 the Waters Pierce Oil Company had enjoyed a monopoly on sale of fuel oils, such as kerosene and paraffin, lubricants, and other petroleum derivatives, which it

[98] W.D. Hornaday, "Municipal Improvements in Mexico," *Municipal Journal and Engineer*, April 26, 1911, 575.
[99] Clarence A. Miller, "Development of Petroleum Industry. Mexico," Daily Consular and Trade Reports, United States Bureau of Manufactures, January 16, 1911, 179.
[100] Harry H. Dunn, "Automobiling in Mexico's Capital City," *The Horseless Age*, April 27, 1910, 609.
[101] "Mexico as a Market for Motor Cars," *Motor Age*, April 8, 1909, 1.
[102] Harry H. Dunn, "Automobiling in Mexico's Capital City," *The Horseless Age*, April 27, 1910, 609.
[103] Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington: Government Printing Office, 1912), 25.

produced in Mexico with imported crude from the United States. As early as 1880, the company operated offices in Mexico City and Monterrey, a refinery with a capacity of 100 barrels a day in both, as well as additional facilities in Tampico (450 barrels a day) and Veracruz (250 barrels a day). Although distribution of gasoline was quite rudimentary—it was often transported and sold in small 10-gallon cans—by 1902 the company had developed a network of 20 distribution facilities and retail agencies throughout the nation.[104]

Waters Pierce, however, faced growing competition following the 1901 arrival in the Mexican market of oil barons Edward L. Doheny, of California, and Weetman D. Pearson, of England. In response, Waters Pierce initially began to reduce prices while increasing the direct importation of refined products. The Mexico City and Monterrey refineries were soon closed, and the introduction of "illuminating oils" from abroad, for example, grew from 460,000 gallons a year during 1905 to 2.5 million in 1907. The company's efforts to head off competitors resulted in little success, and by 1908 Pearson had put together an extensive sales network throughout the country. His company, S. Pearson & Sons—which by 1909 took on the more nationalistic sounding name "Compañía Mexicana de Petróleo, El Águila"—had begun construction of storage tanks in Mexico City, Puebla, Orizaba, and Veracruz, while it planned to build others in Celaya, Pachuca, and San Luis Potisi.[105]

Although demand for gasoline grew markedly during the early twentieth century, it represented only a small component of the commercial oil business, as fuel oil for houses, lighting, and the railways continued to be the most heavily purchased petroleum item. Meanwhile, the distribution and supply of gasoline for local consumption remained precarious and prices elevated throughout much of the country. Yet hostile competition between firms

[104] Joel Álvarez de la Borda, *Los Orígenes de la industria petrolera en México, 1900–1925* (Mexico: Petróleos Mexicanos, 2005), 24–27.
[105] Ibid., 27, 52.

during the so-called Great Oil War, which erupted in 1909, encouraged a rapid decline in gas prices from 35 to 11 centavos per liter. Gasoline could thus be acquired in Mexico for around the same price as in the United States, while lubricating oils were slightly higher. [106]

The fight over the petroleum retail market soon spilled over into the nation's newspapers and was reflected in aggressive advertising campaigns by the country's principal oil companies. Calling on motorists not to "damage your [automobile] using inferior gasoline," Waters Pierce encouraged consumers to purchase only its Nafta and Solarina fuels.[107] "El Águila," on the other hand, warned consumers to buy nothing but "Naftolina," while populating its advertisements with such nationalistic images as Mexican cowboys (charros), cactuses, and icons of industrial progress like the national railway.[108] Although the US Department of Commerce did not keep statistics on gasoline exports to Mexico at the time, Naphtha shipments, a petroleum product used to produce gasoline, grew from 4,327 gallons in 1900 to 363,101 in 1911, indicating significant growth in consumption over little more than a decade.[109]

Manufacturing, Maintenance, and Services

The development of automobile-use encouraged the first efforts by local entrepreneur-inventors to manufacture motorized vehicles. As early as 1896, bicycle mechanics Alexander Byron Mohler and William P. DeGress had built the first domestically designed automobile, a tiny two-person vehicle that rode atop four bicycle wheels,[110] while three years later, George Braniff

[106] Ibid., 58. The US Department of Commerce and Labor found that by the early 1910s, a liter of gasoline was selling for around 13 centavos. Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington: Government Printing Office, 1912), 21; Harry H. Dunn, "Automobiling in Mexico's Capital City," *The Horseless Age*, April 27, 1910, 611.
[107] *El Diario*, January 24, 1910, 4.
[108] *El Diario*, January 28, 1910, 6.
[109] Brown, *Oil and Revolution in Mexico*, 19.
[110] *El Universal*, January 22, 1895; "El coche del diablo," *El Universal*, January 16, 1895; "First Motor Carriage Built in Mexico," *The Horseless Age*, August 1897, n.p.

contracted the same inventors to build him an 8 horsepower black and red "carriage."[111] In what was likely the first effort to launch a domestic auto-manufacturing firm, in 1905 L.C. Browne requested the right to establish an "automobile and bicycle factory, consistent with the most recent processes," an industry he described as "completely new in the country." Although a contract between Browne and the Secretariat of Development, Colonization, and Industry (Secretaria de Fomento, Colonización e Industria) appeared in the Diario Oficial on November 24, 1905, the plant floundered and on February 15, 1909 authorities cancelled the concession before production had begun.[112]

Although would-be manufacturers of motor vehicles enjoyed little success, the expansion in motoring produced a host of new service needs soon met by local workers and entrepreneurs. On the one hand, wealthy car owners began to demand private drivers, and one of the first new professions to appear as a result was that of chauffeur. Earning between 30 and as much as 100 pesos a week, drivers were largely Mexican citizens, although in some cases foreigners took part in the new industry.[113] Meanwhile, service garages, like *Garage Italiano*, began to appear, yet a notable scarcity of mechanics made repairs costly and often slow. Other entrepreneurial investors opened storage facilities, like *Garage Anglo-Mexicano* and *Automobile Garage*, which charged between 15 and 20 pesos a month per car. Sale of tires expanded rapidly as well and was largely dominated by French and German imports. Vulcanization shops emerged, and by 1910 there

[111] "An Automobile," *The Mexican Herald*, July 1, 1898, 1.
[112] AGN, FOP, IN, Caja 31, Exp. 1; AGN, FOP, IN, Caja 31, Exp. 2; AGN, FOP, IN, Caja 31, Exp. 5.
[113] Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington: Government Printing Office, 1912), 25; "Mexico as a Market for Motor Cars," *Motor Age*, April 8, 1909, 1.

were three or four operating in the city, although the business was practically monopolized by the *Compañía Vulcanizadora Mexicana*, a firm run by American national Jack Davis.[114]

Meanwhile, entrepreneurs put motorized vehicles to use in a variety of new commercial capacities, as taxis, buses, and delivery or service trucks. In what was likely the first business of its kind, during 1908 local investors formed the *Mexico City Motor Cab & Omnibus Company*, a firm that employed ten 35-horsepower English "Straker-Squire" buses illuminated with acetylene gas lamps and capable of seating 30 passengers. The company also reportedly owned twenty-five cabs fitted with taximeters, while the bus line ran on a regular schedule from the Zócalo to Colonia Roma, passing through Colonia Juárez, and then on to the newly built Plaza de Toros.[115] The scheme seems to have quickly failed, however, and by 1909 no taxicab system operated in the city, although motorcars could be hired at the San Francis and New Porter hotels, and the Garage Anglo-Mexicano maintained a small fleet of Humber cars.[116] By the beginning of the next decade things had changed, however, as a "well-conducted taxicab service" had begun to operate 96 Renault cabs in the city that charged 20 centavos for the first 1,500 meters followed by 5 centavos for each additional 200 meters.[117]

Trucking, meanwhile, remained notably underdeveloped in the city, and as one observer remarked, the greatest opportunities for US exporters was no doubt in the provision of auto-delivery trucks and wagons. Indeed, as late as 1909 virtually no dealers of motor trucks or commercial vehicles operated in the city.[118] Sales languished throughout the Porfiriato due

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[114] "Mexico as a Market for Motor Cars," *Motor Age*, April 8, 1909, 4; Harry H. Dunn, "Automobiling in Mexico' Capital City," *The Horseless Age*, April 27, 1910, 610; *Motor Cyclopaedia. Year Book 1908* (New York: E.E. Schwarzkopf, 1908), 221–223.
[115] "City of Mexico," *The Commercial Vehicle*, May 1908, 111; Harry W. Perry, "Taxicab Operators and Builders in America," *The Commercial Vehicle*, February 1908, 37.
[116] "Mexico as a Market for Motor Cars," *Motor Age*, April 8, 1909, 1.
[117] Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington, DC: Government Printing Office, 1912), 22
[118] "Mexico as a Market for Motor Cars," *Motor Age*, April 8, 1909, 4.

largely to local businesses' continued reliance on human porters for the delivery of anything from sewing machines to large pieces of furniture. "One has only to look at that peculiar Mexican institution, the *cargador*," William Archer remarked, "to see how cheap is human nerve and muscle in this country. At any hour of the day, on the asphalted avenues of Mexico City […] you may see a couple of *cargadores* jogging along with a huge sideboard or wardrobe between them, or with half the furniture of a household piled on their backs, thus advertising the fact that legs are cheaper than even that simple piece of mechanism, the wheel."[119] Although at times companies employed horses and wagons, porters remained the dominant mode of cargo transport until the following decade.[120]

During early 1910, observer Harry Dunn reported that he had seen only one or two large motor trucks in the city, both of which belonged to the National Packing Company.[121] That January the Company had ordered seven 19-foot-long Mercedes refrigerated motor delivery cars—and contracted seven English drivers—capable of carrying 12 whole carcasses of beef.[122] Meanwhile, during the same month, the Federal District police put a Fiat automobile ambulance into service.[123] Yet by 1911 there were still only 7 or 8 commercial motor vehicles and trucks operating in the city—mainly cigarette company and brewery vehicles—as use of machine power continued to compete unsuccessfully with the city's large number of licensed porters who worked cheaply and were capable of transporting "all classes of merchandise to all parts of the city and vicinity."[124]

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[119] William Archer, "The Collapse of the Díaz Legend," *McClure's Magazine* 37 (May–Oct, 1911), 402.
[120] Harry H. Dunn, "Automobiling in Mexico's Capital City," *The Horseless Age*, April 27, 1910, 611.
[121] Ibid.
[122] "Refrigerator Cars in Mexico," *The Commercial Vehicle*, January 1910, 26.
[123] "El Auto Ambulancia," *El Imparcial*, January 16, 1910, 11.
[124] Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington: Government Printing Office, 1912), 25.

Cars, Conflict, and Leisure in Mexico City

On Sundays, motorists and their families often headed to Chapultepec Park to careen around the shores of a small lake or listen to the local police band. In certain instances these regular weekend visits to the park resulted in parades of automobiles a mile and a half in length.[125] Yet as the *Diario del Hogar* reported, one French visitor, shocked at the "tolerance" given to local chauffeurs, found that the masses of motorists had transformed "the only place where inhabitants of the city can go to breath a bit of fresh air" into an area full of "gases" and "detrimental *toilettes*."[126] Such an association between automobility and medical ailment was again suggested by Dr. Salvador Quevedo y Zubieta who characterized motoring as harmful to one's health, noting that the "automobile can be considered medically to be a cause of an impulsive neurosis."[127] Meanwhile, the *Diario del Hogar* commented on the deleterious effects of "toxic" exhaust fumes that filled the air along San Francisco Avenue during the "daily procession of the elegant world," demanding official action to address what the paper understood to be a public health threat.[128]

Just as the bicycle had initially met resistance from residents and local authorities—they were banned from the center of town for a few months during 1891—the automobile had its own vocal detractors.[129] As early as 1900 the growing agglomeration of motorcars led journalists at *El Universal* to call for authorities to intervene in order to ease the circulation of people and vehicles, and to "put things in order" during the hours of transit.[130] Indeed, as motoring expanded, the new and powerful machines began to transform the pace of pedestrian life and

[125] Harry H. Dunn, "Automobiling in Mexico's Capital City," *The Horseless Age*, April 27, 1910, 610.
[126] "Prohibase el humo de los automóviles. Es un peligro para la saluda publica," *Diario del Hogar*, March 14, 1909, 7.
[127] *El Diario*, June 3, 1907, n.p.
[128] *Diario del Hogar*, Marzo 14, 1909, n.p.
[129] Beezley, *Judas at the Jockey Club*, 44.
[130] "México antiguo y la ciudad moderna," *El Universal*, February 2, 1900, n.p.

thus force walkers to navigate new and dangerous obstacles.[131] Over the course of the decade the number and public awareness of automobile accidents grew dramatically. Periodicals described collisions and injuries in gruesome detail, while slipping in broader commentary on the state of traffic and transit in the city. *El Diario*, for example, lamented the "frequent automobile accidents…that day by day are becoming increasingly disgraceful."[132] In another instance, the same paper informed readers of a frightful collision along the Calzada de Tlalpan in which one Joaquín Capilla crashed his recently purchased 40 H.P. vehicle. While traveling back to Mexico City from the fashionable "Country Club," Capilla's car had apparently hit a tree, thus propelling his four young daughters, he and a colleague, as well as his chauffeur—who had been riding as a passenger—into the roadway.[133]

As the speed and number of cars increased, reports continued to fill local dailies, and during December 1913, *El Independiente* reported on an accident in the Colonia Roma that nearly killed a group of six young people from some of the city's most "distinguished families" when their vehicle hit a light post.[134] Days later, the same paper reported on a "horrible trampling in which an unfortunate young 13-year-old boy lost his life." Riding along side an El Buen Tono cigarette delivery vehicle, the boy had lost his balance and fallen under the wheels of the truck, which passed over his head, crushing his skull.[135] Such gruesome incidents encouraged *Modernista* writers, already discontented by the spread of industrialism, to publish their own attacks on the use of motorcars.[136] In his poem "El automóvil en México," for example, the

[131] For a discussion of conflicts over the use of the street during these years, see Pablo Piccato, *City of Suspects: Crime in Mexico City, 1900–1931* (Durham: Duke University Press, 2001), 24–26.
[132] *El Diario*, August 5, 1907, n.p.
[133] "Resultan Lesionadas Cinco Personas en un Choque de Automóvil," *El Diario*, January 2, 1910, 1.
[134] "Junto al hada de la caridad la muerte escondia su garra," *El Independiente*, December 9, 1913, 1.
[135] "Niño con el craneo destrozado bajo las ruedas de un auto," *El Indepentiente*, December 11, 1913, 8.
[136] Modernismo was a Latin American literary movement that lasted from the 1880s to around the early 1920s. For an introduction to modernismo, see Bart L. Lewis, "Modernism," in *Mexican Literature: A History*, David William Foster, ed., (Austin: University of Texas Press, 1994).

celebrated writer José Juan Tablada who had once written advertisements for the Pepe and Andrés Sánchez Juárez, owners of the Garage Internacional dealership, would describe the automobile as nothing less than a "dragon made by cubists," a "mechanical caricature of an apocalyptic beast," and a "dynamic coffin" that left behind "carbon flatulence."[137]

The Automobile in Regional Cities

The expansion of automobile use in regional Mexico would not occur until the late 1900s, due, as already suggested, to the poor condition of urban thoroughfares, which made automobile travel prohibitively unpleasant. As late as the 1890s, Monterrey was the only city in the northeast with paved streets: a total of 13 miles of cobblestone, built with the forced labor of convicts. Yet even these were so rough "as to make carriage-riding extremely uncomfortable," while the slippery quality of the stones made them notoriously difficult to walk on when wet. Most other cities in the north of the country enjoyed only dirt roads, although some had been leveled and then covered in gravel or rock. In the Gulf coastal city of Tampico, for example, there was "not a street […] fit for a carriage to drive over," while in Tuxpan—where residents were required to repair local roadways—the town's pavement was no more than an collection of "rocks of all shapes and sizes," making transit a "crude" affair.[138]

Resurfacing of provincial city streets would finally take place during the end of the first decade of the twentieth century. By 1909, a municipal improvement effort in Guadalajara had resulted in pavement of streets and a few routes beyond the city. Meanwhile, Monterrey had

[137] Rubén Lozano Herrera, *Las veras y las burlas de José Juan Tablada* (Universidad Iberoamericana, 1995), 96; Eduardo Chirinos Arrieta, "Oliendo las flatulencias de carburo. Poetica de la desconfianza en un poema de Jose Juan Tablada," *Nueve miradas sin dueño: ensayos sobre la modernidad y sus representaciones en la poesía hispanoamericana y española* (Lima: Fondo Editorial PUCP, 2004), 37.
[138] "Mexico," in *Streets and Highways in Foreign Countries* (Washington: Government Printing Office, 1891), 462–467.

emerged as a formidable market for cars due to recent pavement improvements as well as the large number of Americans living in the city. Mérida, on the other hand, had become an early motoring center following an importation boom during the early 1900s that initially gave it more cars per capita than Mexico City. In the City of Puebla, however, the expansion of automobility remained largely stalled due to the ongoing installation of a sewer system that inhibited transit.[139]

Significant growth in provincial automobile-use would occur during the early years of the following decade. During the early 1910s observers found 49 American cars and 3 European cars in Chihuahua, many of which had been purchased second-hand. Although prices remained 60 to 70 percent higher in the state than in the US, around Durango a total of 45 "pleasure vehicles" were being operated. The asphalt paving of one hundred blocks in the City of Durango had encouraged motor vehicle use in the state capital, and indeed, 30 motorcars operated in that city alone. In certain instances, hacienda owners in the state had begun to use cars to supervise work on their properties, as was the case in Aguascalientes where 35 (32 American and 3 German) could be found. Meanwhile, in Guadalajara there were about 150, nearly all American-made cars, which cost from 2,000 to 5,000 dollars a piece. Most were gas powered and fuel could be acquired for around $3.24 dollars per 10-gallon box. In Monterrey, where prices were between 40 and 60 higher than in the US, about 50 gas-powered pleasure vehicles were being operated. Around that city, residents used their vehicles at times to drive to Torreón, Nuevo Laredo, Parras, Montemorelos, Linares, and Saltillo, while gasoline cost 15 to 18 cents per gallon and was sold in either boxes of two 5-gallon cans or in barrels or drums. Beyond Chihuahua, Durango, Aguasalientes, Guadalajara, and Monterrey, the nation's other regional cities could claim no more than a handful of vehicles. In Mazatlán and Nogales, for example, there were 10

[139] "Mexico as a Market for Motor Cars," *Motor Age*, April 8, 1909, 5.

each, 7 in Ciudad Porfirio Díaz and 6 in Hermosillo, 3 each in Ensenada and Colima, 2 or 3 in Veracruz, 2 in La Paz, and one in Ciudad Juárez [140]

The nominal spread of motoring in the larger regional cities of the country resulted in the development of a small-scale automotive services sector. By 1909 Guadalajara could boast of two small garages, one Italian- and the other Mexican-run, a service garage operated by Jarrer Verea, and sales agencies run by Julio Collignon and the firm Fernández Somellera & Stevens. Although in 1908 three sales agents reportedly operated in Aguascalientes—including Carlos Morfin, C.C. Woodworth, and the Aguascalientes Lumber & Mercantile—by 1911 the local US consul found no repair shops, sales agents, or advertising in the city. Mérida's three dealers included E. Escalante e Hijo, Guerra & Co., and J. Rendón & Hermano, while Domingo Palamo and Adolfo Zavala ran local garages in the Yucatecan city. Monterrey, meanwhile, had two sales agencies, and both Michoacán and Queretaro had one sales agent each, Dante Cusi, dealer of Wayne vehicles, and M.M. Urquiza, a Holsman distributor, respectively. [141]

Into the Countryside: Motoring Beyond Cities

Although automobile-use had begun to expand beyond the confines of Mexico City by the end of the 1900s, in the absence of a basic interurban road system motoring remained limited to regional pockets largely cut off one from the other. This lack of suitable highways, according to a 1912 study by the US Department of Commerce, constituted the most significant drag on vehicle sales in the neighboring country, as it did in much of Latin America.[142]

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[140] Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington: Government Printing Office, 1912), 25-26.
[141] Ibid.; "Mexico as a Market for Motor Cars," *Motor Age*, April 8, 1909, 5; Motor Cyclopaedia, *Year Book 1908* (New York: E.E. Schwarzkopf, 1908), 221–223.
[142] Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington: Government Printing Office, 1912), 26.

The problem of overland travel had long represented a headache for business, government, as well as citizens. Prior to the railway construction boom of the late nineteenth century, travel along overland thoroughfares had constituted a grueling affair. Following Mexico's wars of independence (1810–1821), the country's colonial-era road network had largely fallen into disrepair due to the scarcity of financial resources for basic maintenance as well as limitations on the nascent state's administrative capacity. During these first decades of postcolonial governance, public roadways were managed by the Secretariat of Foreign Relations (Secretaría de Relaciones Exteriores), which granted private concessionaires the right to charge *peaje*, or a toll, in exchange for taking charge of supervision and repairs. Although at the time private financing and management of transportation infrastructure was quite common globally, in Mexico it coincided with the progressive degradation of the country's road network. Things changed little with the establishment of the Secretariat of Public Works (Secretaría de Fomento) in 1853, followed by the creation of the General Administration of Roads and Tolls (Administración General de Caminos y Peajes).[143]

As the century wore on, travel outside of cities remained a taxing enterprise, particularly during summer months when heavy rains transformed many overland corridors into little more than murky streams. Describing the situation in the early 1880s, US traveler Frederick A. Ober remarked that the roads in Mexico were "as a rule, in a horrible state." "Take one of our country lanes," he suggested, "cut ditches across it, dig deep pits in it, demolish a stone wall and cast into the centre of it, run a few streams through it, and slush the whole over so that one can hardly keep his footing on it, and you have a Mexican country road in the rainy season."[144] Similarly, during the following decade US consuls stationed in the north found regional roadways to be "in

[143] Juan Félipe Leal and José Woldenberg, *Del estado liberal a los inicios de la dictadura porfirista*, 59.
[144] Frederick A. Ober, *Travels in Mexico and Life Among the Mexicans* (Boston: Estes and Lauriat, 1884), 205.

a very primitive condition," due to the great distances between towns and the area's low population density. Although attention to the benefits of good roads had begun to develop, lack of funding meant that most public thoroughfares remained in a "lamentable condition." Consequently, overland travel tended to require one to follow natural and often circuitous formations in the land, a dry streambed or a canyon for example. In many instances, as around the town of Guaymas, the only repairs to these natural roadways were made by the owners of freight teams and stagecoaches, and when a portion of a road became impassible, self-designated road builders simply forged new paths around damaged sections.[145]

In such conditions movement across the land relied heavily upon four basic forms of conveyance: the stagecoach (*diligencia*), the litter (*litera*), mounted travel, or travel on one ones own, ideally, two feet. Use of the *diligencia*, however, was only feasible on the few well-maintained highways, and along the many poorly maintained roads the use of the more expensive *litera*, carried atop mules or human porters, represented an alternative. But both travel by stagecoach and litter was of course a luxury for most, and although mounted travel—on donkeys, mules, or horses—was a more affordable option, the vast majority of people chose to walk. Indeed, the Secretariat of Public Works found that between 1877 and 1882, along 37 checkpoints on 14 federal highways, of 6 million travelers, 6.5 percent used stagecoaches, 25.1 percent were mounted, and 68.4 percent were on foot."[146]

The eruption of railway construction set in motion a fundamental transformation in the character of travel. Plans to build a system of railroads in the country had appeared as early as the 1830s, but inauguration of the nation's first line would not occur until 1873, when service

[145] "Mexico," in *Streets and Highways in Foreign Countries* (Washington: Government Printing Office, 1891), 462–467.
[146] John H. Coatsworth, "Indispensable Railroads in a Backward Economy: The Case of Mexico," *Journal of Economic History* 39.4 (December 1979): 943–4. See also, Fred Wilbur Powell, *The Railroads of Mexico* (Boston: Stratford, 1921), 91–98.

between Mexico City and the port of Veracruz finally commenced. Over the following decades, the Porfirian government would encourage further construction through generous concessions and subsidies to private firms. By 1910, the system had expanded to around 19,000 kilometers, one of the largest in Latin America. The use of trains significantly altered economic practices, social relations, and indeed, governance. In addition to extending the administrative reach of the state, the railway helped to alter the nature of production as the fruits of agriculture and mining enterprise became—for the first time in many instances—competitive on the global market. Unprecedented quantities of foreign capital flowed into the Mexican economy to finance new productive ventures, which in turn began to transform the nature of work, patterns of land tenure, and many Mexicans relationship to the outside world. Simultaneously, the railways began to break down regional isolation and weave a patchwork of isolated local economies into a domestic market. Yet the railways were characterized by a notable dependence on many imports, including basic construction materials and fuel, as well as technical knowledge since most railway cars, land surveyors, and engineers arrived from abroad. Once in operation lines were staffed in large numbers by foreigners and indeed, English became the working language on the railways.[147]

Growing reliance on train travel had the effect of encouraging the further degradation of the old public roads, and as early as the 1880s, observers like Frederick A. Ober found that the federal government had so embraced railway travel, that the "carriage roads and bridle paths" had been almost completely neglected.[148] A decade later, the US Consul-General of Mexico

[147] The scholarship on Mexican railways is vast. See for example, John H. Coatsworth, *Growth Against Development: The Economic Impact of Railroads in Porfirian Mexico* (DeKalb: Northern Illinois University Press, 1981); Daniel Lewis, *Iron Horse Imperialism: The Southern Pacific of Mexico, 1880–1951* (University of Arizona Press, 2008); Teresa Miriam Van, *A Social History of Mexico's Railroads: Peons, Prisoners, and Priests* (Lanham: Rowman & Littlefield, 2008).
[148] Frederick A. Ober, *Travels in Mexico and Life Among the Mexicans* (Boston: Estes and Lauriat, 1884), 205.

summarized the government's transportation policy with the succinct affirmation: "Highways have not been the means by which Mexico has attained its present interior development."[149] As a result, maintenance of many roads fell to local communities, and as late as 1909, Andrés Molina Enríquez would remark that he had personally seen people around Sultepec, in the State of Mexico, "barely forty or fifty leagues from the nation's capital," year after year fix the country roads (caminos vecinales) with little more than wooden bars and picks: "in those places we have even seen the use of wooden machetes."[150] Although creation of the Secretariat of Communications and Public Works on May 13, 1891 would give the new entity authority over virtually all forms of communications and transportation, the Secretariat largely continued to ignore road transportation throughout the rest of the decade, and by 1895 management of roads in areas already served by railways had passed to state governments.[151]

Even as the expansive rail system provided many Mexicans with a new means of travel, the vast majority of people, scattered around the country in isolated rural hamlets, had virtually no direct access to the network. Walking thus remained a necessary adjunct to the train travel, and, as Molina Enríquez explained, the lack of easy means of communications meant that rural people in particular had been forced to put up with "great hikes on foot." In his notably pseudo-scientific estimation, Molina Enríquez declared: "the Indian has a special muscle which permits him to act as a beast of burden."[152] Meanwhile, well into the twentieth century foreign exporters would continue to rely on mules to get their products to remote locales, while isolated mining

[149] *Special Consular Reports. Vol. XII. Highways of Commerce* (Washington: Government Printing Office, 1895), 67.
[150] Andrés Molina Enríquez, *Los grandes problemas Nacionales* (Mexico: Imprenta de A. Carranza e Hijos, 1909), 233.
[151] *Reseña y memorias del primer Congreso Nacional de Industriales* (Mexico: Talleres Gráficas, 1918), 109.
[152] Molina Enríquez, *Los grandes problemas*, 257.

operations often found it necessary to transport state-of-the-art extractive machinery upon the backs of various domesticated animals.[153]

The emergence of automobile-use among urban elites produced the first successful post-Independence demands for the construction of a network of inter-urban roads capable of supporting comfortable wheeled travel. The appearance of what might be characterized as an incipient "good roads movement" paralleled the arrival of the first cars in Mexico City as drivers sought to take their vehicles "off road" and into remote areas. As early as 1902 Alonso Fernández Castelló organized the first such tour into the countryside as he and five acquaintances made their way to the Mariscala hacienda, passing through Tlalnepantla and Cuautitlán. Days later, a group of five cars traveled to the Soltepec hacienda, while that same year, H. Menel and Pedro Z. Méndez drove to Pachuca and back in one day.[154]

Such excursions were soon followed by the first coherent, although limited, efforts to rebuild the dilapidated colonial area roadways (caminos reales), as the late Porfirian motoring boom coincided squarely with the federal government's budding concern over road maintenance and construction. In October 1905 the Secretariat of Communications and Public Works, for example, approved the establishment of a Junta Directiva de Caminos.[155] Three years later Enrique Ornelas, Mexican consul in Texas, traveled to Los Angeles to inspect the city's "petrolithic paving system" where he told the Los Angeles Times that Mexican authorities had for some time been experimenting with various paving techniques, while he reported that "A great movement for good roads, good automobile roads particularly" was taking place in the country.[156]

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[153] "Special Problems for the Exporter in Mexico," *Mexican Financier*, May 1, 1921, 11–12.
[154] Del Río and Vargas, *El Autotransporte*, 32–33.
[155] AGN, SCOP, TG, Caja 2, Exp. Caminos, Sept 1956.
[156] "Mexico Wants Good Roads," *Los Angeles Times*, August 25, 1908, II1.

The expansion of automobile travel outside of the nation's capital had first begun less ambitiously with short trips to the city's outlying suburbs. Although roads beyond the Federal District were often in poor condition, those to nearby suburbs were, alternatively, "excellently paved." Popular destinations for motorists within the Federal District included Tlalpan, San Ángel, Coyoacán, Tacubaya, Tacuba, Xochimilco, Chalco, as well as the Cerro de Guadalupe.[157] By the final years of the Porfiriato, visitors like Harry H. Dunn would encounter "excellent highways [radiating] in all directions to beautiful suburban cities, the six lakes of the valley and thence, passing the boundaries of the Federal District […] on out to various states."[158]

Leisurely excursions quickly became linked to cultural and historical inquiry as motorists sought to use their vehicles to visit famed monuments, buildings, historical sites, and to experience archaic cultures. One motoring destination "of great interest to tourists" was the Pyramid complex of Teotihuacán, a short 35-mile trip from the capital. Yet as the local train left early in the morning and only returned in the evening, reliance on railway travel forced visitors to spend the entire day at the pre-Columbian complex. By 1909 an American motorist had begun covering the Pyramid route at the cost of 40 pesos per party.[159] Atzcapotzalco likewise became a popular destination, where, as one observer described it, visitors could view the "capital of one of the Indian tribes which inhabited this country before the Aztecs came." Meanwhile, Texcoco—where "the ruins of the earlier races" could be seen—similarly became a destination popular among local motorists.[160]

Tourism and the business of automobility thus developed a symbiotic relationship. Just as entrepreneurial chauffeurs provided services to scenic locales, domestic road materials producers

[157] Harry H. Dunn, "Automobiling in Mexico's Capital City," *The Horseless Age*, April 27, 1910, 610; Percy F. Martin, *Mexico of the Twentieth Century. Volume 1* (New York: Dodd, Mead, & Co., 1908), 281.
[158] Harry H. Dunn, "Automobiling in Mexico's Capital City," *The Horseless Age*, April 27, 1910, 610.
[159] "Mexico as a Market for Motor Cars," *Motor Age*, April 8, 1909, 1.
[160] Harry H. Dunn, "Automobiling in Mexico's Capital City," *The Horseless Age*, April 27, 1910, 610.

like Mexican Asphalt, promoted road construction as a means to facilitate leisurely travel. Indeed, Edward L. Doheny would argue during the later years of the Porfiriato, that asphalt pavement of streets had done much to make the country's "architectural beauties" accessible to the average tourist while at the same time cleaning up the previously "cobble-covered, litter-strewn thoroughfares" which discouraged visits by travelers.[161]

Beyond central Mexico a small number of roads had begun to be built by federal, state, and private initiative. In 1906, months after the new federal road-building office had been founded, and following petitions by a local Good Roads Association, the federal government inaugurated a route to Toluca. That fall construction began to the east on another road between the capital and Puebla, which passed through Los Reyes and Texcoco, a portion of which (San Lázaro to Texcoco) had been organized by "enthusiastic motorists" Rafael Bernal and Antonio Riba y Cervantes.[162] A reconstruction effort took place along the Cuernavaca-Mexico City roadway as well, organized by Governor Alarcón of the State of Morelos and funded by local private interests. As late as 1909, however, the 75-mile road from Mexico City to Cuernavaca still included "an appalling variety of bad road conditions, such as deep sand and broken rocks." The road, which followed the old stage route, left the capital via Tlalpan after which it headed up through the mountains and passed through the settlements of Tres Marías and Huichilac (Huitzilac), before arriving in Cuernavaca.[163] Although many outlying roads remained rough and required the use of cars "built high and flexible," the US Department of Commerce found in 1911, that "quite an extensive mileage of good roads" had been constructed in central Mexico

[161] "American Promoters in Mexico," *Los Angeles Herald Sunday Magazine*, December 19, 1909, 95; "Two Big Doheny Companies Will Pay Steady Dividends," *Los Angeles Herald*, November 17, 1910, 6.
[162] Chalres S. Seeger, "Good Road–building in Mexico," *Modern Mexico*, October 1907, 8–11.
[163] "Mexico as a Market for Motor Cars," *Motor Age*, April 8, 1909, 1; Chalres S. Seeger, "Good Road–building in Mexico," *Modern Mexico*, October 1907, 8–11.

during previous years, a total of 400 miles of macadamized roads between Mexico City and Puebla, Cuernavaca, Pachuca, and Toluca.[164]

Beyond the Central Valley of Mexico, roads built were few and far between. In one exceptional instance, during 1909 the federal government and the state of Guerrero inaugurated a jointly financed automobile road between Iguala and Chilpancingo.[165] More commonly, however, local private interests gathered forces to expand thoroughfares beyond cities, and in one case the Club Automovilísta Jalisciense built a private road from Guadalajara to the popular recreational destination of Lake Chapala, financed with a members' fee of 5 dollars per month, which gave car owners the right to use the route.[166]

The expansion of provincial touring by urban elites intent on testing their personal limits, visiting sites of cultural, historical, and natural interest, and freeing themselves from the confines of the rails, produced increasingly daring efforts to take automobiles to seemingly unfeasible destinations. During October 1910, *El Diario* reported that Carlos Buenrostro y Ibarguengoytia, Manuel Ibarguengoytia, Felipe del Hoyo, and Ignacio Mariscal had traveled over "the old highway roads" between Mexico City, Zacatecas, San Luis Potosí, Aguascalientes, and Guadalajara in an automobile. In early October the party had left Mexico City, sending telegrams to the paper so that it could inform readers on their whereabouts. As the paper reported on the excursionists' activities, the public learned of the poor condition "our highways" and the great difficulties faced by the adventurous motorists who reportedly found it necessary "in many areas" to "transport the machine on their shoulders."[167]

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[164] Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington: Government Printing Office, 1912), 25

[165] *Reseña y memorias del primer Congreso Nacional de Industriales* (Mexico: Talleres Gráficas, 1918), 109.

[166] Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington: Government Printing Office, 1912), 26; *Reseña y memorias del primer Congreso Nacional de Industriales* (Mexico: Talleres Gráficas, 1918), 109.

[167] "Cuatro distinguidos sportmen efectuaran una penosa jira automovilistica," *El Diario*, October 9, 1910, 5.

Motorists without Borders

As urban-dwelling elites aimed to extend the radius of automobility beyond the confines of cities, motorists with international ambitions in the United States, backed by automotive industry entrepreneurs, sought to unite the two countries via automobile travel. In so doing they engaged in the first efforts to map the "natural" roadways between Mexico and the United States.

Due to growing domestic automotive production and a consequent public demand for good roads, construction of long-distance roadways had expanded quickly in the United States. During the late nineteenth century, the US federal government had created an Office of Road Inquiry, while states began to pursue their own road construction agendas. "Good roads" associations sprang up around the country, and in 1901, a "Good Roads Train" toured the US in order to foster public support for the construction of overland highways. The movement gained the support of President Theodore Roosevelt who addressed the National Good Roads Convention in 1903, and two years later signed the Agriculture Appropriations Act of 1905, which led to the establishment of the federally funded Office of Public Roads. By 1902, 23,000 cars were already registered in the United States and over 50 auto clubs had been formed, while that same year motoring enthusiasts established the American Automobile Association.[168]

Motoring trends across the border not only encouraged the spread of new ideas about overland travel in Mexico, but they produced the first efforts in the United States to travel in automobiles through the territory of its southern neighbor. During the first decade of the century, adventuresome travelers frequently crossed the Mexican border by car, while motorized travel to exotic environs regularly appeared in the popular press, magazines, and technical journals, as

[168] William Kaszynski, *The American Highway: The History and Culture of Roads in the United States* (McFarland, 2000), 30–36.

well as children's literature. In 1910, for example, the Los Angeles Times reported that two "motor girls" had recently taken a trip in an Overland automobile from Riverside, California to "Tia Juana."[169] Earlier, Charles Fredrick Holder had told US readers of his adventure "Motoring in a Cactus Forest," while the popular Stratemeyer Syndicate book series marketed the book *The Motor Boys In Mexico or, The Secret Of The Buried City* (1906) to young boys, followed by *The Motor Boys on the Border: Or, Sixty Nuggets of Gold* (1913).[170]

Meanwhile, promoters of automobile use and good roads staged spectacular "path-finding" expeditions and endurance races across Mexico's inhospitable terrain, still largely untouched by such machines. During 1906, in what was likely the first motoring trip between the United States and Mexico City, millionaire auto enthusiast Charles J. Glidden drove a car from Chicago to the Mexican capital, employing the only suitable path available: the rails of the Mexican National Railroad. After hitting a small rock that threw his car from the tracks, partially demolished it, his trip came to an abrupt end 50 miles from Mexico City. Accompanied by Mrs. W.S. Hill of El Paso, Miss Martha Waldron-Barron, engineer Charles Thomas, and Mexican National Railroad trainmaster W.S. Page, Glidden, his party, and car eventually arrived in Mexico City aboard a wrecking train.[171] Three years later, in 1909, racecar driver Billy Knipper took a Chalmers-Detriot "30" from Denver to Mexico City on a "pathfinding" enterprise. Facing similar difficulties, on the first day in Mexico the vehicle slipped a gear fifty-six miles outside of El Paso and forty-six miles from the nearest railway. Forced to catch a train back to the border,

[169] "Motor Girls Cross Border," *Los Angeles Times*, August 8, 1910, I9.
[170] Charles Frederick Holder, "Motoring in a Cactus Forest," *The Century Magazine*, March 1910, 762–773.
[171] R.R. l'Hommedieu, "Glidden's Tour on the Rails is Stopped by Accident," *San Francisco Call*, January 10, 1907, 6.

W.E. McCarton, editor of Motor Field magazine, returned with a rescue party as well as food and water for the stranded driver and his co-pilot F.E. Spooner.[172]

American automobile manufacturers, in the meantime, planned a Flag-to-Flag race from Denver to Mexico City. Originally set for November 1909, organizers had postponed the race in order that it might coincide with the country's centennial celebrations.[173] By the beginning of 1910 the AAA had sanctioned the event and set down the rules. Participants were to depart from Denver on October 25 and arrive at the Paseo de la Reform in Mexico City after passing through Trinidad, Colorado, Amarillo and San Antonio, Texas, and the Mexican towns of Zacatecas, Aguas Calientes, Celaya, San Juan del Río, and Tula. Racers, meanwhile, were to carry "Baldwin Auto Guides," drafted from information provided by Billy Knipper, and upon arrival in the Mexican capital, vehicles would be displayed at a large auto show. [174]

Before the Under Two Flags race began, however, a Flanders "20" arrived in Mexico City on August 3, 1910 as part of an "Under Three Flags" trip from Quebec to the Mexican capital. The car, which had left Canada on June 6, faced numerous difficulties, not least of which was the notable absence of passable routes, forcing the crew to construct large sections of road on its own.[175] Once it arrived in Mexico City, the Flanders car was met by local automobile enthusiasts and later led a parade of cars from the National Palace to the American Embassy.[176] Revealing the event's intimate relationship to the sale of vehicles in the country, the car came to its final destination on Morelos Avenue at the Mohler & DeGress garage where it was put on display.[177]

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[172] "Autoists in Bad Plight," *New York Times*, May 16, 1909, n.p.
[173] "Automobile Notes," *Washington Post*, February 13, 1910, 2.
[174] "Flag to Flag Contest," *New York Times*, April 17, 1910, n.p.; "Sanction for Flag to Flag Endurance Run," *New York Times*, August 29, 1909, n.p.
[175] "In the Auto World," *Washington Post*, July 30, 1910, 9.
[176] "El Flanders '20' llegó ayer a esta cuidad," *El Diario*, August 4, 1910, 2.
[177] *El Diario*, August 7, 1910, 9.

International motoring spectacles functioned as part of a larger marketing effort pursued by an emergent transnational network of automotive industry promoters in Mexico and the United States. Motorcar, parts, and accessories suppliers used dazzling trips to not only garner public attention, but to prove the value of their products to would-be consumers. After his arrival in Mexico City, Knipper set about establishing a variety of records for inter-city automobile travel, including a trip between Mexico City and Toluca, which he completed in an hour and 16 minutes.[178] During early 1910 he also headed to Puebla in order provide demonstrations of his "Chalmers" motorcar, a model imported by dealers Mohler & DeGress.[179] Months later, during March 1910, a Packard "30" owned by distributor Kenneth Walter would, in similar fashion, make a trip from Mexico City to the western city of Guadalajara, completing the journey in under thirty-three hours.[180] Finally, when the Under Three Flags car, arrived in Mexico, Mohler & DeGress took out a full page in *El Diario* to announce that they had the model in stock,[181] while the Compañía Mexicana de Petróleo "El Águila" placed ads in local papers observing that the car had used its Naftolina gasoline and Monarca oil.[182] Together these daring drives emphasized to buyers that such models could handle the rugged terrain of a country that still lacked a system of good roads.[183]

Conclusion

Prior to 1910 many of the essential features of automobility had been established in the center of the country and to a lesser extent in regional Mexico. In particular, a basic infrastructure of

[178] El Diario, January 24, 1910, 3.
[179] "El 'Chalmers Detroit'," *El Imparcial*, January 11, 1910, n.p.
[180] "Packard '30' México a Guadalajara," *El Imparcial*, March 23, 1910, n.p.
[181] *El Diario*, August 7, 1910, n.p.
[182] *El Diario*, August 4, 1910, 8.
[183] El Aguila petroleum company used similar strategies in marketing its "Naftolina" gasoline to motorists. *El Diario*, April 27, 1910, n.p.; *El Diario*, May 6, 1910, n.p.

agents and dealerships, garages and mechanics, gasoline provision, and modern pavement of streets had become fairly common in major cities. By the late 1900s a limited network of interurban roads had begun to spread out from Mexico City. The incipient use of motorized vehicles for commercial purposes—specifically the transport of passengers and cargo—had also appeared, but remained underdeveloped and isolated to urban areas. Finally, local elites and adventuresome foreign visitors had embraced an association between motoring beyond cities and exploration.

As motorists sought independence from the railways and the ability to venture in their own cars between cities and to recreational destinations, they established an early tendency to encourage road-building in areas largely covered by the railroad. Following the collapse of the Porfiriato, Revolutionary and post-Revolutionary administrators would expand upon the old regime's road construction activities by rebuilding the country's dilapidated network and extending it to more distant cities as well as to the nations borders and coasts.

Chapter Two

On Revolutionary Avenue

A rapid transformation in motoring coincided roughly with the exile of President Díaz (1911) and accelerated following disintegration of the short-lived Madero administration (1911–1913). During the decade of upheaval, which lasted until around 1920, automobile-use grew dramatically as it moved beyond the confines of the urban elite. Soon the motoring public included generals, soldiers, government officials, and entrepreneurial workers, as well as a diversity of paying passengers. In the meantime, rebel factions that had sprung up in previous years quickly clashed with the federal government and amongst themselves for control of the nation's transportation and communications infrastructure, a battle that had the effect of undermining much of the old railway and telegraphic network. Wanton destruction combined with limited maintenance on the rail- and tramways as well as the country's rudimentary roads, aggravated an already demanding transport situation, and encouraged policymakers to search for a solution to "the problem of communications." To a growing number of policymakers and observers the motor vehicle seemed a practical tool to facilitate mobility in and between cities. As political leaders contemplated reconstruction of the country, motorization emerged as a plausible solution to the problem of inadequate railway coverage and the continued isolation of rural inhabitants.

The transformation of the automobile from an elite consumer item into a developmentalist device was initially shaped by the growth in automotive production in the United States. During the 1910s, as American manufacturers honed their methods of production and distribution, an explosion in motoring took place in the US. Many of these vehicles began to

flow southward, into Mexico, both legally (through cash purchases at the border) and illegally (through theft and smuggling operations). Although the initial popularization of motor vehicle use had occurred when soldiers and generals began to confiscate the cars of wealthy motorists, soon additional autos were passing over the border and into cities and rebel camps.

Cognizant of the growing market for vehicles in the neighboring country, US manufacturing interests began to propose their own greater participation in the resolution of the so-called "Mexican situation." Individuals like Henry Ford articulated technologically and sociologically inspired projects for reconstruction that emphasized the use of new machines in alliance with new organizational methods. More commonly, however, manufacturers and exporters began to view the country as an appealing market for the US automobile, while they made plans to expand their presence in Mexico as stability increased.

This chapter begins by tracing the initial impact of Revolutionary instability on the practice and business of motoring. It then examines the rapid transformation of passenger transportation in Mexico City, the product of labor conflicts on the urban rails and industrial changes within the automobile industry itself. Finally, it moves into the countryside by examining the impact of the Revolution on ideas about long-distance transportation infrastructure and how they shaped both the adoption of motorized vehicles and the character of road-building in the country.

Generals, Intrigue, and Confiscation

One of the first consequences of the revolutionary conflict for automobility was the militarization of the Porfirian motorcar. Although military uses for motorized vehicles had been contemplated under Díaz, the onset of revolution would accelerate this tendency, just as the

instability of WWI would do so in European nations.[184] During the spring of 1914 General Huerta began to organize an Automobile Brigade ("Brigada de Automoviles"), while the regime commissioned head of the military train service, Juan Venegas, to adapt a variety of cars for military purposes. In the meantime, the administration acquired additional armored vehicles ("coches blindados") from Germany, capable of transporting 12 men and a machine gun, while it built another such vehicle in the railway shops of Aguascalientes and moved forward on plans to construct additional cars for the transport of ammunition, water, and the injured.[185]

Rebels similarly sought to weaponize the motorcar, and in January 1911 *La Iberia* reported on a strange occurrence in the state of Guerrero in which a group of "rebels" had commandeered a vehicle owned by a local hacendado and packed it with dynamite. Late at night, having lit the explosives, they sent the car barreling toward an encampment of federal forces with whom they had been skirmishing. Although the charge detonated a kilometer before reaching the base, injuring no one,[186] the anticlimactic event may nevertheless have represented one of the world's first car bombings.[187]

Finally, during the United States' failed "Punitive Expedition," which took place between March 14, 1916 and February 7, 1917, the Army experimented with the use of motorcars and trucks in its search for Pancho Villa. Cognizant that the country's few passable roads would make the mission an arduous one, the military ordered road-building machines, including tractors, graders, dump wagons, scrapers, and other implements. Due to continued reliance on mules and horses for transport of equipment, the army scoured the country for trained drivers,

[184] On the use of motor vehicles in WWI, see Erik Eckermann, *World History of the Automobile* (Warrendale: SAE International, 2001), 72–78.
[185] "Poderoso auto cruzarán los campos de batalla sembrando a su paso la desolación y la muerte," *El Independiente*, March 6, 1914, 1; "Motor Cars Useful in Mexico," *Washington Post*, February 1, 1914; "Autos Aid to Huerta," *Washington Post*, May 31, 1914; "Thousands for Bearing," *Los Angeles Times*, January 30, 1916.
[186] "Ridiculeces de los Rebeldes," *La Iberia*, January 20, 1911.
[187] This case predates the 1920 car bombing in Manhattan that Mike Davis suggests was the first in world history. See his *Buda's Wagon: A Brief History of the Car Bomb* (London and New York: Verso, 2007).

including taxi men from New York and autoworkers from Detroit.[188] Soon after its exploits in Mexico, the US military took what it had learned in the field of motorized warfare to the battlefields in Europe.

In the meantime, cars came to constitute highly visible symbols of the revolutionary-era redistribution of power as a significant transfer of automobiles from wealthy private citizens to new "public" authorities took place following the collapse of the Díaz administration. Nearly every major figure of the period owned one if not multiple vehicles, and even the rural-oriented Emiliano Zapata reportedly traveled around Mexico City in a large touring car as early as 1911.[189] Three years later, on August 13, 1914, General Álvaro Obregón signed the "act of rendition of the City of Mexico" on the front bumper of an automobile along the road from Cuautitlán to Teoloyucan,[190] and in 1915, General Venustiano Carranza reportedly purchased six train carloads of motorcars from the US side of the border.[191] As Carl W. Ackerman recalled, at one point six generals based in Mexico City had requested that a manager of a large American firm provide them each with an automobile as forced payment for protection,[192] while one Carrancista colonel, a former trolley conductor, had not only acquired a vehicle of his own during the armed Revolution, but a house in Mexico City and two pianos.[193] Vicente Blasco Ibañez would later capture the association between military leaders and the motorcar in his short story "The General's Automobile," published in the Los Angeles Times during June 1921, while

[188] "Yankee Ingenuity is Victor in Mexico. B.F. Goodrich Company Tire Expert Tells of Troubles of Punitive Force," *San Francisco Chronicle*, May 14, 1916, 53; "U.S. Auto Truck Driver Tells of Trips to Mexico," *San Francisco Chronicle*, May 22, 1916, 6; "More Mexico Equipment," *New York Times*, June 18, 1916, 2.
[189] "Zapata Yields to Madero," *Washington Post*, June 21, 1911.
[190] Álvaro Obregón, *Ocho mil kilometros en campaña* (Mexico: Fondo de Cultura Económica, 1973), 158–159, 177.
[191] *The Automobile*, December 16, 1915, n.p.; *Motor West*, December 1, 1919, 23.
[192] Carl. W. Ackerman, *Mexico's Dilemma* (New York: George H. Doran company, 1918), 50.
[193] Whitney Caspar, *What's the Matter with Mexico* (New York: MacMillan, 1916), 27.

Martín Luis Guzmán would open and conclude his novel *La Sombra del Caudillo* by evoking the Cadillac of the book's protagonist, General Ignacio Aguirre.[194]

Forced seizure of motor vehicles, so common during the armed upheaval, caught the attention of *Automotive Industry* magazine, as it found the practice to have been one of the major reasons for the limited expansion of the market for new cars during the 1910s. Consumers, it seemed, had increasingly sought to import used vehicles from the United States, as their "unsightliness" failed to attract the attention of would-be thieves and the powerful.[195] By 1918 the Los Angeles Times reported that the country had become "a land of used automobiles," noting that while a few new models had been introduced over the previous eight years, second-hand cars had been imported "in large numbers, not only from the United States, but from Central and South American countries."[196]

Subordinates of the country's many generals, meanwhile, did their part to challenge the moral geography of automobility, entering previously forbidden spaces and altering the Porfirian association between motoring and elite social standing. During 1914, for example, Mexico City residents feared for their safety as a group of Zapatista soldiers dashed through the streets in a car while firing off their pistols.[197] Most famously, however, during the middle of the following year, when the capital was under Zapatista rule, a group of men donning official-looking uniforms began to employ a grey car in the robbery of the homes of wealthy residents. They quickly became known as the Grey Automobile Gang. To gain access to the houses of the upper classes, over the next few years the group displayed warrants signed by high-level Revolutionary figures, from Zapatista general Amador Salazar and Carranicista general Francisco de P. Mariel,

[194] Vicente Blasco Ibañez, "The General's Automobile," *Los Angeles Times*, June 26, 1921, VIII12.
[195] "Mexico Increases Demand for Cars," *Automotive Industries–The Automobile* 43 (September 16, 1920): 590.
[196] "Mexico, a Land of Used Automobiles," *Los Angeles Times*, June 28, 1918.
[197] "War Rends Mexico," *Washington Post*, November 12, 1914.

to future presidential candidate Pablo González. The gang soon earned fame for their daring raids on elite urbanites, their use of fancy cars, and their conspicuous spending habits at local restaurants and cantinas.[198] Eventually they became the subject of a popular film, *El automóvil gris* (1919) that appeared in movie halls across the city.

Mexico City's Revolutionary Motorscape

Throughout the Porfirian-era, movement around the capital had relied on two basic modes of travel: rails and feet (human and animal). Cargo transportation, for instance, was heavily dependent on the city's network of licensed porters, while the tramways increasingly handled passenger transportation, stretching over 100 miles and furnishing service within the urban center as well as to the outlying suburbs of Tacubaya, San Ángel, Tlalpan, and Guadalupe, among other destinations. Meanwhile, mule-drawn trolleys covered an additional 40 miles, although they were quickly disappearing by the end of the 1900s. The nerve center of the network converged on the capital's central plaza, the Zócalo, as the many tramways started and stopped their journeys at this symbolic heart of the nation. Operated by the Canadian firm The Mexican Tramways Company, in association with the British concern Mexico Electric Tramways, by 1907 the system was transporting nearly 65 million passengers each year.[199]

Following little more than a decade and a half of service, the electrified tramway system began to face severe competition from Revolutionary-era motorists looking to earn a profit with their privately owned vehicles. Following production innovations introduced by Henry Ford, the price of a Model T had declined dramatically and by 1916 a "runabout" could be acquired for

[198] Piccato, *City of Suspects*, 176.
[199] Charles Reginald Enock, *Mexico, Its Ancient and Modern Civilisation, History, Political Conditions, Topography, Natural Resources, Industries and General Development* (New York: Charles Scribner's Sons, 1919, 5th Edition).

345 dollars in the United States and a touring car for 360 dollars. That same year production hit 738,811 units as Ford Motor Company captured half of the world market for motorized vehicles.[200] Many of these machines made their way to Mexico as entrepreneurs put them to use in the transportation of passengers.

During 1914 a "jitney craze" had begun to sweep over the west coast of the United States and quickly move eastward. Within two years these make-shift buses had arrived in Mexico City and would fundamentally alter the character of urban travel over the following decades. Unlike the tramway system, the jitney business was, at least initially, made up mainly of small-scale entrepreneurs who purchased cars or chassis and adapted them to the needs of moving the multitudes around the city. Recalling the birth of the "chafirete"," or professional jitney driver, and his able assistant, the "cobrador" or fare collector, Salvador Novo observed that many of these workers had initially been chauffeurs for an assortment of generals, but over time they had purchased their own cars and begun to offer "the newly fashionable speed to a greater number of citizens at a moderate price." To Novo, these young chafiretes and cobradores were none other than the "first sons of the Revolution."[201]

The powerful labor movement that had emerged in Mexico City following the collapse of the Porfirian regime facilitated the rise of the capital's taxi and bus drivers. After a Mexican Tramways strike during 1911, the city's essential system of urban and suburban transportation experienced frequent service interruptions. The impact of this first labor dispute on the urban rails, "greatly felt in the entire metropolis," had even affected the dead, as funeral homes could

[200] James J. Fink, *The Automobile Age* (Cambridge: MIT Press, 1990), 37.
[201] Salvador Novo, *New Mexican Grandeur* (Mexico: Ediciones Era, 1967), 23-24; by the 1910s, reports on traffic accidents were common in newspapers. "Junto al hada de la caridad la muerte esconda su garra," *El Independiente*, December 9, 1913; "Una mujer muerta y seis heridas, en un accidente automovilisto," *El Democrata*, April 30, 1919; "El Trafico: He ahí la amenaza!" *El Democrata*, November 22, 1919.

no longer transport bodies for interment via the city's fleet of indispensable tramway hearses.[202] Dependent on the steady stream of electricity, the network would later suffer from recurrent supply cuts by the increasingly militant electrical workers union, the Sindicato Mexicano de Electricistas (SME), established in 1914.

During a general strike that swept the Federal District on July 31, 1916 and brought tram services to a halt, entrepreneurial chauffeurs quickly set about transporting multiple passengers for a nominal fee. After moving people around in their own cars during the first day of the strike, by the second they had begun to transform the bodies of vehicles into makeshift buses by positioning wooden planks atop old chassis and stringing up cloth around rod canopies. Shortly after the initial improvised vehicles hit the streets, chauffeurs began to experiment with additional design and service innovations. On mainly Ford chassis, they crafted wooden bodies that contained laterally running benches to fit eight, sturdy roofs, sides to act as back rests, and curtains to keep out rain. With a price tag below 1,400 pesos, they were eminently affordable and quickly came to represent a permanent competitor of the trams. The vehicles charged 10 centavos a person, and initially roamed the city like taxis, at all hours, keeping to no permanent routes. To attract passengers, chauffeurs displayed a diversity of cardboard signs listing the tramway routes they claimed to serve, though did not always do so faithfully. On stops along Cinco de Febrero, Argentina, 16 de Septiembre, Tacuba, and Bucareli, the noise of revving engines, honking horns, and shouting *cobradores* filled the streets with a relentless cacophony.[203]

By the end of 1918 one observer would affirm that in fact it was in Mexico where "this modern solution of the transportation problem in its highest stage" had to be seen. Although the country's jitney craze began later than the United States'—where concerns over safety had

[202] Leindenburger, *La historia viaja en tranvía*, 85–6.
[203] Moisés T. de la Peña, *El servicio de autobuses en el Distrito Federal* (Mexico, 1943), 13–15.

resulted in its rapid decline during the later years of the 1910s—it lasted much longer.[204] Although its origins are obscure, it seems that the jitney idea was first introduced to Mexico City after a forgotten visitor witnessed the new mode of transportation in a Southwestern border state. By the later years of the decade, throngs of buses could be observed in "every conceivable shape, style and capacity," the largest of which seated between 25 and 30 passengers and transported additional commuters who clung to the vehicle's running boards. Others were no more than unadapted automobiles, Fords being quite common, that simply accommodated all who could find a seat.[205]

By the end of 1918 the city's more than 2,500 jitneys were covering all but one of the principal roads of the capital—Francisco I. Madero Avenue—and providing quick transport to the suburbs and "colonies" both day and night. Although the electric trams, when first introduced, had represented an improvement upon older forms of travel, they could scarcely compete with the speed of the makeshift buses. Indeed, jitneys covered the same routes as the tramways, but did so in less than half the time, moving along at a speed "calculated to turn one's hair gray." Their steady flow also proved appealing to commuters as the tramcars, in contrast, often passed by at intervals of 15 to 20 minutes. Meanwhile, at 10 centavos within the city and to nearby suburbs and 15 centavos for more remote destinations, the price of a ride on a jitney matched that of the tramways. Adding to their appeal was the fact that the streetcars had become overcrowded during later years and acquired a reputation as cesspools of pickpockets and conductors of typhus. Nevertheless, during rush hour the city's fleet of jitneys were similarly

[204] Arguably the "jitney craze" continues in Mexico City as small buses (micros or peseros) and vans (combis) provide transportation for a large portion of the capital's residents.
[205] *The Mexican Review* 2.12–13 (September–October, 1918): 18.

"crowded to the limit," as "homeward-bound travelers, of every age, of every walk and condition in life, cluster in all over them, inside and outside, like a swarm of bees."[206]

Consistent with their reputation as working-class wordsmiths, jitney owners and drivers drew attention to their machines by adopting fanciful names that were inspired by popular culture, geography, international events, political sentiments, or simply unexplained personal preferences. Names included, among others, General Joffre, Hindenburg, Kaiser, America, El Vampiro, Fifí, Maclovio Herrera, Rosa Blanca, La Marina, Hormiga, Mayatito, Rio Bravo, Nandito, Anáhuac, Marianela, Mitla, Malintzi, Monterrey, Pretty Baby, El Submarino, El 8, Mancito, Charlie Chaplin, Max Linder, El Pacholín, Guillermina, Dante, La Paz, El Transiberiano, Consentido, España, Don Tancredo, Lupe, El Centenario, Montserrat, El Chimalpopoca, La Favorita, El Recreo, El Arcón, Laredo, Zacatecas, and El Triunfo.[207]

The diversity of names paralleled a diversification in motor vehicle users. Prior to the introduction of the jitney, motoring had remained a decided luxury. The "fortunate auto riders, as they rolled proudly down the Paseo de la Reforma, were the envy of all, and especially of their less fortunate countrymen and women," one observer found. Yet by the end of the 1910s all this had changed and 10 or 15 centavos was all it took for one to enjoy a ride down the Paseo de la Reforma, past the Caballito statue, and on to Chapultepec Park. Riders could "rise neck and neck with the proudest official or merchant in his expensive French or American machine. No more must the lowly peon or mechanic and his wife watch from the sidewalk the supercilious auto rider, leaning back against the soft cushions. The seats of the jitney may not be so soft and luxurious, but the vehicle runs side by side with those of the aristocracy, and 'gets there just the

[206] Ibid.
[207] Ibid., 19.

same,' to the manifest huge content of the occupants, who for a few centavos now find themselves enjoying a luxury once supposed to belong peculiarly and solely to the wealthy."[208]

The jitney business had been one of the principal factors in bringing about a dramatic increase in automobile imports, which accelerated during 1917 when the Carranza administration removed import duties on all "wagons, carriages, and automobiles for commercial and agricultural purposes." Although the capital's 2,457 coaches or carriages outnumbered motorcars during the first part of the year, that summer reports suggested 5,000 automobiles would be imported into the country and 1,000 would be put to use as either taxis or jitneys in Mexico City alone. It is little surprise that during 1917 brothers Emilio, Gastón, and Rogerio Azcárraga had begun to import and distribute Ford automobiles. Within a year they had allied with an American national and formed "Azcárraga y Copeland." By 1919 there were around 5,500 automobiles in the capital and surrounding suburbs, double that of just two years before, while Harvey Middleton would recall witnessing "a parade of automobile" in Chapultepec Park "four lines deep, two lines going in each direction, the cars being so numerous that they can only go at a walking rate."[209]

During the latter years of the decade newspapers began to publish special automobile sections, while Rafael Alducín purchased the magazine *El Automóvil en México*, originally founded in 1907, and put it back into print. In Mexico City, where literacy levels had long been much higher than in the provinces, the city's growing number of motorists, would-be mechanics, and transportation workers demanded information on the emergent industry. As early as 1918, *El*

[208] Ibid., 18.
[209] United States Bureau of Foreign and Domestic Commerce, *Supplement to Commerce Reports*, No. 32c, October 17, 1918, 11–12; "Mexico," *Bulletin of the Pan American Union* 44 (January–June, 1917): 407, 682; "Mexico," *Bulletin of the Pan American Union* 45 (July–December, 1917), 691, 271; *The Automobile*, December 16, 1915, n.p.; *Motor West*, December 1, 1919, 23; P. Harvey Middleton, *Industrial Mexico: 1919 Facts and Figures*, (New York: Dodd, Mead and Company, 1919), 134.

Universal Ilustrado began publishing an "Automobile Advice Section" ("Sección de Consultas Automovilísticas") in which readers could ask questions about motoring and the automotive industry. During July, for example, "Señor H.G." of Puebla inquired about the earnings of chauffeurs in Mexico City, as he wanted to know if a move to the capital was worthwhile. Others, like "Señor Comerciante" inquired about the costs of maintaining a bus in the capital.[210]

Although the most radical expansion in automobility had occurred in Mexico City, growth in automobile use took place in regional centers as well. In Mazatlán, for example, both private automobiles and motor trucks had become "very popular," particularly following the introduction of "low-priced American" makes, which had become the most popular vehicles in the area. The local consul estimated that although during 1915 residents in the district owned no more than 25 cars, a short two years later around 350 were being used, while he suggested that Mexico would develop into "an important market for American automobiles" following the end of the First World War. A variety of "automobile stage lines," meanwhile, had been established in the district and a few even covered some of the roughest roads in the area. Following months of experimentation, the consul remarked, "there seems to be no tendency to return to the use of the old horse and mule stages." Motor trucks, in contrast, remained little more than an "experiment" due to apprehension regarding such large investments, as well as to the fact that the trucks imported thus far had "not been of sufficiently heavy construction" to allow for use on poor country roads.[211]

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[210] "Seccion de consultas automovilisticas," *El Universal Ilustrado*, 5 Julio, 1918, n.p; It seems that many people who entered the automobile industry had learned basic mechanics on the railways. Native of Durango, Jesús Vasquez, for example, had been studying to be a railroad mechanic, but due to the Revolution, he moved to Torreón where he became an automobile chauffeur. Jesús Vasquez to Eduardo Hay, AGN, SCT, DGAC, Caja 59, Exp. 29930, Foja. 25, February 1, 1928. Others like Alfonso Lopez, who moved to the US during the early 1920s at age 19, studied automobile mechanics a Creer College in Chicago. Alfonso Lopez to SCOP, AGN, SCT, DGAC, Caja 59, Exp. 29931, Foja. 33, March 15, 1929.

[211] United States Bureau of Foreign and Domestic Commerce, *Supplement to Commerce Reports*, No. 32c, October 17, 1918, 11–12.

Infrastructure Destruction

As motoring continued to develop in Mexico City and expand in regional centers like Tampico, Monterrey, Puebla, and Guadalajara, the situation on the national railway system entered rapid decline. During the armed Revolution, destruction of transport infrastructure became a frequent tactic of Revolutionary forces, as rebels ripped up railway tracks and toppled bridges with TNT and other explosives. Writing to Genovevo de la O from his encampment in Morelos during the summer of 1912, Emiliano Zapata, for example, discussed his plans to destroy a railway line and confiscate a cache of arms being shipped from Veracruz, while noting more generally, that "the complete destruction of the railways, telegraphs, and telephones would be of great utility for the Revolution" since this would limit advantages held by the government.[212] Motivated by similar concerns, on August 17, 1915, future president General Lázaro Cárdenas reported that he had destroyed all bridges from Casita to Santa Ana, in the state of Sonora.[213] In other, more spectacular instances, rebels employed the famed "Máquina Loca," a train filled with dynamite, in their efforts to disrupt opponents' communications lines, while telegraph lines became favored places to dangle executed opponents.[214]

Capturing the situation during the middle years of the Revolution, Aguascalientes consul Gaston Schmutz reported that during 1914–1915 all the railroad, express, and telegraph services in the area had been under military control since April 21, 1914, and that during 1914 railway lines had often been simultaneously interrupted for periods of one and two months. Similarly,

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[212] Emiliano Zapata to Genoveva de la O, AGN, AGO, Caja 11, Exp. 10, Fs. 12–13, Agosto 16, 1912.

[213] Lázaro Cárdenas, *Obras. I–Apuntes 1913–1940, Tomo I* (Mexico: Universidad Nacional Automoma de Mexico. Dirección General de Publicaciones, 1972), 99.

[214] On the máquina loca, see Alan Knight, *The Mexican Revolution: Counter–revolution and Reconstruction* (Lincoln: University of Nebraska Press, 1990), 322. On the hanging of rebels along telegraph wires, a practice some observers dubbed the "revolutionary necktie," see Investigation of Mexican affairs: Committee on Foreign Relations, *Preliminary Report and Hearings of the Committee on Foreign Relations, Part 1, Volume 1* (Washington: Government Printing Office, 1920), 390.

Mazatlán Consul William E. Alger found that during 1914, there had been "no railroad traffic either north or south," while in many instances rolling stock and railway equipment had been so reduced that travelers were forced to use ordinary boxcars and "iron gondolas" for transportation. Finally, in Durango, Consul Homer C. Coen reported that because of the destruction of the rolling stock and the inability to secure additional equipment, there was "no prospect of a betterment along this line."[215]

The crippling of railway facilities significantly altered commercial movements, and according to the US Consul in San Luis Potosí, the peddlers who tended to frequent the area selling Spanish lace, leather bags, belts, baskets, and tin ware, had ceased to do business in the region. Getting agricultural products to market proved equally difficult, and a large crop of onions cultivated by American colonies between Tampico and Victoria had resulted in a total loss since there had been no means of transport to the port. During harvest time the entire area had been under control of "forces attacking Tampico," and permission for use of the railway was not obtainable. In the one instance in which shipment of the harvest was secured, the onions spoiled before even reaching the port due to the need to send them along a circuitous route that included use of canoes.[216]

As the country emerged from the most devastating middle years of armed Revolution, production and exports picked up, even as the transportation situation changed little in many regions. US consul at Acapulco Clement S. Edwards found, for example, that except for a few miles of railway lines between Iguala and the Balsas River, there was no rail transportation in the state of Guerrero. The automobile road from Iguala to Chilpancingo—one of the few thoroughfares built during the Porfiriato—had likewise fallen into disrepair and was "useless."

[215] *Supplement to Commerce Reports. Daily Consular and Trade Reports. No. 32a, April 30, 1915* (Washington: Government Printing Office, 1915), 30, 32, 36.
[216] Ibid., 7, 9.

Guerrero's lack of highways meant that "narrow trails" afforded the only means of travel from one town to the next, yet even these were so unsafe that overland postal services had ceased and mail destined for Acapulco had to be sent by water from the Oaxacan port of Salina Cruz.[217]

Automobility in Revolutionary-era Reconstructive Thinking

Faced with a devastating situation on the railways and cognizant of the growing use of motor vehicles in and outside of the country, Revolutionary leaders and intellectuals began to propose the use of automobiles and road construction as a solution to the nation's frustrating transportation dilemma. Calls for good roads filled the pages of the vast majority of programs for reconstruction, which had begun to appear as quickly as Díaz had fallen from power. As early as the fall of 1911, future head of the country's National University, Ezequiel Chávez, for example, affirmed that among others things, "[…] the establishment, in the shortest time possible, of country roads (*caminos vecinales*) between the populated areas of the country is urgent" since the lack of such means of transportation had meant that "millions of Mexicans are left almost entirely outside of civilization."[218] Similarly, Salvador Alvarado would argue in his 1919 treatise on reconstruction that automobiles and trucks were "destined to have a great future in our country," and that modern highways would function as a critical feeders to the railway system. Alvarado called, more over, for the construction of a system of oil ducts and refineries in central Mexico in order to encourage a decline in the price of gasoline and growth in the use of vehicles "for the transport of products and the transit of passengers."[219]

[217] United States Bureau of Foreign and Domestic Commerce, *Supplement to Commerce Reports*, No. 32a, August 9, 1916, 3.
[218] Ezequiel Chávez, *Hacia el Futuro* (Mexico: Tiporafia y Litografia Muller Hermanos, 1911), 20.
[219] Salvador Alvarado, *La Reconstrución de México, Tomo I* (México: K. Ballesca y Cía, Sucs., 1919), 99.

A flurry of organizational and legislative activities in the midst of the armed phase confirmed that road construction would likely constitute a critical component of any reconstructive program. In 1912 federal authorities established an *Inspección de Caminos*, which was reorganized as the *Sección de Caminos* in 1913, again as the *Departamento de Caminos* in 1914, and once more as the *Sección de Caminos y Puentes* that same year.[220] Meanwhile, legislators and consulting engineers tackled the question of road legislation, jurisdiction, and financing, and during March of 1916 federal authorities proposed a Law of Roads (*Proyecto de Ley de Caminos*). This "absolutely indispensable" law, as consulting engineer A.M. Anza termed it, would do much to encourage contacts between "completely isolated" regions and the rest of the country. Yet Anza concluded that many of the basic decisions regarding construction of new roadways were in effect political in nature, and that he, as a consultant on technical matters, could not be expected to provide such answers.[221]

Although the passage of the December 15, 1917 *Nueva Ley de Secretarías de Estado* had given the Secretariat of Communications and Public Works authority over "National Highway Roads" as well as the "inspection" of those of a private nature, a comprehensive law would not emerge until the following decade.[222] In the mean time construction moved ahead in the absence of any coherent plan. As early as 1912, reports suggested that the road connecting Mexico City, Puebla, and Veracruz—three cities well linked to the railway network—would be "reopened, widened, and improved in every way" by the Secretariat of Communications and Public Works, so as to give neighboring ranches easy access to both the port and the capital, as well as due to "the pleasure it would afford to those who are addicted to sport." Reconstruction of this

[220] AGN, SCOP, TG, Caja 2, Exp. Caminos, Sept 1956.
[221] "Proyecto de ley de caminos," AGN, SCOP, SG, Caja 278, Exp 550/44, March 21, 1916; A.M. Garza, AGN, SCOP, SG, Caja 278, Exp 550/44, March 21, 1916.
[222] *Documentos para la historia de las carreteras en México. I Legislación 1925–1963* (Mexico: Secretaría de Obras Públicas, 1964), 1.

particular highway was to be executed by engineer Ismael Carlos Falcón, who announced that he would have the 22-footwide road open within six months and ready for automobile traffic.[223] A half-decade later, during 1917, in what was no doubt one of the first invocations of what later came to be known as the Pan American Highway, the Carranza administration revealed that the Federal Government would soon begin construction on a 1,200-mile automobile highway between Mexico City and the US border town of El Paso.[224]

Such initiatives were, however, not embraced by all, and that year, during the 1917 National Congress of Industrialists (Congreso Nacional de Industriales), engineer Lorenzo Pérez Castro argued before attendees that if roads were to serve any broader public good, they needed to be of an exclusively local nature. Prefiguring a debate that would recur consistently over the next two and a half decades, he affirmed that such routes ought not be built from city to city, or even from town to town, but they needed to be used to tie small centers of production to the system of railways. Indeed, according to Pérez Castro, it would be "unforgivable" if federal resources were used to build unnecessary roads for automobile "tourists" when such funds could be put to use improving the embryonic system of small but "indispensable" rural roads.[225]

Conclusion

By the end of the armed phase of the revolution, the elite character of Porfirian-era automobility had been significantly altered by the both the upheaval itself—and its attendant social and political transformations—as well as innovations in manufacturing and distribution. The proliferation of affordable automobiles converged with the degradation of urban tramways and

[223] "To Reopen Road to Vera Cruz," *Bulletin of the Pan American Union* 34 (January–June 1912): 130.
[224] "Mexico," *Bulletin of the Pan American Union* 45 (July–December, 1917): 691.
[225] Lorenzo Pérez Castro, "Cómo debe orientarse el fomento de las vías de comunicación en la resulación del os grandes problemas Nacionales," *Reseña y memorias del primer Congreso Nacional de Industriales* (Mexico: Departmento de Aprovisionamientos Generales, 1918), 110, 112.

the Mexico's "indispensable" railroad network to hasten the popularization of motorized vehicles even in the context of widespread unrest. In the meantime, the undeniable ascent of the motorcar encouraged political leaders to inject these new machines, and the road and energy infrastructures they required, into the heart of their wide-ranging projects for reconstruction and post-revolutionary modernization.

Yet for all the ostensible interest expressed by policymakers and observers, no legislation dealing with basic questions regarding the promotion of automobility would be addressed until well into the following decade. In the meantime, the growing number of motor vehicle users set about affirming their rightful place in cities and spreading out over the country's dilapidated roadways, all the while advocating construction of new routes and thoroughfares. In so doing, they carried on where Porfirian engineers and administrators had left off as they pressed for roadways between major cities and toward destinations of historical, natural, and recreational merit.

When the Obregón regime came into power during 1920, the new administration encountered a crisis in transportation that called for careful attention to the question of national communications. Although an assortment of analysts and policymakers would argue forcefully for construction of a network of roadways integrated with the struggling railroad system, the early post-revolutionary period would instead be marked by an unmistakable tendency on the part of the federal government and private initiative to construct intercity highways along routes already served by the trains. Before the effects of these actions were felt, however, the nation's capital would experience a parallel phenomenon on the scale of the city as an onslaught of cheap motorcars began to challenge the supremacy of the urban railways.

Chapter Three

A City Transformed

In 1920 a faction of Sonoran leaders headed by Álvaro Obregón descended upon Mexico City where together they would oversee the country's social and economic reconstruction for the next fourteen years. Upon arrival, these inheritors of the revolutionary state encountered a city fundamentally altered by the process of revolution. The number of inhabitants had grown dramatically, while built structures had increased as well, in one estimation by as much as three times since the outbreak of armed violence.[226] Workers, meanwhile, had mobilized and formed trade unions, residents had engaged in numerous consumer riots as they demanded solutions to food shortages and other challenges to life in the capital, and informal venders had packed into streets and onto sidewalks.[227] Active participants in the striking transformation of the revolutionary-era urban environment, the city's growing number of motorists had also promptly seized large portions of city space previously reserved for pedestrians, carts, and other forms of non-mechanical transit.

Over the next two decades, private motorists, chauffeurs, bus and taxi workers, and consumers would consolidate Mexico City's incipient motorization, while local political leaders, administrators, and investors aimed to remake urban space to meet the demands of motordom. Indeed, much as their Porfirian-era predecessors, urban reformers sought to conquer what they deemed to be an acute problem of congestion. Alarmed at the city's uncleanliness, the proliferation of disease, and the growing agglomeration of people living in the traditional

[226] On transformations in the built environment see Gustavo Garza y Fernando Aragón, "La contaminación atmosférica de la ciudad de México en escala megalopolitana," *Estudios Demográficos y Urbanos* 10.1 (January–April 1995), 50.

[227] On worker and consumer mobilization during the revolutionary Mexico City, see John Lear, *Workers, Neighbors, and Citizens: The Revolution in Mexico City* (Lincoln: University of Nebraska Press, 2001).

downtown, reformers devised plans to remake the built environment by encouraging greater use of open space and construction of wide avenues capable of facilitating the more "hygienic" flow of traffic. In so doing they helped encourage the geographical expansion of human settlement, much as Porfirian-era real estate developers had through construction of fashionable subdivisions to the west of the city.

Many of the urban planners who worked with federal and municipal authorities on the "rationalization" of the capital during the late 1920s and 1930s, began their work as consultants, architects, and engineers on new elite and upper-middle class neighborhoods during the years immediately following the armed revolution. These neighborhoods had emerged as the result of a residential building boom facilitated by the reallocation of capital from risky endeavors to safer real estate speculation. The new neighborhoods were, in turn, populated by affluent urbanites anxious about the hazards of life in the city center and inner suburbs, areas brimming with recent arrivals from the countryside and relentless commercial and passenger traffic. The new *colonias*, alternatively, offered the wealthy the opportunity to live in quarters described by their promoters as "healthful," "idyllic," and far from the bothersome bustle yet within easy access of the city's modern conveniences. This chapter centers its analysis on this battle for city space that characterized the immediate years after the armed revolution and would continue to shape residential practices, urban reform projects, and mobility over the following decades.

A Battle for Space

Although traffic problems had attracted the attention of observers during the Porfirian era, such troubles hardly compared to those brought about by the onslaught of vehicles and people during the first decade of post-revolutionary reconstruction. While the number of cars in Mexico City

more than tripled during the course of the armed Revolution, the most rapid expansion had taken place during the final years of the decade, when from 1917 to 1919 motor vehicles grew by over twofold.[228] Upon the election of Álvaro Obregón two years later, more than 6,100 cars and 130 trucks battled with around 6,700 horse-drawn vehicles and an extensive though dilapidated system of tramways for use of the capital's narrow and poorly maintained streets.[229] The expansion in urban automobility had occurred so quickly the *El Universal* would quip that "the memory of that clear and clean Mexico [City] of 10 years ago vanished in a cloud of dust and gasoline."[230]

By 1924 the city's "picturesque hacks and victorias" used to shuttle residents around had been completely displaced by 2,849 cabs and jitneys that together transported 592,536 passengers per day. A year later one observer estimated that 35 million pesos were invested in automobiles in Mexico City and surrounding suburbs alone. Nevertheless, old-style two and four wheeled springless carts continued to far outnumber the modern motor truck, due largely to the poor state of suburban roads in the Federal District. Thus during 1924, the 9,115 tons of cargo hauled each day by the city's 2,145 trucks still paled in comparison to 26,961 tons transported by the 9,162 wagons and carts in the capital.[231]

The lamentable state of the capital's roadways constituted another arresting reminder of the Revolution's impact on the city. Even the famed Paseo de la Reforma, noted by earlier observers for its wonderfully smooth pavement, had become "covered with ruts and chuck-

[228] "Mexico," *Bulletin of the Pan American Union* 45 (July–December, 1917): 691; *The Automobile*, December 16, 1915, n.p.; *Motor West*, December 1, 1919, 23; "Poderosos autos cruzarán los campos de batalla sembrando a su paso la desolación y la muerte," *El Independiente*, March 6, 1914, n.p.; "Motor Cars Useful in Mexico," *Washington Post*, February 1, 1914; "Autos Aid to Huerta," *Washington Post*, May 31, 1914; "Thousands for Bearing," *Los Angeles Times*, January 30, 1916.
[229] David Beecroft, "The N.A.C.C. Resumes Export Mangers' Meetings," *Automotive Industries–The Automobile*, October 14, 1920, 754–755.
[230] Figaro, "Mexico sin Camiones," *El Universal*, March 8, 1922
[231] "Many Autos Now Used in Mexico City," *Los Angeles Times*, April 2, 1926, 5.

holes" to the extent that drivers had to be "skilled indeed to pilot a smooth passage over the famous thoroughfare."[232] Consequently, when the Sonorans took over administration of the city, one of their first objectives would include the material reconstruction of the capital. To that end, during the first year of the Obregón administration authorities graded more than seven thousand cubic meters of causeways (calzadas), paved 115,252 cubic meters with gravel, and covered 124,264 cubic meters with macadam and another 857 with cobblestone. Meanwhile, construction began on the massive Insurgentes Avenue that connected the center of the city to the southern suburb of San Ángel as it passed by the neighborhoods of Condesa, Roma, and Mixcoac.[233]

As reformers continued Porfirian-era efforts to disinfect the city of disease and illness, urban residents faced a rapidly spreading plague of a different sort in automobile accidents. Between the latter years of the revolution and the early 1920s, pedestrians had been pushed to the perimeters of streets by the growing agglomeration of passenger cars, jitneys, and trucks. In the meantime, urban residents had developed a new set of skills to navigate the latest hazards of life in the machine-age. Drivers, for example, became famed for their quick-paced weaving through narrow streets and congested thoroughfares. As Frank S. Howard—general manager of the Howard Automobile Company—observed, they commonly employed "whatever driving expedient best fits. The speed is very high and if there is an opening, two or more cars may all dash for it. The first there wins. Whatever becomes of the other one or two is a matter of dodging, brakes or luck."[234] Meanwhile, *El Universal* found that urbanites were quickly adapting their bodies to a series of new "instinctive physical needs." Over time "we have been altered, without noticing it, becoming sad and wary animals. […] We have become untrusting of

[232] "Many Conditions Limit Automobile Exports to Mexico," *Automotive Industries–The Automobile*, October 16, 1919, 780.
[233] "Datos de la Secretaria de Comunicaciones y Obras Públicas, para el Informe Presidencial, 1921, AGN, SCOP, EM, Caja 202, Exp 537/4.
[234] "Unbent Fenders in Mexico City Are Matter of Luck," *Los Angeles Times*, December 13, 1925, G8.

everything, even of our own shadows" as every "small sound, the flapping of a wing, seems to us the snorting of a bus that might attack us from behind." Even the dogs, cats, and chickens of the Federal District seemed to have acquired this new "sixth sense of the big city."[235] Although the tramway drivers of the late Porfirian-era had been known as *mataristas* (murderists), rather than *motoristas* (motorists), due to the frequent accidents they provoked, motor vehicle drivers soon constituted one of the more striking threats to pedestrians. Indeed, by the summer of 1921 El Demócrata would lament that the "scandalous frequency" of "accidents along the public thoroughfares" had become part of daily life, and if it was "not a child run over by a train or an automobile, it's an elderly person, and even men and women in the midst of life, for mercy is given to no one." The fact that the traffic situation in the city was a "resounding failure" seemed undeniable.[236]

Difficulties, to be sure, were not confined to the capital, and in Guadalajara locals frequently complained of the damage as well as annoyance caused by trucks that used hard-rubber tires. The racket they produced, *El Informador* newspaper argued, far surpassed that of the trucks and buses in San Francisco or New York, particularly because in the Jaliscan city "loud sounds [were] indispensable in order to avoid crashes or running over people due to the narrowness of streets." Indeed, the trucks and buses, it seems, were much louder than the tramways, and a study conducted on a seismograph in the basement of the School of Engineers found that a hauling machine at a distance of 200 meters created more vibration than a tram at less than a sixth the distance, or 30 meters. In fact, as the paper remarked, one particular bus that frequently passed by Madero Avenue caused such a "tremor" that it would have likely sent people of the early 1910s out of their houses in the belief that it was an earthquake. Such

[235] Figaro, "México sin Camiones," *El Universal*, March 8, 1922, n.p.
[236] "Por su mala organización, el tráfico es un enorme fracaso," *El Demócrata*, August 10, 1921, 1.

vehicles not only affected "nervous people," however, but caused real structural damage to the city's adobe houses, leading the paper to suggest that vehicles would have to either travel more slowly or switch to pneumatic wheels.[237]

As pedestrians battled with the tangle of automobiles, buses, jitneys, carts, and tramways for space on city streets, motoring proponents like *El Automóvil en México* demanded that officials deal with what they deemed to be a population of intransigent bipeds. As early as 1920, an article in the magazine insisted, flippantly, that a "law for pedestrian traffic" be passed in Mexico City, requiring, among other things, that pedestrians walking at night carry a white light in front and a red light in back; that they not carry any items that might, upon breaking, damage the tires of a car; that when dodging automobiles, pedestrians should not run any faster than seven miles per hour; and that they should not emit too much smoke from their cigarettes or cigars.[238] Less facetiously the magazine argued in June of 1921 that since the city's Traffic Code (Reglamento de Tráfico) had gone into effect in 1918, no pedestrian had ever been charged for a variety of offenses such as jaywalking. Reproducing portions of the law for the reading public, the magazine argued "it is time to begin concerning ourselves with teaching pedestrians how to walk on the streets and to comply with the traffic laws."[239] In its effort to address the under-regulation of traffic in the capital, the city's Department of Transit established a twenty-man motorcycle police corps during the following year,[240] and during early 1927 city authorities responded to the complaints of motorists by banning horse-drawn vehicles from the capital's

[237] D.V. Navarro, "El Tráfico de autocamiones pesado por la ciudad," *El Informador*, October 24, 1921, 5.
[238] *El Automóvil en México*, December 1920, 37.
[239] *El Automóvil en México*, July 1921, n.p.
[240] Del Río and Vargas, *El Autotransporte*, 91.

paved streets as well as those of the suburbs of San Angel, Atzcapotzalco, Coyoacán, Tacuba, Tacubaya, Mixcoac, and Tlalpan.[241]

Jaywalking, rather than a simple bad habit of those ignorant of the new demands of the motorized city, remained a necessity. In many instances capitalinos had little option but to venture into the streets, as venders and itinerant merchants had begun to fill up the capital's sidewalks. The expansion of unregulated street hawking forced pedestrians to "invade the place destined for the transit of vehicles," the increasingly forbidden middle of the street. Around the Merced, San Juan, Juárez, and Lagunilla markets, and on avenues like Corregidora and San Juan de Letrán, temporary stalls vied for space originally made for feet. As the stalwart defender of motorists, *El Automóvil en México*, argued, if a solution was not soon found to problem of crowded sidewalks, any attempt to reduce traffic congestion in the city would fail. Yet motorists themselves had added to troubles as owners frequently left their cars along the major streets in the city, a practice that further threatened to produce "a true aversion to automobile travel through the city center."[242]

In the meantime, the motorcar emerged as a new space for a variety of old activities, from making love and a living, to murder and suicide. Indeed, in one instance during April 1921, reports told of an "elegantly dressed" man who had killed himself in the back of a taxi. After hailing a cab early in the morning at the corner of Flores and Santa María de la Ribera, the young "aristocrat" had directed the chauffeur to drive him to Chapultepec Park. On board the Ford taxi, he unleashed a bullet into the right side of his head.[243] In other instances, the car became a scene of premeditated murder, and on August 9, 1921, while driving his Buick through the city center, General José Alessio Robles became the unfortunate recipient of a gunshot from General Jacinto

[241] "Mexico City Bans Horses," *Los Angeles Times*, January 16, 1927, F11.
[242] "El tráfico citadino y las banquetas intransitables," *El Automóvil en México*, February 1930, 7.
[243] "A bordo de un automóvil, un joven romántico se arrancó ayer la vida," *El Demócrata*, April 17, 1921, 1.

B. Treviño.[244] Similarly, during November 1927, the Catholic engineer Segura Vilchis attempted to assassinate Álvaro Obregón when he slung a bomb at his car.[245]

Finally, the city's young avant-garde quickly took note of the budding culture of automobility. During the early 1920s figures like Manuel Maples Arce, Germán List Arzubide, Salvador Novo, Luis Quintanilla, and Arqueles Vela, would depict the capital's nascent automobile culture in their work while using it to develop new forms of artistic representation.[246] In his first book of poetry, *Esquina*, List Arzubide described "the voyage to Mars" finally being made "by bus."[247] In the sixth act of Quintanilla's Teatro Mexicano de Murciélago, entitled Camiones, the writer offered viewers an "anthropomorphic rendition of buses that cough and fall dead in the middle of the street 'like any one of the dogs they've run over.'"[248] Maples Arce, meanwhile, wrote of "literally guzzl[ing] down Juárez Avenue" in "a half cup of gasoline,"[249] and Novo began editing *El Chafirete*, a magazine for taxi and jitney drivers, described as "A Fifí Weekly Written in Prose but with Much Verse."[250] Challenging many of their contemporaries growing fascination with rural and indigenous themes, these controversial modernists injected the motor vehicle into the very heart of their avant-garde creations.[251]

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[244] "El Gral. Alessio Robles fue asesinado ayer por el Gral. Jacinto B. Treviño," *El Demócrata*, August 9, 1921, 1.
[245] Jürgen Buchenau, *The Last Caudillo: Álvaro Obregón and the Mexican Revolution* (New York: John Wiley & Sons, 2011), 159.
[246] For most scholars, 1916 constitutes the birth of the Latin American avant–garde, the very year that mass automobile transportation emerged in Mexico City. Hugo J. Verani, "The Vanguardia and its implications," in *The Cambridge History of Latin American Literature. Volume II: The Twentieth Century* (Cambridge: Cambridge University Press, 1996), 116.
[247] Javier Mora, *El ruido de las nueces: List Arzubide y el estridentismo mexicano* (Universidad de Alicante, 1999), 96.
[248] Elissa Rashkin, *The Stridentist Movement in Mexico: The Avant–Garde and Cultural Change in the 1920s* (Lanham: Lexington Books, 2009), 102.
[249] Manuel Maples Arce, "Manifiesto Estridentista Número 1," Osorio T, Nelson, ed. *Manifiestos*, *proclamas y polémicas de la vanguardia literaria hispanoamericana* (Caracas: Biblioteca Ayacucho, 1988), 103.
[250] *El Chafirete*, March 1923, 1.
[251] The Estridentista, a group of avant–garde artists and writers who formed around poet and polemicist Manuel Maples Arce, were arguably the most enamored by the motor vehicle. See Luis Mario Schneider's classic study *El estridentismo, o, Una literatura de la estrategia* (Mexico: Consejo Nacional para la Cultura y las Artes, 1997), as well as the more recent accounts Gallo, *Mexican Modernity* and Rashkin, *The Stridentist Movement in Mexico*.

The Rise of the City Bus

The ubiquitous references to jitneys, buses, and taxis in the work of the Mexican avant-garde came in response to very real changes in urban transportation as passengers descended from crowded trolleys and increasingly packed in to motorized vehicles. Indeed, by 1923, over 90 percent of the bus lines functioning by the early 1940s had already been established in the nation's capital.[252]

With little regulation regarding permits and routes, an excessive number of vehicles led to mounting conflict over scarce space and desirable routes. To defend their interests, bus line owners and workers established the Centro Social de Choferes in 1921, an affiliate of the Confederación Regional Obrera Mexicana (CROM). Through the Centro Social and the CROM, the budding industry attempted to limit the number of permits granted by the municipalities of the Federal District. On February 27, 1922, they halted all services and marched to the Palacio del Ayuntamiento (City Hall), where they exchanged gunfire with authorities. Negotiations with President Obregón ended favorably for the industry, as officials reportedly met all demands of strikers. Members of the Centro Social would henceforth advise the Department of Transit and eventually they would take up key positions within its hierarchy. Chauffeurs thus became important allies of the Obregón administration, and during the failed de la Huerta rebellion, La Alianza de Camioneros de México came to the government's aid by mobilizing 300 cars for the transportation of troops to the western battlefront.[253]

Just as had been the case during the armed revolution, the growing political power of bus and taxi drivers paralleled and benefited from labor conflicts on the urban rails. During

[252] Moisés T. de la Peña, *El servicio de autobuses en el Distrito Federal* (Mexico, 1943), 16–17.
[253] Ibid, 17-18, 35; "Taxis Commandeered," *Los Angeles Times*, February 3, 1924.

December 1921, Mexican Tramways mechanics declared a strike that severely hampered service. With necessary repairs were no longer being made, by the middle of the month 200 of the system's 500 cars were inoperable. A year later, tramway workers declared another strike as part of a larger work stoppage by the city's bakers, followed again by a mechanics strike during 1923, and another halt to work due to labor disputes two years later.[254] As early as 1923, the Mexican Tramway Company threatened to declare bankruptcy, having reported that it was losing 1.3 million pesos a year due largely to the competition from the city's nearly six thousand buses that covered over seventy routes.[255] The ascent of internal combustion would even encourage the adaptation of streetcars to the gasoline engine, as was the case on the Monte Alto railway, which developed a special car mounted atop a Dodge chassis.[256] Meanwhile, reports during 1922 suggested that Mexican Tramways would soon put into service its own American-made jitneys and London cabs.[257] Yet the limited barriers to participation in the passenger transportation industry, combined with the growing power of the *camioneros*, meant that the tramway business would continue its decline. Finally, between 1947 and 1952, the city's tramways were municipalized under then president Miguel Alemán.[258]

As the new industry continued to consolidate its presence in the city, bus and taxi workers earned an unexpected defender in the figure of Salvador Novo, later dubbed the "poeta chófer" ("chauffeur poet") by his colleague Carlos Pellicer. Along with other local literary figures, the young Novo established and began editing the industry magazine *El Chafirete*,

[254] Leindenburger, *La historia viaja en tranvía*, 85–7.
[255] "Mexican Tramway Facing Bankruptcy," *Los Angeles Times*, July 16, 1923, I1; "Las iniciativas del Departamento de Trafico," *El Universial Ilustrado*, September 6, 1923, 48–52.
[256] "Unique Street Cars in Mexico," *The Motor Truck*, January 1922, 21.
[257] "Mexican Railways to Run Buses," *Bus Transportation*, December 1922, 668.
[258] Joel Alvarez de la Borda, "Transportes, negocios y política: La compañia de Tranvías de México, 1907–1945," in *Las Compañias Eléctricas Extranjeras en México, 1880–1960*, Reinhard Liehr and Mariano E. Bautista, eds. (Mexico: Benemérita Universidad Autónoma de Puebla, 2010), 99.

dedicated to the defense of any and all chauffeurs in the capital.[259] Founded in 1923, the magazine published numerous poems and fictional stories on such diverse themes as the conflicts between drivers and traffic police, the enticements of prostitutes and cabaret women, the masculinity of taxi and bus drivers, and the increasingly intimate relationship between Mexicans and their machines. In the March 1923 edition, for example, Novo offered a tale of lost love between an old Ford and its chafirete in "Mi coche triste" (My Sad Car). In the poem, the "fotingo," a frequently-used slang term for a Ford, recalls his abandonment by his chauffeur, "El Tenorio de Mixcalco," lamenting, "Ungratefully you left me/ in a ghetto garage/ leaving me without a steering wheel/ and without tires, for free/ knowing that I loved you, both night and day/ we worked together/ and in the station you changed me/ and then you transformed me/ into a ridiculous bus."[260]

Over the years Novo would continue his fascination with the world of motorized mobility and in the mid-1940s *Nueva grandeza mexicana*, he recounted the social and cultural impact of the new motorscape of the 1920s. The early cobrador, he found, had quickly learned to move "on foot up and down the rear running board when he was not calling out 'room for two', or asking for 'ten and one' at the gas station, or reciting a heterodox and hybrid litany of celestial and mundane names of routes." Meanwhile, workers developed their own neologisms to describe the transformed urban environment, and as Novo remarked, "Our highly expressive folk language owes much to the verbal ingenuity of this new caste of drivers and conductors." The word

[259] Very little has been written on El Chafirete. The only study of the magazine is Adriana González Mateos, "El fifí y su chofer: control social, homosexualidad y clase en un periodico del México posrevolucionario," *Signos Literarios* 2 (July–December 2005), 103–125; Discussion of Novo's involvement in the newspaper can be found in Robert McKee Irwin, *Mexican Masculinities* (Minneapolis: University of Minnesota Press, 2003); Carlos Monsiváis, *Salvador Novo: lo marginal en el centro* (Mexico: Ediciones Era, 2004); Viviane Mahieux. "The Chronicler as Streetwalker: Salvador Novo and the Performance of Genre." Hispanic Review 76.2 (2008): 155–177. To my knowledge, the only version of *El Chafirete* outside of Mexico is located, on microfilm, at the New York Public Library.

[260] *El Chafirete*, 15 March, 1923, n.p.

lambiscón, widely used by the mid-twentieth century to refer to sycophants and toadies, had originally been coined to describe "the young conductors of the buses." The verb *ruletear*—from roulette—was first employed to describe the offering of services "on the wheel," but later was applied to streetwalking prostitutes. Finally, *mordida*, a bite or a bribe—a word that had become widespread by the 1940s—had its origins in the nickname for the first traffic cops: *mordelones*.[261]

Countryside in the City: Post-Revolutionary Suburbanization

The convergence of growing traffic congestion in the center of Mexico City with ongoing rural-urban migration encouraged the relocation of wealthy and upper-middle class capitalinos to the west and southwest of the city. Facilitating the exodus, real estate speculators began to carve out subdivisions from the agricultural hinterland of the Federal District. New and surviving Porfirian elites alike quickly moved into these areas of the city in search of better living conditions, less human and vehicular congestion, and an atmosphere of country living within the comfortable reach of the modern city.

Suburban flight had its origins in the nineteenth century when, during the French Intervention, Maximilian von Hapsburg built a road between the city's main square, the Zócalo, and Chapultepec Park. As wealth poured into the country during the latter decades of the century, the middle and upper classes followed his lead and began to resettle to the west and southwest of the old city center. Around the turn of the century work moved ahead rapidly on the upper-middle class "colonias" of San Rafael and Limantour to the west, and Juárez, Cuauhtémoc, Roma, and Condesa to the southwest. The Paseo de la Reforma, meanwhile, linked these comfortable enclaves to the center of town, which increasingly specialized in commercial

[261] Novo, *New Mexican Grandeur*, 25.

activities. The working poor, with few alternatives, moved to the scarcely desirable eastern periphery.[262]

Segregation paralleled and had been facilitated by turn-of-the-century innovations in urban transportation. With the introduction of tramways—first pulled by mules and later powered by electricity—the footprint of the capital stretched outward as did the daily activities of its residents. As early as 1882, when poet Manuel Gutiérrez Nájera wrote his ode to travel by trolley, he argued against a narrow view of the capital, affirming that Mexico City did not start at the National Place, nor did it end at Reforma Avenue. "I give you my word," he insisted, "that the city is much bigger. It is a great turtle that extends its dislocated legs toward the four cardinal points."[263] Yet by the end of the Porfirian era, the majority of the tramway lines still served the western side of the capital, and even the two lines on the eastern end could seldom be used legally by the masses, given the prohibitive cost of a ticket.[264]

The spatial restructuring of the city came as a clear response to the growing population of workers and internal migrants who had crowded into the center of the capital. From 1895 to 1921 the city had grown faster than the nation as a whole, nearly doubling in size from a total of 329,774 residents to 615,327. Unlike other major urban centers like New York and Buenos Aires, the population explosion in Mexico's national capital occurred largely as a result of internal migration, and by 1910 over a full quarter of all the country's migrants resided in Mexico City.[265] Mounting anxiety over crime and public health accompanied demographic growth, leading city authorities to embrace policies that combined paternalistic social reformism

[262] John Lear, "Mexico City: Space and Class in the Porfirian Capital, 1884–1910," *Journal of Urban History* 22.4 (May 1996): 454–92 and *Workers, Neighbors, and Citizens: The Revolution in Mexico City* (Lincoln: University of Nebraska Press, 2001); Tenorio Trillo, "1910 Mexico City," 80–87.
[263] Quoted in Pablo Piccato, *City of Suspects*, 25.
[264] Lear, "Mexico City: Space and Class in the Porfirian Capital," 454–92 and the same author's *Workers, Neighbors, and Citizens*; Tenorio Trillo, "1910 Mexico City," 80–87.
[265] Pablo Piccato, *City of Suspects*, 21–22.

with physical exclusion from specific areas of the city. Porfirian authorities, for example, had been careful to prevent the capital's many shoeless strollers from entering the area on display during the country's centennial celebrations of 1910. Yet as administrators sought to enforce what Mauricio Tenorio Trillo has termed "the ideal city," the wealthy developed their own spatial fixes by simply continuing their west- and southward resettlement, effectively isolating themselves from the undersides of downtown life.[266]

The residential patterns of the post-Revolutionary elite and middle classes reveal profound continuities with the Porfirian-era flight from the chaotic downtown. When the Díaz regime collapsed, threats to orderly living were only aggravated. Although the nation's capital would avoid the upheaval's most devastating violence, refugees, radicalized workers, and consumers did much to challenge the "order and progress" of the Porfirian city. As stability began to be restored in the early 1920s, the city's elite—many of whom had gone into exile during the Revolution—joined in on a building boom. Real estate speculation expanded dramatically and luxurious residential developments were built to the south and west of the capital, while recently constructed boulevards like Insurgentes connected them to the center of town.

As in the Porfirian period, an intimate alliance between public authorities and private interests encouraged and shaped post-revolutionary suburbanization. Early in the 1920s, J.G. de la Lama, for example, happily ceded land to the city for the construction of Insurgentes Avenue, which happened to pass through the middle of his new real estate development *Fraccionamiento J.G. de la Lama*. Upon completion of the new thoroughfare, all of the subdivision's lots ended up

[266] Tenorio Trillo, "1910 Mexico City."

on one or the other side of street. Once crossed by "the beautiful boulevard," the development was ready for marketing to the "more or less important" residents of the capital."[267]

Real estate developers like De la Lama cultivated the anxieties of the post-revolutionary elite and upper-middle classes by contrasting the healthful living conditions of their new neighborhoods with disease and congestion of the center of the capital. During 1921, for example, Compañía 'Casas' advertised its "healthful 'cottages'" and "beautiful bungalows," to the readers of *El Universal Ilustrado*, providing them with an example of a "chalet" in the "hygienic" and semi-provincial Colonia Los Portales.[268] J.G. de la Lama, meanwhile, advertised his new subdivision immediately to the south of the Roma neighborhood, as a place where residents could "Live comfortably in the countryside without leaving the city."[269] Below advertisements for the neighborhood prospective consumers found images of suburban-looking Californian ("Hollywoodiano") style homes, replete with carports and gazebos.[270]

In similar fashion, the luxurious Chapultepec Heights development appealed to urban residents who sought escape from the cramped quarters of the city center. In 1921 construction began on the new suburban neighborhood, marketed as "Mexico's First Garden City," which developers presented as a place where urban ways could be enjoyed alongside gardens and flower-bedded boulevards.[271] Advertising campaigns, meanwhile, pleaded with parents to "Care for the health of your children" by relocating to Chapultepec Heights.[272] Other advertisements noted the level of infant mortality in other areas of the city due to "impure water, the unhealthy

[267] El Universal, October 15, 1922, quoted in María del Carmen Collado, "Los Sonorenses en la Capital," *Miradas recurrentes: la ciudad de México en los siglos XIX y XX* (México: Instituto Mora, 2004), 106.
[268] See that Ad for the Compañía 'Casas' in *El Universal Ilustrado*, April 7, 1921, 28.
[269] El Universal, October 15, 1922, quoted in Collado, "Los Sonorenses en la Capital," 106.
[270] *El Automóvil en México*, Febrero 1923, 7; "Suburban Additions to Mexico City," *Pan American Union Bulletin* 59 (November 1925): 1106.
[271] Alfonso Valenzuela Aguilera, "Green and Modern: Planning Mexico City, 1900–1940," in eds. Dorothee Brantz, Sonja Dümpelmann, *Greening the City: Urban Landscapes in the Twentieth Century*, 42.
[272] *El Automóvil en Mexico*, August 1926, 55

air, [and] unhygienic homes," calling on prospective residents to move to a "high and well situated lot" and to "live in the most healthful place in Mexico." Connected to the city via the Calzada de la Exposición, which passed through Chapultepec Park, the development was ideal for automobile travel, while its curvilinear streets and service station differentiated it from the gridded downtown and older colonias.[273]

Planning the Motor City

The rapid expansion of post-revolutionary Mexico City encouraged a small group of young architects, engineers, and urban planners to devise a series of spatial strategies aimed at improving life in the capital, addressing problems of congestion in the city center, and facilitating the rational circulation of traffic. They fused their fondness for open spaces and apprehension about congestion with the promise of automobility, and soon drafted proposals that granted particular attention to the need for free-flowing transit of the city's growing number of motorcars and buses.

As early as the first decade of the twentieth century, a concern with "planning" cities was visible in the work and proposals of such figures as Emilio Dondé and Miguel Ángel de Quevedo. During 1904, for example, Dondé had suggested construction of large avenues that crisscrossed the city, much as the Haussmanian thoroughfares of Paris did, while the engineer Miguel Ángel de Quevedo encouraged the establishment of "green spaces" in order to address the problems of human and vehicular agglomeration. As head of the Junta Central de Bosques (Central Forest Authority) and later at the Mexico City's Department of Parks and Gardens, the

[273] Arturo Almandoz, ed., *Planning Latin America's Capital Cities, 1850–1950* (London/New York: Routledge, 2002), 162.

French-trained de Quevedo would eventually oversee the transformation of around 15 percent of the city in to park lands, earning the moniker "Apostle of the Tree."[274]

These early urban reformers were influenced by the work of intellectuals and technocratic reformers in such cities as Paris, Berlin, New York, and Chicago. During 1900 de Quevedo had traveled to Paris to attend a conference on hygiene and another in Berlin seven years later, while the engineer José Luis Cuevas visited England where he listened to several lectures by British urbanist Patrick Abercrombie. Ebenezer Howard, Jean Claude Forestier, and Patrick Geddes likewise inspired de Quevedo and Cuevas, while both developed a decided preocupation with "agglomerations" and a partiality for the countryside, reflected notably in Cuevas's mid-1920s "garden city" design of the Hipódromo-Condesa neighborhood.[275]

By the middle of the 1920s apprehension over congestion encouraged the development and formalization of urban planning. During August 1925, for example, the daily Excélsior would affirm that the problem of transit required "comprehensive planning" to address the need for improved "communications lines" ("vías de comunicación") and relief from bottlenecks.[276] Months later the same paper would call for a "Joint Plan on Urbanization and Public Health" for the city and a "Regional Plan for the Federal District,"[277] while that fall the Society of Mexican Architects (Sociedad de Arquitectos Mexicanos) announced that it would hold a "Primer Congreso Mexicano de Planificación de Ciudades."[278] The following year arquitect and president of the Society, Alfonso Pallares, proposed construction of a network of arterial thoroughfares to solve the city's transit needs, while that fall the same author wrote of the growing importance of

[274] Valenzuela Aguilera, "Green and Modern," 42.
[275] Ibid.
[276] "El tráfico en la ciudad es un problema de planificación aún no abordado," *El Exélsior*, August 2, 1925.
[277] "Urge un Plan Conjunto de Urbanización y Salubridad para el Distrito Federal," *El Exélsior*, September 27, 1925.
[278] "El Primer Congreso Mexicano de Planificación de Ciudades," *Excélsior*, December 6, 1925.

"city planning" throughout the world.[279] Adopting an understanding of the city as a living organism, these early planners aimed not only to foster rapid circulation of people and goods, but turned to the new technology of aerial photography to gain a view from above in order to solve problems below, not unlike the contemporary use of x-ray in the study of the human body.[280]

It was in this context that the Columbia-trained arquitect Carlos Contreras returned to Mexico and presented his monumental national planning project to President Calles (1925), while a year later he established the Asociación Nacional para la Planificación de la República Mexicana (1926). Demonstrating his international credentials, Contreras invited recognized planners such as Ebenezer Howard, Raymond Unwin, Edward Bennet, and Thomas Adams to participate in the new association as honorary members, and through its official magazine, Planificación, the group set about popularizing foreign ideas about urban and regional design. Indeed, it inaugurated its first issue with a grandious quotation from Daniel H. Burnham, calling on Mexican technical experts to "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will not die, […] Let your watchword be order and your beacon beauty."[281]

During 1926 the association held a Primera Exposición de Planificación de Ciudades y Regiones, followed three years later by the Primer Congreso Nacional de Planificación. By 1928 Contreras had become director of the recently established Comisión de Planificación de la Ciudad de México, the year in which both the Departmento del Distrito Federal (DDF) and the

[279] Alfonso Pallares, "El tráfico y la estructura urbana," *El Excélsior*, July 25, 1926; Alfonso Pallares, "Embellecimiento de la ciduad," *El Excélsior*, November 14, 1926.
[280] Lourdes Roca, "La fotografía aérea en México para el estudio de la ciudad: el crucero de El Caballito," *Anais do Museu Paulista: História e Cultura Material* 19.2 (2011): 71–105.
[281] Translated into Spanish as "No hagáis proyectos pequeños, no tienen poder bastante para excitar el entusiasmo de los hombres y no se realizarán jamás. Haced proyectos grandes; elevad vuestras miras, en esperanza y en trabajo, recordando que un diagrama noble y lógica, una vez grabado, no morirá nunca… Que vuestro lema sea el orden y la belleza vuestra guía." "No hagáis proyectos pequeños," *Planificación*, September 1927, 1.

Comité del Plano Regulador de la Ciudad de México were created. Two years later a Ley sobre Planeación General de la República (1930), based largely on the work of Contreras, was passed and included a section dealing specifically with the Federal Distict. When he finished his "Regulatory Plan for the Federal District" in 1933, Contreras's comprehensive proposal, much as his earlier plans, called for the erection of large throughfares that crisscrossed the city and construction of interior and exterior "ring axes" ("ejes de circunvalación").[282]

Yet just as the work of planners accelerated, world depression slowed economic growth in Mexico City, and as a result, the importation of motor vehicles and the consumption of gasoline. During 1929 yearly registration of brand new passenger cars in the capital peeked at 3,879, declining to a mere 768 by 1932, and by 1934 the number had still not surpassed 1929 levels. The situation was similar among the city's truck owners, as brand new registrations in the city, having peeked in 1929 at 1063, declined to under 300 in 1932 and would only again surpass one thousand in 1934.[283] Traffic problems may well have continued to multiply, however, as the registration of used cars grew at a swift rate, increasing from 2,369 to 6,415 between 1928 and1933.[284] Although many of the proposals of planners were not put into practice, during the first half of the 1930s various avenues in the center of the city were widened, including San Juan de Letrán, 20 de Noviembre, República de Venezuela, and Palma Norte.

As the national economy began to recover, in 1935 Carlos Contreras presented a bold vision for the capital in his "Development Plan for the City of Mexico, 1935-1985." The

[282] In 1933 a law dealing specifically with the Federal District was passed in the form of the Ley de Planificación y Zonificación del Distrito Federal y Territorial de Baja California. A second Ley de Planificacion del Distrito Federal y Baja Califonrian was passed in 1936, and the Comisión Mixta de Planificación was created. Cárdenas created the Oficina del Plano Regulardor de la Comisión Consultiva del Distrito Federal. The 1936 law would not be reformed until 1953, with passage of the Reglamento de Planificación.

[283] *El Automóvil en México*, January 1930, 7; *El Automóvil en México*, January 1935, 31; P.R. Mattix, *Foreign Markets for Automotive Replacement Parts, Accessories, and Service Station Equipment. U.S. Department of Commerce. Trade Promotion Series–No. 128* (Washington: United States Government Printing Office, 1932), 352–358.

[284] *El Automóvil en México*, January 1930, 7; *El Automóvil en México*, January 1935, 31.

proposal called for preservation of the historic center of the city, decongestion of transit, control of the city's growth, the tackling of food supply issues, protection of ecological reserves, and the ordering urban industry. Much as his earlier proposals, the plan recommended construction of large thoroughfares, including a massive 60 meter-wide interior loop highway ("periferico interior") in order to prevent motor vehicles from having to transgress city center. Railway lines entering the city were to be reduced and shortened, while he suggested construction of a circumferential electrified railway line or "belt railway" around the city. Although the project was not pursued at the time, even this ambitious plan failed to consider the explosive demographic growth that would take place during the following decades, as he estimated that city's population would reach a mere two million by 1985.

Indeed, the enthusiasm of planners during the 1920s and 1930s was not met by a radical nor particularly "rational" reconstruction of the capital. In large part, the private sector continued to act as the principal force in remaking the built environment, and during the late 1930s, "a blaze of building construction," took place due largely to the fact that real estate development and construction represented one of the few "secure refuges for investment." As private resources flowed in, land values skyrocketed by between 50 and 200 percent from 1935 and 1940.[285] Not until the 1960s would authorities take action to provide the public underground transportation through construction of the Metro (Sistema de Transporte Colectivo), decades after many of the world's major cities had done so.[286]

In the meantime, authorities aimed to adapt the city to the automobile by different means. Namely, they sought to educate residents on the demands of life under motordom. In 1937, for

[285] Diane E. Davis, *Urban Leviathan: Mexico City in the Twentieth Century* (Philadelphia: Temple University Press, 1994), 94.
[286] Rafael Montesinos Carrera, "Limitantes de la política urbana en la zona metropolitana de la ciudad de México," *Iztapalapa 27* (1992): 181-197.

example, the Mexican federal government organized the First Safety on Streets and Roads Congress (Primer Congreso Sobre Seguridad en Calles y Caminos). Held in the Palace of Fine Arts, the conference's objectives included the encouragement of protection of life, preservation of property, and prevention of accidents that caused lasting disability by teaching residents how to be responsible drivers and pedestrians.[287]Architects and engineers, meanwhile, aimed to bring the logic of automobility into the home as they sought to design houses and other buidings with the automobile in mind. Inspired by the work of Le Corbusier, Juan O'Gorman, for example, started work at the newly established Escuela Superior de Construcción in 1934, and began publishing the journal Edificación, the school's official magazine. In it O'Gorman published installments of Le Corbusier's Towards a New Architecture (1923), a book in which the influential French architect had famously described the home a "machine for living."[288]

Conclusion

From the arrival of the Sonorans in Mexico City to the onset of the Second World War, the nation's capital was transformed into the country's unrivaled motor city. Not only did capitalinos own more cars, use motorized vehicles more frequently, and consume more gasoline than any city or state in the country, but they became the nation's first automotive manufacturers. Indeed, during the initial industrialization in the automobile industry, all assembly took place in Mexico City itself. When Ford moved its operation from San Lázaro in 1932, it set up shop a short

[287] *Guerra Contra Accidentes. Primer Congreso Sobre Seguridad en Calles y Caminos* (Mexico: DAPP, 1937), copy in AGN, SCOP, F, Caja 5, Exp. 589. During 1937, the federal government also published *Estadística de accidentes de tránsito: clasificados por entidades federativas, 1929-1935* (Mexico: Dirección General de Estadística, 1937).
[288] Le Corbusier "Hacia una Arquitectura. Traducido del frances por el Arq. Luis Cuevas Barrena," *Edificación: Organo de la Escuela Superior de Construcción* 1.1 (1934): 4–6; O'Gorman would later disavow the ideas of Le Corbusier and embrace a more vernacular and fantastical architecture.

distance away at La Villa. Likewise, when Chrysler and General Motors established operations in the country during the Cárdenas administration, they chose the nation's capital.

Over the course of the second half of the twentieth century, as automotive production expanded following a series of decrees limiting importation of parts and vehicles, multinational companies would settle into cities beyond the nation's capital. Ford moved to the State of Mexico, Nissan headed for Cuernavaca, and Volkswagen chose Puebla. Residents of Mexico City would nevertheless remain the unrivaled consumers of these ever more indispensable machines, forcing urban planners to devise increasingly radical strategies to adapt the capital to onslaught of automobiles. The transformation of the Mexican capital from a "City of Palaces" to the country's unparalleled motor city was, however, shaped by a decades-long effort on the part of automobile industry interests, Mexican importers and motoring advocates, local and international engineering firms, a US government intent on extending the frontiers of motorization southward, and a Mexican government eager to improve its transportation facilties and encourage greater commercial exchange with its northern neighbor.

Chapter Four

The Transnational Business of Reconstruction

Although the invention and initial development of the automobile had its origins in Europe and the United States, motor vehicle manufacturing and exportation had become a global affair by the first decade of the twentieth century.[289] By 1904, the US had surpassed France as the world's largest maker of motorcars and soon began sending vehicles to Europe, while producers on both sides of the Atlantic battled for additional consumers in Asia, Africa, and Latin America. Genuine expansion in this new and global trade would come, however, following the First World War, due in large measure to a dramatic expansion in productive capacity. With the status of the United States as an industrial power affirmed, US manufacturers and government bureaucrats scrambled to capture new foreign markets.

When prospects of peace began to appear in Mexico during the later years of the Carranza regime, exporters had eagerly sought to transform the neighboring country into a robust market for a host of manufactured goods. In 1917 the US Department of Commerce determined that one of its most important and immediate objectives following the First World War would include assistance "in building up our trade with Mexico," while it reported having received numerous inquiries "whenever events […] indicated that peaceful conditions were being restored." The "great deal of latent interest" had been encouraged not simply by Mexico's proximity to the United States, but by a belief among exporters that following the many years of revolutionary "disorder" stocks of manufactured goods had been thoroughly depleted or destroyed, suggesting that consumers would soon demand large quantities of all "kinds of factory

[289] See Mira Wilkins, *Ford on Six Continents*.

products."[290] Two years later, the Department again remarked that there had been a "considerable revival of interest in Mexico" among US exporters, "many of whom have been deprived of their more remote markets through war restrictions."[291]

Relieved of their Old World competitors, US manufacturers seized upon the opportunity to capture the Mexican market for motor vehicles. As P.C. Lange, president of the Mexico City's Compañía Automotriz Mexicana, found, although European firms had often continued their advertising campaigns in the country, their cars were currently not being imported in any large number.[292] Meanwhile, as Durango lumber manufacturers H. Rosas and L. Rodríguez remarked, American automobile, truck, and tractor exporters had faced "no competition […] since the European war began."[293] Soon the pages of US newspapers and trade journals were being filled with accounts of the promising trade beyond the Rio Grande, in which the country was presented as a "virgin territory for automobiles," simply waiting for an extensive commercial conquest.[294]

Mexico held out particular appeal among automakers and distributors due to their belief that the Revolution itself had set the country on course toward greater economic equality and a resultant expansion in local consumers' buying power. Speaking before the 1920 Export Managers' Convention of the National Automobile Chamber of Commerce, J.F. Barry observed that Mexico, "lying right at our door has more undeveloped and accessible wealth than any other country in the world."[295] That year trade journal *Automotive Industries* had also called for greater attention to the "close to home" Mexican market, instead of chasing "business in the far-away

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[290] *Reports of the Department of Commerce – 1917* (Washington: Government Printing Office, 1917), 92, 343.
[291] *Reports of the Department of Commerce – 1919* (Washington: Government Printing Office, 1919), 200, 214
[292] "Find Motor Sales High in Mexico," *Automotive Industries–The Automobile*, Volume 43, September 2, 1920, 491.
[293] Harry H. Dunn, "Export Customers Point Out Our Export Sales Mistakes," *Automotive Industries–The Automobile*, Volume 43, September 30, 1920, 674.
[294] El Automóvil en México, Enero 1921, 16
"Import $1,000,000 Tires," *Los Angeles Times*, December 10, 1922, VI4
[295] David Beecroft, "The N.A.C.C. Resumes Export Mangers' Meetings," *Automotive Industries–The Automobile*, Volume 43, October 14, 1920, 754–755.

countries" and fighting over the competitive European field.[296] Meanwhile, in June, *Los Angeles Times* predicted that soon, "a wonderful increase in the automobile trade" would take place, and it anticipated "a great increase in the sale and consumption of gasoline and lubricant oil" as around a half a dozen American companies planned to build filling stations in the country's major cities.[297] Enthusiasm continued into the next year and during March, Jaques E. Blevins of the Southern Motor Manufacturing Association concluded that the field for automotive products was "practically unlimited."[298]

The prospect of Mexico's transformation into a strong market for American manufactures held out particular appeal to US observers as domestic demand for cars in the world's first motoring nation showed increasing signs of saturation. During the last three years of the 1910s, registration of vehicles in the United States had nearly doubled from just under 5 million to 9.2, and by 1923, that figure had surpassed 15 million. Manufacturers feared that US consumers would soon be unable to support the spectacular output of the rapidly expanding automotive sector. In order to prop up demand, citizens were urged to buy new cars every year or two. Yet the industry quickly began to formulate an alternative solution in greater exports to underdeveloped markets. Nevertheless, in Europe, companies like Fiat, Austin, Morris, and Citroen already dominated sales, while Africa and Asia looked even less promising. Poor prospects to the east led US automobile industry interests to shift their attention southward, to Latin America, a region with virtually no local automotive production.[299]

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[296] "Highway and Cheaper Fuel Promotion Needed in Our Export Fields," *Automotive Industries–The Automobile*, Volume 43, November 11, 1920, 974–975.
[297] "Motor Trade to Boom in Mexico," *Los Angeles Times*, June 6, 1920, VI1.
[298] "Mexico Offers a Broad Field," *Los Angeles Times*, March 20, 1921, VI7.
[299]Edwin Warley James, "Introduction," in Roger Stephens, *Down That Pan American Highway* (New York: Roger Stephens, Publisher, Inc., 1948), 11–16.

The Business of Expansionism

Enthusiasm for Mexico as an export field converged with the advocacy of automobile-use by an emergent group of local motoring interests through organization of the First Automobile Exposition (Primera Exposición de Automoviles) during March of 1921. Held in the National Theatre (Teatro Nacional), the event was organized by the local magazine *El Automóvil en México* and sponsored by the Secretariat of Communications and Public Works. Committee members included SCOP Secretary Pascual Ortiz Rubio, Mexican manager of the United States Rubber Export Co. Ltd., S.L. Carricó, Antonio Vallalba de la Corte of Lamborn & Co. de New York, President of the Jaliscan Automobile Club of Guadalajara, J.M. Schneider, and Gustavo Alaña, editor El Automóvil en México.[300]

The show was followed during the summer and fall by a dramatic expansion in automobile imports. That August, over 100 Mexican Ford dealers traveled to Houston, the node of virtually all Ford exports to Mexico, in order to discuss the status of the country's automotive market.[301] A month later the Compañía Importadora del Auto Universal, S.A. of Mexico City ordered the single largest shipment of Ford automobiles yet sent to the country, 340 cars, purchased from the company's Houston branch.[302] Finally, that fall the American Chamber of Commerce of Mexico established an Automotive Division, headed by longtime local dealer A.B. Mohler, of Mohler & DeGress.[303]

[300] "En el Teatro Nacional," *El Automóvil en México*, January 1921, 16.
[301] "Ford Dealers in Mexico Agree Future is Bright," *Automotive Industries–The Automobile*, Volume 45, August 25, 1921, 392.
[302] "Mexico Gets Largest Shipment of Ford Cars," *Automotive Industries–The Automobile*, Volume 45, October 6, 1921, 692.
[303] "Mohler Heads Motor Division of Chamber," *Automotive Industries–The Automobile*, Volume 45, September 21, 1921, 437.

During 1921 more American-made passenger cars and commercial vehicles were imported by Mexico than any other nation in the world.[304] While the country had purchased a paltry 235 passenger cars during 1913, eight years later 6,510 flowed over the border from the United States, a trade valued at over 5 million dollars. Commercial vehicle imports, meanwhile, grew from 35 to 1,154 over the same period, while the trade in auto parts grew from under 47,000 dollars to over 1.5 million.[305]

As had been the case during the first two decades of the century, throughout the 1920s Mexico City remained the country's principal automotive distribution center. Yet even in the capital, sales were constrained by poor access to credit. As J.F. Canales, sales manager of B. Estades y Compañía, distributor for Packard, Renault, Paige, Briscoe and Pierce-Arrow reported, although the agency sold around 25 cars and trucks per month, most dealers in the city were unable to provide appealing terms of sale since banks did "not give credit to dealers as a rule." The best deal agencies could offer a buyer was the option to purchase a car on one-half cash and the balance within ninety days.[306]

Following the success of the first auto expo, Mexico City hosted a Second Annual International Automobile Show during April 1922. The organizing committee had been formalized during late 1921, and included, representatives of the American Motors Company, Compañía Unida de Ventas, S.A., Shearer Electrical Construction Company, S.A., United States Rubber Export Company, Mayfield Auto Company, S.A., Mohler & Degress Sucs., S.A., Mexican Trading Corporation, Robertson Motor Company, S.A., Lamborn & Compañía, and the

[304] "November Exports Total $5,000,000," *Automotive Industries–The Automobile*, Volume 45, December 22, 1921, 1300.
[305] *Foreign Commerce and Navigation of the United States* (U.S. Government Printing Office, 1922), 329–333.
[306] "Mexican Trade is Improving," *Los Angeles Times*, August 7, 1921, VI9.

Automotriz Mexicana, S.A.[307] By February, Secretary of the Automobile Club of Cleveland, Fred H. Caley, as other foreigners, had arrived in the capital to help organized the gathering, an event aimed at part in professionalizing the country's automobile business.[308] On display were thirty makes of principally American passenger cars, but also European brands Fiats, Mercedes, and Renault. All trucks and tractors were, however, American built.[309]

The promising demand for cars encouraged new attempts to build motorcars locally. As early as 1921 reports suggested that former governor of New Mexico, Octaviano A. Larrazalo, J.S. Curtiss of El Paso, and Adolfo P. Buquor of Mexico City, would establish a facility in the nation's capital in order to build "Anáhuac" automobiles.[310] Two years later, during the fall of 1923, persistent rumors suggested that another factory would soon be established in Tampico, and would function as a branch of a "well-known corporation in the United States." Both efforts failed, however, and it would fall to the Ford Motor Company to become the country's first automobile assembler. During 1922, the company had set its sights on the northern city of Saltillo, Coahuila as a prospective center for manufacturing. Representatives visited the state that year where they met with local authorities and business interests.[311] As Ford's main distribution center for Mexico was located in Houston, Coahuila represented little more than a hop over the border. Yet following failure of the venture, the company redirected its focus to the nation's capital and in 1925 established its first facility in the country. That year Ford sales hit an all-

[307] "Committee Appointed for Mexico City Show," *Automotive Industries–The Automobile*, Volume 45, December 15, 1921, 1196.
[308] "Mexico Plans Big Auto Show," *Los Angeles Times*, February 22, 1922, VI4.
[309] "Great Show is Planned in Mexico," *Los Angeles Times*, April 2, 1922, VI12.
[310] "Propose Erecting Car Plant in Mexico City," *Automotive Industries–The Automobile*, Volume 45, December 22, 1921, 1239.
[311] Ford to Establish a Plant in Mexico: First Step in His Project to Pacify That Country," *New York Times*, July 14, 1922, 25; Ford Plans to Save Mexico by Work: Proposes to Start Automobile Plants," *New York Times*, July 26, 1922, 29.

time high in Latin America, while the company planned to use its new Mexico operation as a base for shipments to Central America.[312]

The establishment of Ford Motor Company of Mexico was encouraged by tariffs placed on a host of imports by the Obregón regime, which included automobiles, and represent an early effort to encourage "import-substitution industrialization" in the automotive sector. Installed in a rented warehouse in the San Lázaro neighborhood, near the railway depot, the factory employed 295 people who assembled five Model-Ts a day from kits imported from the United States.[313] Personal acquaintance of President Plutarco Elías Calles and long-time Ford executive Adrian Rene Lajous, who had also served the company in Detroit, Buenos Aires, Houston, and Havana, arrived as head of the new operation. Lajous had negotiated the concession from the Calles administration, which included limits on freight costs and taxes, as well as a fifty percent rebate on all import duties. In the context of a thorny labor situation, Calles assured Lajous that there would be "no trouble" from workers, and indeed, Ford employees would not unionize until 1932. As plans for the Mexican operation moved along, Mexican students began to arrive at Ford's Highland Park Trade School, where they constituted—along with Chinese and Indian students—one of the three largest foreign contingents.[314] In 1926 production at the new plant began, and during the next year the number of Ford facilities in Latin America reached a total of eleven and its network of dealers 1,172.[315]

Contraband Cars

[312] "Report Ford Plans Plant in Mexico," *New York Times*, October 21, 1924, 8.
[313] John Peter Tuman, *Reshaping the North American Automobile Industry: Restructuring, Corporatism, and Union Democracy in MexicoEmployment and Work Relations in Context* (Routledge, 2003), 23.
[314] "Items of Interest in the Motor Trade," *New York Times*, January 25, 1925, XX9.
[315] Wilkins and Hill, *American Business Abroad*, 147–148.

As a nominal peace emerged in the country under the Obregón regime and the economy began to expand, local demand for automobiles produced a disconcerting expansion in the commercialization of old as well as stolen vehicles.[316] Even before the tariff increase of 1922, the importation of used and stolen vehicles had drawn the attention of the country's auto dealers. As early as 1921 J.F. Canales, sales manager for B. Estades y Cía., protested the "tremendous influx of second hand cars to Mexico from the United States." There were so many used cars in the country, he observed, that vehicle prices on the Mexican side of the border had dropped below those in the US.[317] Indeed, by the early 1920s reports suggested that due to the "good many stolen automobiles" smuggled into Mexico free of customs dues, one could purchase a vehicle valued at $2,000 for about $600 on the Mexican side.[318] Dealers, meanwhile, affirmed that every other automobile in use in Northern Mexico had in fact been stolen in the United States. Most were "run surreptitiously into Mexico from the other side of the border," as limited patrolling made it "a very easy matter for stolen cars to be brought across the international boundary stream in time of low water." By 1922 the "nefarious trade" had "attained gigantic proportions," while smugglers had become highly organized and well capitalized.[319]

The question of stolen vehicles would eventually attract the attention of Mexico's intelligence authorities at the Confidential Department, and on June 11, 1925, "Agent Number 3" filed a report on the "Scandalous trafficking in stolen automobiles" of Texan origin in the northern part of Coahuila, a business that had become both lucrative and well organized. In a

[316] "Mexico, a Land of Used Automobiles," *Los Angeles Times*, June 28, 1918.
[317] "Mexican Trade is Improving," *Los Angeles Times*, August 7, 1921, VI9.
[318] National Association for the Protection of American Rights in Mexico, "Border Smuggling Totals $20,000,000 Yearly," in Investigation of Mexican affairs. Preliminary report and hearings of the Committee on foreign relations (Washington, D.C.: Government Printing Office, 1920), 467.
[319] "Duty to Hurt Dealers?" *Los Angeles Times*, November 12, 1922, VI17; Around Tijuana, however, motorists entering Mexico from the United States were required to register a description of their cars and information on the time of entry, thus making it a "poor place to take stolen automobiles." See Edward C. Thomas, *The wanderer in Tijuana: gambling, liquor, ponies, girls, high life 'n everything* (Los Angeles, Calif. : Wanderer Pub. Co., 1922), 29.

meeting with Sheriff A. Hausser of Eagle Pass, the Texan police officer had informed the agent that over thirty automobiles stolen in Texas had been sold in Piedras Negras, Villa Acuña, and the mining centers of Coahuila during previous months. The agent suspected that "Mexican authorities" were collaborating with the operation. Particularly disconcerting was the fact that such activities made it difficult to gain the support of the US in "cases of interest to our Government" as American authorities were able to offer important information on "rebel activities" in the border region.[320] Yet the problem of stolen vehicles would continue well into the century, and in 1936 the Roosevelt administration would even sign a treaty with Mexico to recover and return stolen vehicles, while a convention attended by the two countries was held on the theme during the following year.[321]

Advocates Hit the Road

As had long been apparent, the expansion of the automobile market in Mexico required a solution to the country's pronounced problem of bad roads, and initial plans to increase the export trade with Mexico coincided squarely with incipient efforts to extend the US road system from the southwestern border to the Mexican capital. As early as 1915 a Pan American Road Congress was held in San Francisco during the Pan-Pacific International Exposition, yet attention to Latin America had been extremely limited, and only two delegates from the region, both from Central America, arrived to take part in the gathering. By 1917, however, as the US Department of Commerce began to eye the prospects of expanded trade opportunities in the region, it noted, "The building of such systems of good roads would make possible the extensive use of motor trucks in transporting farm products, and the range of pleasure cars, now as a rule

[320] AGN, SG, IPS, Caja 50, Exp 4, June 11, 1923.
[321] John Heitmann, *The Automobile and American Life* (Jefferson, NC: McFarland & Company, 2009), 52.

confined to the large cities, would be greatly increased." Any plans however, were largely delayed until the end of the decade.[322]

During early 1919, soon after conclusion of the First World War, members of the Woodrow Wilson Way highway association—initially organized during 1916 in Lake Mills, Iowa by real estate man J.B. Conley and local Commercial Club secretary M.A. Aasgaard—drew up a plan to extend a highway from Ely, Minnesota to El Paso, Texas, on to Mexico City, and then to Panama.[323] Yet, again, political strife as well as diplomatic tension between the US and Mexico complicated road construction plans, and further efforts would have to wait until the beginning of the next decade.

Seizing the opportunity to shape the reconstructive effort of the recently installed Obregón regime, during the summer of 1921 Southern and Midwestern road-building representatives associated with the Meridian Highway Association began a public campaign to extend the celebrated highway—which connected Winnipeg, Canada to Southern Texas—beyond the US-Mexico border and on to the neighboring country's capital city. In June of 1921 Texan representatives of the Association D.E Colp and Fred W. Mally, accompanied by 12 other US citizens, met with authorities in both Northern Mexico and the nation's capital. The party, which included members of the Laredo Chamber of Commerce, the Texas State Highway Commission, as well as other highway and automotive industry promoters, was met at the border by Communications and Public Works officials Jorge Núñez and Pablo Philippi, as well as by two Department of War guards. Traveling to Mexico City in an army Pullman, they stopped along the way where they convened with the governors of Nuevo León, Coahuila, San Luis Potosí, and Queretaro, as well as a delegate from Tamaulipas. In Mexico City they gathered with

[322] *Reports of the Department of Commerce – 1917* (Washington: Government Printing Office, 1917), 344.
[323] "Push Work on Woodrow Wilson Way," *The Highway Magazine*, September 1919, 11–12.

Communications and Public Works head Faustino Roel, and learned of a government plan to build a system of interstate highways that would link into the United States road network at Laredo, Brownsville, and El Paso.[324]

As anticipation grew regarding new road-building concessions and expanded sales, automobile and road construction interests made the case for diplomatic recognition of the Obregón administration. Writing during August 1921, Meridian Highway Association member E.A. Kingsley spoke in glowing terms of the president, noting, he "is an earnest man with a strong but jovial countenance. He seems to be laboring hard for a new Mexico." In his conclusion to an article on the Association's 1921 trip, he affirmed: "May the so badly needed recognition soon be given was the prayer of each member of the delegation."[325] In the meantime, others, like Jack Starr-Hunt of the Los Angeles Times predicted that resumption of diplomatic relations would do much to facilitate the trade in motor vehicles, a market that "will probably astound manufactures."[326]

During September 1921 the nation's capital played host to The First National Roads Congress (*Primer Congreso Nacional de Caminos*), inspired in large measure by the activities of the Meridian Highway Association.[327] Held in the National School of Engineers and organized to coincide with the Centennial of the Consummation of Independence, delegates from across Mexico and the United States arrived to take part in the gathering where the exchange of ideas about road-building was combined with the sale of vehicles and road construction machinery.[328]

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[324] E.A. Kingsley, "Mexico to Undertake Extensive Road–building Program," *Good Roads*, August 3, 1921, 62
[325] Ibid., 63–64.
[326] "Capital is Car Wealthy," *Los Angeles Times*, Octobre 7, 1923, VI15
[327] In a 1921 request by SCOP sub–secretary J. Roel to use the School of Engineers for organization of the event, he told the school's head of the "business men from beyond the Río Bravo" who were promoting the construction of a "great highway" from Winnipeg, Canada to México, which would connect Laredo to various Mexican states. J. Roel to the Director of the National School of Mines, Caja 1921 I 358, Num. 7, Año 1921–I, June 24, 1921.
[328] *Highways of Friendship: An Intimate Account of the Tour of the Pan American Highway Commission* (Washington, D.C.: Highway Education Board, 1924), n.p.

Organizers presented attendees with film demonstrations of road construction and machinery use in Mexico and around the world, while delegates addressed themes including the economical construction of roads, financing and participation of the private sector, road maintenance and conservation, road construction legislation, planting of trees along roadways, and the establishment of garages and gasoline stations.[329] As Faustino Roel argued, the event would help to gather together "a group of men imbued with love of the Patria" and those with technical knowledge about road construction and the needs of the country, in order "to develop a well-thought-out plan for the development of a highway network" that would cross the country in all directions, "facilitating rapid communications by automobile" in order to "increase commerce and the economic well-being of the pueblos."[330]

By February 1922, reports suggested that instead of the Meridian Highway Association, President Obergón had lent his approval to a plan by the Automobile Club of Texas and the Bankhead Highway Association to extend a branch road of the Washington, DC to San Diego highway that would stretch from Mount Pleasant, Texas through Laredo and on to Mexico City. The club, meanwhile, determined that it would promote the effort by "demonstrating to the communities along the Mexican extension the value of such a highway," while reports suggested that once completed, "an amazing automobile traffic between the countries will result."[331]

Private initiative was, however, soon followed by the emergence of the US government as an active advocate of road-building throughout not only Mexico, but Latin America in its entirety. During 1923 US officials extended official backing to the efforts of American-based

[329] "Primer Congreso Nacional de Caminos. Comisión Organizadora," AHPM, AENI, Caja 1921 I 358, Num. 7, Año 1921–I, June 1921.
[330] J. Roel to the Director of the National School of Mines, AHPM, AENI, Caja 1921 I 358, Num. 7, Año 1921–I, June 24, 1921.
[331] "Road to Mexioc City part of highway plan," *Washington Post*, February 6, 1922, 2.

motoring advocates to promote highway construction in the region.[332] As E.W. James recalled, in the months before the 1923 International Conference of American States, held in Santiago, Chile, a conversation took place within the US Department of Commerce regarding the possibility of pursuing construction of a massive highway system for the Americas. Present were J. Walter Drake, Assistant Secretary of the Department of Commerce, former President of the Hupp Motor Car Corporation, and former Chairman of the Export Committee of the Automobile Chamber of Commerce; Drake's close friend Roy D. Chapin, President of the Hudson Motor Car Company and Chairman of the Highway Transport Committee of the International Chamber of Commerce; John N. Willys, Chairman of the Board of Directors of Willys-Overland; and Leo S. Rowe, Director of the Pan American Union. Following the meeting, the US government directed American delegates to the conference in Santiago to support a resolution calling for the extension of a highway system across the hemisphere.[333] The 1923 meeting thus formalized an alliance between private sector promoters of "Pan-American" automobility, US government road-building authorities, and the Pan-American Union.

Within a year of the Chilean conference, the US automobile industry financed a project that brought thirty-seven representatives from nineteen countries in the region to the United States, at the cost of around one hundred thousand dollars, in order to study road-building methods and examine the rapidly expanding US highway network.[334] On June 1, 1924, members of this "Pan American Highway Commission" arrived in Washington, including delegates from Mexico José Certucha, Frederico García Cuellar, and Jorge Núñez. The Mexican participants embodied the blurring of lines between business and state during the era of reconstruction.

[332] Thomas H. MacDonald, *The Bureau of Public Roads and Its Exhibit. Supplementing Exhibit of the Bureau of Public Roads at the Brazil Centennial Exposition, Rio de Janeiro, Brazil, 1922–1923* (Department of Agriculture, 1923).
[333] James, "Introduction," in Stephens, *Down That Pan American Highway*, 11–16.
[334] Ibid.

Certucha, a trained civil engineer, was a congressman, a member of the Engineers Club of Mexico City, and vice-president of both the Good Roads Company of Mexico City and the United Dredging Company. Former professor of the Military College, engineer Garcia Cuellar, meanwhile, was head of the National Construction Company, while Jorge Nuñez was a division head in the SCOP.[335]

Upon their arrival in Washington, the delegates met with President Coolidge, who assured them that they would encounter not only "friendly feelings for your respective countries" in the capital, but "far beyond" as well. "The people of every section of this country," he affirmed, "are actuated by a deep and genuine spirit of fellowship toward the sister nations of this continent," while he called on visiting engineers to take with them a "heartfelt message of fraternal good feeling, for in it is to be found the surest guarantee of peace and prosperity of the American Continent." Outside the Pan American Union building, the visitors joined Pan American Union president Leo S. Rowe, Union vice-president Esteban Gil Borges, Secretary of Commerce Herbert Hoover, and Secretary of State Charles Evans Hughes in the planting of a tree to commemorate the trip. Following their stay in the nation's capital, delegates traveled with Secretary of Interior Hubert Work to the Bureau of Public Roads' experimental station at Arlington, Virginia, had lunch with Roy D. Chapin of the Highway Education Board at the Chevy Chase Club, and later took a train to Raleigh, N.C. where they were greeted by the state's governor and local highway authorities and engineers. While in Winston-Salem the party heard "500 negro singers render a symposium of southern folk songs" before traveling west to Chicago, and then on the Minneapolis and Duluth. They toured Hibbing, the United States' massive iron mining center, and later passed through Madison and Milwaukee. The visiting

[335]"The Pan American Highway Commission En Tour," *Bulletin of the Pan American Union* 58 (January–December 1924): 876–894.

engineers spent four days at the University of Wisconsin where they met with faculty and representatives of major Detroit automobile manufacturers. Before returning to Washington, via Ohio, Henry Ford and his son Edsel welcomed the travelers as guests of honor at the company's Hyland Park Plant.[336]

The events of June concluded with the establishment of the Pan American Confederation for Highway Education, an organization coordinated by the Pan American Union in order to promote the construction of the recently proposed Pan-American Highway system. The Confederation aimed to act as a clearinghouse for informational exchange and research related to "the fundamental principles of highway construction, finance, administration, and maintenance, and the advancement of the social and economic uses of the highway and the automotive vehicle." Members of the Confederation included a mix of public and private representatives, including, among others, director of the Pan American Union L.S. Rowe (chairman of the Confederation), as well as Assistant Secretary of State, Wilbur Carr, Assistant Secretary of Commerce, J. Walter Drake, Chief of the United States Bureau of Public Roads, Thomas H. MacDonald, President of the National Automobile Chamber of Commerce, Roy D. Chapin, former President of the Rubber Association of American, W.O. Rutherford, and Fred I. Kent of the American Bankers' Association. Members eventually assembled an Executive Committee, deemed by the Pan American Union to be "the strongest assurance of a sound but aggressive policy looking to the expansion of adequate highway systems in all the countries of the Pan American Union […] cementing the bonds of friendship and amity."[337]

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[336] Ibid.

[337] Ibid. Following the 1924 gathering, the Confederation hosted a series of additional tours "devoted to the serious study of the effects of highway transportation upon the prosperity of the United States of America." The second Pan American Highway Commission, held during April 1926, brought leading journalists from Latin American to the US, including Mexican delegates Nemesio García Naranjo, Arturo García Pajujo (Monterrey), Federico Gómez (Monterrey), Adrian Guerrero Díaz (Pachuca), J. Cantú Leal (Monterrey), Rodrigo de Llano, Rafael E. Machorro (Veracruz), Aurelio Manrique (Monterrey), Eduardo Martinez (Tampico), Rogerio Meraz Rivera (Pachuca), Adolfo

Conclusion

By 1925, the United States had captured ninety-nine percent of the 9.5 million dollar per year market for automobiles in Mexico. Although the US supplied the vast majority of vehicles to all Latin American countries, none except Guatemala was more fully dominated by US exporters than Mexico.[338] Automotive manufactures were keenly aware, however, that the country needed more and better roads in order to foster greater consumption of motor vehicles in the country, while recently-elected Plutarco Elías Calles set his sights on expanding the Obregonista road-building program. In the absence of machinery and with no more than a handful of civil engineers trained in highway construction, the new president turned to United States, where a surplus of public and private engineers had long sought to extend the nation's road network southward into Mexico and beyond.

Rodríguez (Monterrey), Carlos Trinidad Sepulveda (Guadalajara), Silvestre Terrazas (Chihuahua), Julio Treno, V. Villasana (Tampico), and Federico Zorrilla Barrundia (Oaxaca). A third Commission (May 13 to 28, 1927), aimed at businessmen in the region, drew only one Mexican delegate, Luís G. Aragón. See *The Pan American Confederation for Highway Education* (Washington, D.C.: Pan American Union, n.d.).

[338] César Yáñez and Marc Badia–Miró, "Las importaciones de relojes y automóviles en América Latina durante 1925," 146.

Chapter Five

The Rise of Roads

During the spring of 1925, recently inaugurated president Plutarco Elías Calles authorized the creation of a semi-autonomous National Highway Commission and the establishment of a tax on gasoline sold within the country, the proceeds of which would be used exclusively for road construction. For the next seven years the Commission would function as the country's principal road authority, while it managed construction of a rudimentary highway network connecting the country's major cities and ports of entry. In 1932, with the establishment of the Bureau of National Highways (Dirección Nacional de Caminos), construction and management was transferred back to the Secretariat of Communications and Public Works, while new legislation gave the poorly financed state governments a share of proceeds from the gasoline tax, which they were to use for their regional road-building needs. Following the 1934 establishment of the public works bank Banobras, the state, for the first time in its post-revolutionary lifespan, would use debt—backed by future earnings from the gas tax—to finance construction. Over the following years spending grew precipitously from 15.5 million (nominal) pesos in 1933 to 60.8 million in 1936.[339] Budgets again expanded sharply during the early 1940s, and over the following decades road-building would remain one of the major expenditures of the federal government.

[339] For federal spending on road construction see Dirección Nacional de Caminos, "Informe sobre la construcción de caminos y de la Carretera Panamericana en México," in *IV Congreso Panamericana de Carreteras. Memoria. Tomo III* (Mexico, 1942), n.p.; For total Mexican federal spending see James W. Wilkie, "Changes in Mexico Since 1895: Central Government Revenue, Public Sector Expenditure, and National Economic Growth," in James W. Wilkie and Adam Perkal, eds., *Statistical Abstract of Latin America, Vol. 24* (Los Angeles: UCLA Latin American Center Publications, University of California, 1985), 875.

Rather than a neutral or natural evolution from an inferior technology (rails) to a superior one (highways), the promotion of motoring along federally financed national roads was actively shaped by the actions and demands of a variety of actors, including motoring enthusiasts, US exporters and local importers, transportation entrepreneurs (notably the growing bus industry), as well as a transnational network of road-building advocates. Following the 1925 introduction of the gas tax, the financing of road construction became directly linked to gasoline consumption and therefore the increasing use of motor vehicles. Federal road engineers and administrators quickly began to establish plans to link these consumers, who as a rule, continued to be largely located in the country's major cities. Mexico City and Monterrey, for example, the nation's two largest centers of automobility, were soon proposed as two cities necessitating a modern highway. The other nearby motoring center and major consumer of gasoline, was, of course, the United States, and from early on authorities prioritized the construction of a route from the national capital to the northern border, believing that US motorists would, if provided with good roads, visit the neighboring country just as they had the national parks and other attractions in the western United States.

The emphasis on construction of inter-state and international roadways had significant consequences for both users of automobiles and non-users. As inter-state roads were improved and expanded, automobile tourists, who had been some of the first and most vocal good roads advocates, each year traveled outside of cities in greater numbers. Meanwhile, the jitney operators in Mexico City and other regional population centers began offering inter-city services, and later, although with some delay due to technological limitations, trucks likewise began to spread out along the national roads. Yet as most of the nation's major cities were already connected by rail, the construction of roads along similar routes forced the trains to confront a

new competitor in the motor vehicle, much as the tramways had in cities. Finally, the emphasis on inter-state highway construction meant that small country roads, urgently demanded by a diverse group of agriculturalists and small-scale commercial interests, were effectively abandoned by the federal government.

Before Calles

Well before expansion of road construction under Calles, the country's post-revolutionary leaders had initiated an ad-hoc inter-state road-building effort, effectively resuming activities begun during the late Porfirian era and pursued, although with limited success, in the midst of the armed revolution. As already observed, around 400 miles of macadamized roads had been built in central Mexico during the first decade of the twentieth century.[340] Following the outbreak of the Revolution, in 1912 reports suggested that the road from Mexico City to Puebla and on to Veracruz would be reopened and widened,[341] while in 1917 the Carranza administration revealed that it would soon begin construction of a 1,200-mile automobile highway between Mexico City and the US border town of El Paso.[342] The formalization of road construction under Calles, rather than a novelty, instead represented the continuation of a multi-decade effort to establish an alterative to train travel in the form of the automobile.

Much as previous revolutionary factions and would-be policymakers, the Sonorans knew that successful political administration and economic recovery depended in large measure on rapid transportation between the various regions and population centers of the country. The military, for example, needed the ability to rapidly deploy soldiers around the nation in the case

[340] Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington: Government Printing Office, 1912), 25.
[341] "To Reopen Road to Vera Cruz," *Bulletin of the Pan American Union* 34 (January–June 1912): 130.
[342] "Mexico," *Bulletin of the Pan American Union* 45 (July–December, 1917): 691.

of uprising or instability. Meanwhile, mining, agriculture, and commercial activities required good transport facilities in order to remain profitable, and indeed, without efficient transportation, as Jesús Silva Herzog argued, the country would never be able to fully exploit its "natural wealth."[343] Yet the destruction and instability caused by the revolution had produced a profound transportation crisis that would continue to frustrate authorities over the following years.

The problem, as Silva Herzog observed, had long been shaped by the geography of the country. While in the United States there were navigable rivers like the Mississippi and the Hudson, natural ports like New York, and "interminable" plains along which railways could be laid, in Mexico there were virtually no such rivers, "interminable" mountain ranges, and few natural harbors. Frustration, however, was not isolated to the problem of the country's unique topography, but the fact the Mexico's fundamental means of long-distance transportation, the railways, had entered rapid decline following the outbreak of the Revolution. Many railway lines, as we have seen, had been ripped up or dynamited and much of the rolling stock rendered useless. Meanwhile, the militancy of railway workers had resulted in declining productivity and the railways became famed for their sluggish and inefficient operation.[344]

Although the railway network had reached some 19,000 kilometers in length by the end of the Porfiriato, many of the country's small towns and rural hamlets remained without any access to it. This isolation of much of the countryside represented a critical concern of revolutionary reformers not only because they sought to encourage rural economic development, but because they sought a radical transformation of rural people into modern, patriotic citizens.

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[343] Jesús Silva Herzog, "La situación económica actual," in *Apuntes sobre la evolución económica de México* (Mexico: Publicaciones de la Sociedad Mexicana de Estudios Económicos, 1972), 101–108.

[344] Coatsworth, "Indispensable Railroads," 941, 943. For a recent account that examines many of the difficulties on the railways, see Guillermo Guajardo, *Trabajo y tecnología en los ferrocarriles de México: Una visión histórica, 1850–1950* (Mexico: Consejo Nacional para la Cultura y las Artes, 2010).

Indeed, "scanty transportation facilities," Frank Tannenbaum found, explained in large measure the "cultural backwardness" of the nation's rural villagers. The entire question, he argued, was tied up with rural communities' "inaccessibility" due to the lack of good "means of communications," which meant that rural Mexico remained a "cut-off little world, set apart from the rest."[345] As late as the 1930s Luis Cabrera would similarly note how many regions in the country remained "almost completely foreign" one from the other and that it was not uncommon for the people of those regions to "developed almost independently from each other."[346] Silva Herzog, meanwhile, feared that in the absence of a more dense transportation network the country "would never be able to create a national ideology, bonds of sympathy, solidarity, and common interests between all Mexicans."[347] Breaking the back of isolation thus became a critical task of the post-revolutionary state, as it sought not only to integrate rural Mexico into national life, but to bring city ways to the countryside as well. As SCOP sub-secretary J. Roel would observer during 1921, in "these times in which automobilism is reaching inconceivable heights and disputing with the railroads for supremacy," roads building constituted a particularly appealing solution.[348]

In the meantime, the embrace of road-building converged with a belief among the country's new national administrators that more than pacify the country, the regime needed to visually confirm progress made by the new state. Unlike peace—which Manuel Gómez Morín noted was a bit like good health, "you don't feel it when you have it"—promotion of public works, like roads and bridges, had the unique ability to "enter through they eyes" and thus

[345] Tannenbaum, *The Mexican Agrarian Revolution*, 84–6.
[346] Luis Cabrera, "El balance de la Revolución," in Eugenia Meyer, *Luis Cabrera: Teórico y crítico de la Revolución* (Mexico: Fondo de Cultura Económica, 1982), 121–6.
[347] Silva Herzog, "La situacion económica actual," 101–108.
[348] J. Roel to the Director of the National School of Mines, AHPM, AENI, Caja 1921 I 358, Num. 7, Año 1921–I, June 24, 1921.

visually illustrate the regime's progress.[349] Burdened by debt and unable to secure loans from national or international lenders, however, authorities had little option but to turn to the military as a source of labor. During the early 1920s, much of the roadwork sponsored by the federal government was executed by hand by demobilized soldiers under the guidance of army engineers. In Durango, Puebla, Michoacán, Jalisco, and many other states, idle troops were soon put to work reconstructing dilapidated roadways and building new ones,[350] eventually establishing, as Robert Haberman observed in 1924, "some of the best and practically the only roads in Mexico."[351]

Although the militarization of road construction would continue over the following decades, Secretariat of Communications and Public Works officials acknowledged early on that work by the army "had not produced the desired result."[352] Indeed, throughout much of the 1920s, the poor design and construction methods employed by the military often meant that roads recently built or rebuilt suffered rapid degradation, normally following severe rains. Yet, as Gómez Morín and others were keen to note, the use of the military was appealing in other ways, as it held out the possibility of providing soldiers with "honor and public praise" and did much to "cure the army of its dangerous idleness."[353]

As soldiers continued their road-building work, the Sonorans experimented with the extension of contracts to private construction firms that had begun to be established in the country. By 1921, the federal government had received twenty one requests for concessions to build and administer "special roads for automobiles," while one had been issued for construction

[349] Enrique Krauze, *La Reconstrucción Económica. Historia de la Revolución mexicana. Período 1924–1928* (Mexico: El Colegio de México, 1977), 12.
[350] "Los Estados de Zacatecas y Aguascalientes estan pacificados," *El Siglo de Torreón*, September 6, 1922, 1; "Capital is Car Wealthy," *Los Angeles Times*, Octobre 7, 1923, VI15.
[351] Roberto Haberman, "Bandit Colonies," *The Survey*, May 1, 1924, 196.
[352] AGN, SCOP, G, Caja 280, Exp 550/87.
[353] Krauze, *La Reconstrucción Económica*, 12.

of a route from Teziutlán to Nautla.[354] As early as the summer of 1920, before the election of Obregón and under the provisional presidency of De la Huerta, the federal government sent out a request for bids for construction of a road between Mexico City and Guadalajara, which was to be followed by construction of hard-surfaced roads to Puebla, Tampico, Veracruz, Chihuahua, Monterrey, Tehuantepec, and Zacatecas.[355] Again, during early 1922, the Secretariat of Communications and Public Works issued a call to "Engineers, Contractors, and Builders," to send in proposals for the "reconstruction of a road in the State of Chiapas."[356]

Although progress moved ahead slowly during the first half of the decade, as rudimentary highways spread out from cities, concerns quickly emerged about the impact motoring would have on the struggling railways. Following President Obregón's 1922 address to congress in which he reported construction of seven kilometers of road between Mexico City and Tampico along a planned railway route,[357] engineer José Certucha criticized the effort as eminently counterproductive. He likewise argued that the construction of a roadway between Mexico City and Puebla, two cities "perfectly linked via two affordable train lines," had made little sense, particularly since construction of such "tourism" roads served only a limited number of private

[354] "Datos de la Secretaria de Comunicaciones y Obras Públicas, para el Informe Presidencial, 1921, AGN, SCOP, EM, Caja 202, Exp 537/4.
[355] On use of the Army in road building, see "Mexico to Employ Army on Highways," *Automotive Industries–The Automobile*, Vol. 43, August 1920, 391. Reconstruction of the Mexico–Toluca road began on August 1, 1920 and concluded on November 15, while repair and improvement continued through the next year. On the planned road to Tampico federal authorities repaired the section to between Mexico City and Pachuca, and Pachuca and Atotonilco. On the road to Acapulco, the section between Mexico City and Cuernavaca was rebuilt over the course of three months. The federal government also repaired the road between Igual and Chilpancingo, and extended the road an additional 32 kilometers south to Acahuizotla. Work also moved forward on the Mexico City–Puebla route, via Texcoco, while the road to San Juan Teotihuacan and the Piramids was rebuilt as well. Finally, the road from Peralvillo to Tlalnepantla was reconditioned. "Datos de la Secretaría de Comunicaciones y Obras Públicas, para el Informe Presidencial, 1921, AGN, SCOP, EM, Caja 202, Exp 537/4.
[356] AGN, SCOP, G, Caja 278, Exp 550/46, January 14, 1922.
[357] Diario de los debates de la Cámara de Diputados de los Estados Unidos Mexicanos, Legislatura XXX, Período Ordinario, Número de Diario 52, November 14, 1922.

interests and by no means benefited the broader public.[358]

Observers like Certucha encouraged the government to instead emphasize the establishment of tributary roads to the railways. If most small towns and villages enjoyed no rail connection, small roads to nearby stations would provide for a quick solution to the problem of isolation. During 1922 a newly formed congressional Communications Commission would similarly argue that highways ought to act as "feeders for the country's basic circulatory system,"[359] while SCOP engineer Jorge Núñez suggested that the principal objective needed to be transportation of "products of the soil to market" and "necessary manufactured articles," rather than provide scenic routes for automobile tourists or inter-city transportation. The best way to obtain such a result, in Núñez's view, was again, through the construction of tributary roads to local train stations.[360] The superiority of feeder roads was made clear by Certucha who found that although a ton-kilometer of cargo might cost a tenth of a centavo by train, it could cost between 20 and 50 centavos shipped over the country's roads.[361]

The question of financing similarly attracted the attention of policymakers, and in 1922 the new congressional Communications Commission set about studying the country's legislative options as no law yet regulated road building. Adopting a view of the nation's roadways as public goods that needed to be collectively financed, the Commission rejected the notion that roads—"part of the wealth of the country"—might be funded through tolls or freight charges, as such methods would represent "a serious exaction" on their principal users, the poor. Accessibility was critical, in this view, as roads would function to incorporate the isolated

[358] Diario de los debates de la Cámara de Diputados de los Estados Unidos Mexicanos, Legislatura XXX, Período Ordinario, Número de Diario 52, November 14, 1922.
[359] Diario de los debates de la Cámara de Diputados de los Estados Unidos Mexicanos, Legislatura XXX, Período Ordinario, Número de Diario 50, November 10, 1922.
[360] *Highways of Friendship: An Intimate Account of the Tour of the Pan American Highway Commission* (Washington: Highway Education Board, 1924), n.p.
[361] Diario de los debates de la Cámara de Diputados de los Estados Unidos Mexicanos, Legislatura XXX, Período Ordinario, Número de Diario 52, November 14, 1922.

regions of the country and address two of "the most important problems in national life," agriculture and education. Recalling the experience of the Porfirian-era railroad-building program in which large amounts of money had been simply "absorbed by middlemen," members determined, furthermore, that the extension of subsidies to private concessionaires would be imprudent. Rather than employ user fees or extend expensive concessions, the Commission instead proposed "debt" or government issued bonds as the preferred mode of financing, a method in line with the "the modern theory that the collective ought to pay the initial expense of the road, since with it the wealth of the country is increased."[362]

Yet following failure of the Commission to pass any new legislation, government alliances with private road builders expanded as did emphasis on the construction of inter-city highways rather than feeder roads to the railways. Indeed, during 1924, Secretariat of Communications and Public Works engineer Jorge Núñez would report that the policy of the government had become one of encouraging "the development of highways in all directions through the aid of private road companies." Plans, meanwhile, called for the extension of 20-year concessions to companies that would be allowed to charge tolls upon completion of construction, although ownership of these private roadways would eventually be transferred to the federal government following a contract's expiration.[363]

The Obscure Origins of the National Highway Commission

During early 1925 questions began to emerge regarding the ability of the Secretariat of Communications and Public Works to effectively manage the expansive infrastructural effort, as reports of widespread corruption within the Secretariat's Department of Roads and Bridges

[362] Diario de los debates de la Cámara de Diputados de los Estados Unidos Mexicanos, Legislatura XXX, Período Ordinario, Número de Diario 50, November 10, 1922.
[363] *Highways of Friendship*, n.p.

began to circulate publicly. Soon federal investigators were sent to inquire into the Department's activities, as well as those of its private sector associates.

Rumors of fraud in the Department of Roads and Bridges had reached such high levels that during February 1925 SCOP Secretary Adalberto Tejeda would personally call for all public works in the country to be suspended. On February 12, 1925, *El Demócrata de México* reported that the order had come following news of "Enormous sums defrauded in [the construction] of various roadways." Announcing that the Secretariat was taking "special care" to make sure the Department of Roads and Bridges abided by the "energetic measure," Tejeda acknowledged that "grave irregularities" had been found along the country's principal roadways. Contractors, working with corrupt elements within the Department, it seems, had been constructing roads valued considerably below what had been promised in their proposals. Tejeda's decision had come in order to examine the thickness of paving materials as well as to investigate a number of engineers who had been working with the Secretariat, while the Secretary reported that he planned to put an end to the use of so-called "*destajistas*" (from *destajo* or "work by the job"), which *El Demócrata de México* defined as a sort of labor contractor without technical knowledge of any sort, except with regard to the exploitation of workers.[364]

Concerns about corruption within the heart of SCOP quickly drew the attention of the federal government's Confidential Department. On March 28, 1925, "Agent 27" reported that he had met with the Sub-Secretary of Communications and Public Works' personal secretary in order to collect information on the construction of public buildings and roads, but opted not to confront the Sub-Secretary himself about the consulting engineers in question since this might "make me look suspicious." In an interview with the Director of the Department, however, he

[364] "Escandaloso 'Panamá' se Esboza en la Secretaría de Comunicaciones," *El Demócrata de México*, February 12, 1925, 1, in AGN, SG, IPS, Caja 7, Exp. 3.

demanded to be given information about all the roads built by either *destajos*, contractors, or through direct administration of the Secretariat. No construction work had in fact been done by contractors, the Director affirmed, and all had been administered by the Secretariat and been directly overseen by engineers or by *destajistas*, individuals this time described as "more or less competent in the material." The Director refused, however, to provide the names of the consulting engineers, leading the Agent to observe: "wrongdoings jump to sight and possibly for this reason the Secretary ordered the termination of all construction work in the Republic with the stroke of a pen."[365] Days later the same agent would meet with Secretary Tejeda himself, adopting the cover of a journalist from the *El Globo*, and inform him that the paper suspected the Sub-Secretary was to blame. Although Secretary Tejeda affirmed that he had his own culprits in mind, he assured the agent that he was verifying the matter.[366]

An undated and unsigned letter to authorities in the Confidential Department written during some point in early 1925 suggests the extent of corruption within the federal government's road-building program. Sent from San Antonio, Texas, the letter affirmed that large purchases were being made daily by Mexican road contractors, but that the "Director of this matter" remained unclear. The high prices being paid for merchandise suggested that a "verdadero panamá" (massive corruption) was taking place. Yet the author of the letter urged caution: "Tell me after dealing with this matter, with great discretion, what is known about it, who's involved, and if they are friends or not, since there is, *compadre*, a chance of disturbing things, and for the worst, eh? Keep this an absolute secrete, investigate cautiously the matter, and

[365] AGN, SG, IPS, Caja 50, Exp 6.
[366] AGN, SG, IPS, Caja 50, Exp 6.

give me your opinion, your wishes, or what you know as soon as possible because this is urgent."[367]

A month after Tejeda had cancelled all federal public works activities, newly elected President Plutarco Elías Calles authorized creation of the semi-autonomous National Highway Commission (Comisión Nacional de Caminos), a road-building authority that would report directly to the President's office.[368] From its birth in 1925, until 1932, when it was transformed into the Bureau of National Highways (Dirección Nacional de Caminos) and began a program of "cooperation" with state governments, the Commission would dedicate itself almost singularly to the construction of trunk roads between the country's major cities and border entrepôts.[369] Indeed, within its first years of existence, federal engineers and administrators would boast of completing routes from the capital to Toluca, Pachuca, Puebla, and Acapulco, while they worked away on more ambitious roads between Mexico City to the northern border town of Laredo and the western city of Guadalajara.

The new commission had come into existence following the March 30, 1925 passage of a Law Establishing a Federal Tax on First-Hand Sale of Gasoline, which as its name suggests, also instituted a three-centavo per liter tax on gasoline sold within the country. All revenue from the tax was to be applied exclusively to the construction, conservation, and improvement of "national roads," while taxes would be paid to the National Treasury (Tesorería General de la Nación) and distributed to the new Commission. That July the Commission was also given the right to take six-month loans from the Treasury at a 6 percent annual interest rate when revenues dropped below one million pesos per month. Following a subsequent presidential decree during

[367] AGN, SG, IPS, Caja 7, Exp 14, no date.
[368] AGN, SCOP, G, Caja 281, Exp 550/98, p. 12.
[369] AGN, SCOP, TG, Caja 2, Exp Caminos, Sept 1956

the following year, an additional tax was placed on tobacco products ("tabacos labrados") in order to secure additional funding.[370]

The new Commission was initially led by engineers León Salinas and Fernando Beltran y Puga, as well as Pascual Luna y Parra,[371] although upon its restructuring, engineer Antonio Madrazo was designated President of the Commission, while Francisco Díaz Leal and León Salinas became representatives for the Secretariats of Hacienda and Communications and Public Works, respectively. Other Mexican engineers active in the Commission included famed silent filmmaker Salvador Toscano, as well as Octavio Dubois, Ignacio López Bancalari, Andrés Ortiz, Alfredo Becerril Colín, José A. Cuevas, Alberto Dovalí, Fortunato Dozal, and Manuel Marroquín. Together, they formed the core group of Mexican technical advisors who would oversee implementation of the national road-building program.

During the year after establishment of the Commission, the administration requested authority from congress to draw up a new Law of Roads and Bridges (*Ley de Caminos y Puentes*), which would become the first such legislation in the post-Revolutionary era. Arguing that the "great importance given to the railways in past times had resulted in the almost complete abandonment of highway roads," Calles affirmed that many regions of the country, "left isolated," had suffered impoverishment as they waited in vain for additional railway lines to be built.[372] Given the "heavy burden" such an effort would represent for the Treasury and the urgent demands for good communications by agricultural, industrial, and commercial interests, Calles argued that it would be "foolish" for the government to attempt to build and maintain all necessary highways in the country. Private initiative, which Calles described as the "the true

[370] *Documentos para la historia de las carreteras en México. I Legislacion 1925–1963* (Mexico: Secretaria de Obras Públicas, 1964), 4-8, 10–12.
[371] AGN, SCOP, TG, Caja 2, Exp. Caminos, Sept 1956.
[372] Diario de los debates de la Cámara de Diputados de los Estados Unidos Mexicanos, Legislatura XXXI, Período Ordinario, Número de Diario 62, December 23, 1925.

basis for prosperity of a nation," needed to be included in the larger effort to build good roads, while passage of a new Law of Roads and Bridges would open up a "new and incredibly vast field for private initiative."[373]

The law, approved on April 22, 1926, defined "National Roads" as those connecting the nation's capital to ports, borders, and state capitals, those connecting the capital cities of states and territories, roads covering two or more municipalities in the Federal District or the Federal Territories, as well as any road declared to be so by the federal government. It also gave the President authority to establish "national debt for the construction and maintenance of national roads and bridges, through the emission of road bonds (*bonos de caminos*)." In addition to clarifying the role of the federal government, and establishing the legal basis for construction of a national highway system, the law opened up the possibility of granting concessions to private companies in order to both build roads and exploit them by charging tolls (*peaje*). Upon expiration of such concessions, roads would pass to the Federal Government at no cost. A March 10, 1927 amendment, however, removed this possibility, as all national roads were to remain "free and gratuitous." Privately financed non-national roads, in the meantime, were allowed the right to charge tolls, although they would remain free for official government vehicles, including fire engines, ambulances, as well as police and mail vehicles.[374]

Administrative and legal clarification regarding the federal construction effort did not, however, remove that fact that few engineers had yet to be trained in modern road and bridge building methods. Indeed, during the Revolution, when the Huerta government asked the National School of Engineers to begin giving classes on military road construction in response to

[373] Diario de los debates de la Cámara de Diputados de los Estados Unidos Mexicanos, Legislatura XXXI, Período Ordinario, Número de Diario 62, December 23, 1925.
[374] *Documentos para la historia de las carreteras en México. I Legislacion 1925–1963* (Mexico: Secretaria de Obras Públicas, 1964), 20–49.

the US occupation of Veracruz, most professors explained to an eager Department of War that they had little expertise in such matters.[375] With few available trained highway engineers, the federal government turned to the United States. During 1925 a handful of civil engineers arrived to aid the Calles administration, including Philip K. Schuyler, a bridge specialist, Californian landscape architect Emerson Knight, and American Road Builders' Association president Charles Upham.[376]

Initial collaboration with US road-building advisors was followed in the summer of 1925 by the celebration of a contract between the Mexican government and the Chicago-based Byrne Brothers Construction Company, which called for construction of 2,000 kilometers of highways linking Nuevo Laredo, Mexico City, and Acapulco, as well as two branch lines from Mexico City to Pachuca and Puebla.[377] Mexican laborers and the largest number of Mexican managers and technical staff were to be employed, and upon completion of work, machinery used by the company was to be ceded to the federal government. Aerial mapping technology would be employed to establish the most appropriate routes, while local construction materials were to be used to the greatest extent possible. Plans, meanwhile, called for work to begin in September 1925 under supervision of the Commission along the Mexico City–Nuevo Laredo route, followed by the Puebla and Pachuca roads.[378]

Concerns over limited transparency within the new road-building program quickly emerged, and as early as December 1925, the cantankerous politician Antonio Díaz Soto y Gama affirmed before the Mexican congress that it was the duty of representatives "to alert [the public] to what is occurring in the National Highway Commission." The congressman reminded his

[375] AHPM, AENI, Caja 1914 III 329, Num 16, Año 1914–III.
[376] P.K. Schuyler, "Highway Construction in Mexico," *The Wisconsin Engineer*, April 1927, 227.
[377] AGN, SCOP, TG, Caja 2, Exp. Caminos, Sept 1956.
[378] "La Carretera de Laredo a México empezará a ser construida el próximo mes de Septbre.," *El Porvenir*, August 12, 1925, 4.

colleagues of the "incessant rumor in the streets" regarding "truly monstrous, unfair, and disastrous" activities taking place within the heart of the road-building program. Notably, the contract signed by León Salinas—"the terrible engineer Salinas, the reactionary engineer Salinas, who cannot even be tolerated by his own colleagues"—had been issued behind closed doors. Criticizing the government for having violated Article 134 of the constitution, which called for public auction of all such contracts, Díaz Soto y Gama asked, "When was there a prior auction for the road concession? […] [d]oes any compañero here have news of that auction? I don't?"[379]

Indeed, Article 134 would remain largely unenforced over the following decades. In the meantime, nepotism and "amigismo" became widespread and public bidding remained an oddity. When the US Department of Commerce studied the prospects of road-building opportunities in the country, for example, it found that materials ordered by the government for road construction were "purchased by confidential negotiations, and no public bids are asked for or received. Consequently, sales contacts can be made only through a local agent."[380]

Characterized by Díaz Soto y Gama as a "bold violation" of the Constitution, the origins of the Byrne Brothers Construction Company concession remain unclear.[381] Pressures to grant a contract to an experienced US firm may well have come from the US automobile industry itself. Although evidence is lacking, auto interests in the US appear to have promised to partially finance the road-building program under the Calles administration, and indeed, US trade journals reported during 1926 that the Byrne Brothers Construction Company had been granted a

[379] Diario de los debates de la Cámara de Diputados de los Estados Unidos Mexicanos, Legislatura XXXI, Período Ordinario, Número de Diario 55, December 9, 1925.
[380] Frank B. Curran, *Motor Roads in Latin America. Department of Commerce. Trade Promotion Series–No. 18* (Washington, D.C.: Government Printing Office, 1925), 3–13.
[381] Diario de los debates de la Cámara de Diputados de los Estados Unidos Mexicanos, Legislatura XXXI, Período Ordinario, Número de Diario 55, December 9, 1925.

3,000,000-dollar contract for its work in Mexico, financed by a 15,000,000 fund established by American automobile manufacturers.[382]

During the fall of 1925 the company began its work in the country and incorporated under Mexican law as "Byrne Brothers Construction Company of Mexico, S.A." It soon established offices in the nation's capital and hired engineer E.A. Hurley to head the operation.[383] Although plans had called for work to start immediately on the road from the nation's capital to the US border, delays on the Mexico City–Nuevo Laredo highway meant that work would first commence on the roadways between the capital and nearby cities. During November four thousand men were reportedly laboring on the road between Puebla and the Mexico City suburb of Atzcapotzalco, while work was to soon begin on the Mexico City–Pachuca road as well as a route from the capital to the state of Chiapas. Except for the latter, many of these roads had in fact already been built by Porfirian authorities and reconditioned under Obregón. They therefore required little more than widening and re-grading.[384]

As late as November of 1925, activities on the much-discussed highway to Laredo had yet to commence. In the meantime, the first shipments of road-building equipment—part of a total investment in machinery of 1.5 million dollars—had begun to pass over the border at Nuevo Laredo. In November, Byrne Brothers initiated recruitment of manual laborers for work on the northern section, while dozens of Mexican and US engineers began to fill up the hotels in

[382] *Building and Engineering News* (San Francisco, CA), January 16, 1926, 27; *Building and Engineering News* (San Francisco, CA), July 4, 1926, n.p.
[383] "Llegó una parte de la maquinaria que se utilizará en los trabajos de construcción de la carretera de Laredo a México," *El Porvenir*, December 20, 1925, 5.
[384] "La Carretera de Laredo a México empezará a ser construida el próximo mes de Septbre.," *El Porvenir*, August 12, 1925, 4; "La maquinaria para la construcción de las carreteras," *El Porvenir*, September 13, 1925, 5; "Incuestionable el mes entrante darán principio los trabajos de la gran carretera," *El Porvenir*, November 26, 1925, 4; "Sobre el Camino," *El Porvenir*, November 27, 1925, 4.

Monterrey.[385] Yet as late as 1926 there were few signs of progress, even as a total of 2,000 workers had already been stationed for some time along the proposed road, based in four camps fully outfitted with US military surplus impermeable tents, kitchens, and mess halls.[386]

Questions about the company quickly surfaced, and by February reports told of conflicts between laborers and Byrne authorities. Along the Monterrey–Nuevo Laredo route "labor problems" had erupted just two weeks after work had commenced. Abandoning their posts and organizing a "movimiento huelguista" (strike effort), workers demanded greater recompense than the 1.50 pesos per day they were being paid. The Byrne Brothers eventually acceded to the demands and increased wages by 50 centavos.[387] Yet conflicts continued, and during at least one point the Board of Arbitration and Conciliation seems to have compelled the Byrne Brothers to pay over a large sum due to its disputes with workers.[388] Meanwhile, in Monterrey authorities investigated a case of a Byrne Brothers automobile that had reportedly "bathed" another car and its passengers with mud as it sped through a puddle, suggesting broader tensions around the activities of the company.[389]

Doubts about the efficiency of the Byrne operation were confirmed that July as the Calles administration sent Charles M. Upham and Francisco Díaz Leal to Monterrey in order to reorganize the Northern Division's activities. Although the government had reportedly been spending a million pesos per month on the construction effort, little work had been accomplished

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[385] "La Carretera de Laredo a México empezará a ser construida el próximo mes de Septbre.," *El Porvenir*, August 12, 1925, 4; "La maquinaria para la construccion de las carreteras," *El Porvenir*, September 13, 1925, 5; "Incuestionable el mes entrante darán principio los trabajos de la gran carretera," *El Porvenir*, November 26, 1925, 4; "Sobre el Camino," *El Porvenir*, November 27, 1925, 4.

[386] "Lo que se ha hecho hasta ahora de la Gran Carretera que en no lejanos meses unirá a N. Laredo con la Cd. de México," *El Porvenir*, February 1, 1926, 4.

[387] Ibid.

[388] Charles J. Seitz, "Bolshevism in Mexico Defies Monroe Doctrine," *America*, January 24, 1927, reprinted in *Immigration from Countries of the Western Hemisphere* (Washington, D.C.: United States Government Printing Office, 1928), 677.

[389] "Sobre la queja contra un auto de la 'Byrne Bros', *El Porvenir*, March 19, 1926, 5.

along the northern corridor. On July 11 Upham and Díaz Leal presided over a special banquet at the Gran Hotel Ancira in Monterrey, attended by Paul Byrne (President of the Byrne Brothers Construction Company of Mexico), Engineer Salvador Toscano (Oficial Government Inspector for the Monterrey Division), John Robertson (Byrne Brothers), C. Cifuentes (Division Inspector), A. de Allen (Department of Construction), Pedro Garcia Galán (Resident Engineer), Antonio Fernandez (Warehouse Inspector), and R. Montiel (Division Inspector), among others. Reported to be an event "in honor of the engineers in charge of the government road-building program," the banquet in fact constituted a first step toward the extensive reorganization of the Byrne Brothers' Mexican operation.[390]

Indeed, "Complete reorganization" had been deemed necessary so as to guarantee "the most absolute order in management of funds as well as in the organization of work," since for some time "disorder" had been observed in the various divisions of the company, particularly in Monterrey. Following the banquette most personnel in the Monterrey Division were dismissed, while engineer P.L. Fite became the new head of operations, engineer G.I. Tindall was designated Superintendent of the Northern Division, and P.K. Schuyler became Superintendent of Bridges.[391]

During the gathering, Charles Upham—who in addition to being a trusted advisor of the Calles administration was also the acting President of the American Road Builders Association and a consulting engineer for the State of North Carolina—noted that construction efforts had failed thus far largely due to what he called the "confusion caused by the designation of personnel." He promised, however, that such problems had been resolved and things put in perfect order, while "men of true responsibility" would henceforth manage all work. Speaking

[390] "Para agosto, a mas tardar, quedará abierto el tramo de esta cd. a Laredo," *El Porvenir*, April 14, 1926, 4; "Un millón de pesos es lo que gasta mensualmente Gob. en caminos," *El Porvenir*, July 12, 1926, 8.
[391] Ibid.

with similar confidence, Francisco Díaz Leal affirmed that one of the major problems had been the management of finances, but that due to new organizational methods all difficulties would soon vanish. He confirmed that although the government was spending half of its one million peso per month budget to pay bills at various Mexican commercial houses and to US machinery suppliers, while the other half was going to pay for work in the various highway divisions in the country, within a few months the entire budget would be able to be spent on actual construction. Reorganization, its seems, came too little too late and by the spring of 1926, the Byrne Brothers contract had been cancelled, due to what were publicly reported to be "violations" found by various government inspectors and reported to the President. As the northern newspaper *El Porvenir* observed during June 1926, the exact reasons for suspension of the Byrne Brothers contract had not been made public, and officials only reported that the decision had come as a result of unnamed "irregularities."[392]

Following the departure of the Byrne Brothers, a new contract was quickly signed with a Mexican concern led by Álvaro Obregón's intimate friend and business partner, Ignacio P. Gaxiola.[393] Yet in the months that followed, work moved ahead at little more than a snail's pace, and as late as 1927 engineer García de Alba would remark that the Laredo–Monterrey highway "currently can't been given such a name." Many bridges, culverts, and guard railings, for example, had yet to be installed, while much of the northern road, particularly its drainage system, had been destroyed during hard rains that produced millions of pesos in damage.[394]

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[392] "Un millón de pesos es lo que gasta mensualmente Gob. en caminos," *El Porvenir*, July 12, 1926, 8; "Que el gobierno federal canceló su contrato con la Byrne Brothers Co." *El Porvenir*, May 11, 1926, 4; "Nuevo director de obras en la gran carretera," *El Porvenir*, June 5, 1926, 5.

[393] "Que el gobierno federal canceló su contrato con la Byrne Brothers Co." *El Porvenir*, May 11, 1926, 4. For the business dealings of Obregón and Gaxiola, see Jürgen Buchenau, *The Last Caudillo: Álvaro Obregón and the Mexican Revolution* (John Wiley & Sons, 2011), 140–1.

[394] "Los trabajos realizados por la 'Byrne Bros' en las carreteras estaban hechos sobre una base completamente deleznable," June 27, 1927, *El Porvenir*, 4.

After the failed Byrne Brothers experiment, road concessions were subsequently signed almost exclusively with a host of newly formed Mexican firms, most notably the *Compañía Constructora Anáhuac*, headed by General Juan Andrew Almazán.[395] Established in 1927, Anáhuac employed Mexican engineers who, as Almazán recalled, had "learned the ABCs of construction in the midst of the disorganization of the Byrne" effort.[396] The company had apparently been founded when National Highway Commission engineers Salvador Toscano and Porfirio Treviño Arreola suggested to President Calles that Almazán be selected to establish a construction company with Mexican capital. Acting as head of operations and a major investor in the new company, Almazán was joined by Francisco R. Serrano, while General Ruperto García de Alba and Ramón Holmes Gouthier entered the company as general manager and head of the company's Technical Department, respectively.[397] Three years later, after helping the federal government to quell a rebellion led by General José Gonzalo Escobar, President Ortiz Rubio would enlist Almazán as head of the Secretariat of Communications and Public Works, a post he occupied until the president was forced out of office two years later. As Almazán recalled, Ortiz Rubio had, while in the presence of former president Calles, requested that he form part of his cabinet. Although he claimed to have objected to the offer due to his contracts with the government, Calles and Ortiz Rubio reassured him that no such conflict existed as the contract had already been signed and the National Highway Commission remained in charge of supervising all activities.[398]

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[395] Ibid.
[396] Quoted in Carlos Martínez Assad, Ricardo Pozas Horcasitas, and Mario Ramírez Rancaño, *Revolucionarios fueron todos* (Mexico, Fondo de Cultura Económica, 1982), 242.
[397] "Regresó de México el Gral. García de Alba," *El Porvenir*, August 15, 1929, 8; "Los Delegados Norteamericanos," *El Porvenir*, September 29, 1928, 5.
[398] Quoted in Martínez Assad, Pozas Horcasitas, and Ramírez Rancaño, *Revolucionarios fueron todos*, 246.

Having taken over much of Byrne's work, by early 1930 reports suggested that more than 2000 men stationed in various camps, were working on the Mexico City–Nuevo Laredo highway under the directorship of Anáhuac.[399] That summer 93 provisional bridges and culverts were built of wood and bamboo in the swampy area between Valles and Tancanhuitz, and during the following year they were replaced with concrete, masonry, and steel. As work progressed simultaneously from the north and south, on April 1931 construction crews met at Chapulhuacán, where a celebration was held. Yet with no guardrails on the road, travel remained a dangerous affair. As William Harrison Furlong would report, prospective tourists needed to understand that "the major hazards of the route (the narrow surfaces of the roadway, often less than 10 feet in width, bordering precipitous drops of hundreds of feet in the 65-mile Tamazunchale–Jacala sector)" had not been eliminated, and that "full resourcefulness, courage, and skill" would be required of any driver who attempted the feat.[400] Indeed, it would take another four years for the highway to be fully completed.

As domestic road-building firms expanded their activities, US engineers continued their close collaboration with the Mexican state. Between January 9 and 14, 1928, members of the American Road Builders' Association gathered at the Hollenden Hotel in Cleveland for their annual convention, where they participated in a second annual Pan American Day celebration. The gathering opened with a speech by Charles M. Babcock, President of the Association and Commissioner of Minnesota Highways, who urged all visitors to attend the Pan American session and "strongly" recommended the establishment of a Pan-American division of the Association. Looking back over the recent history of the United States, Babcock argued that the country's interstate highways had done "more than anything else to create a real national unity."

[399] "Más de dos mil hombres se hallan trabajando," *El Porvenir*, January 13, 1930, 4
[400] William Harrison Furlong, "Mexico's Roads," *Bulletin of the Pan American Union* 67 (January–December 1933): 732–740.

Adopting hyperbole reminiscent of Henry Ford's 1915 declarations about the Mexican Revolution, he argued that if the automobile and roads had been built 75 years sooner, "there never would have been a [US] Civil War." Extending his theory to the continent, he affirmed that while "highways are bringing the people of the states closer together, they are also making closer neighbors of the United States with Canada and Mexico." As "All the people in all the countries of the Western Hemisphere are Americans" he noted, the Association would "be performing a real service in the interest of peace and international friendship" by promoting the building of highways in the region. Later, fellow speaker Samuel Hill argued before conference attendees that "we should not stop till this whole continent, North and South, East and West, is joined by continuous bands of highways, because when people come to know each other, to understand each other, then they will be friends."[401]

The Pan American Session was inaugurated by long-time advisor to the Mexican Government, Charles M. Upham, and formally presided over by Foreign Trade Advisor to the Pan American Union William A. Reid and Mexican National Highway Commission member Antonio Madrazo. During his comments, Reid affirmed the interest of the Pan American Union in promoting highways in the hemisphere, while Madrazo, acknowledged that following a 1924 resolution calling for the creation of national road-building sections throughout the Americas, Mexico had "complied" by forming its National Highway Commission. Later, Madrazo would present the Association with a tiled mosaic fireplace built in Puebla, which was placed on exhibit at the convention and described as "a token of friendship and good-will."[402]

Over the following years the American Road Builders' Association and its president, Charles M. Upham, would remain intimate advisors to both Mexican civil engineers and

[401] Charles M. Upham, Ed., *Proceedings of the Twenty–Fifth Annual Convention of the American Road Builders' Association* (Washington: American Road Builders' Association, 1928), 16.
[402] Ibid, 33–37, 362.

presidents.[403] Soon after the 1928 American Road Builders' Association conference, in October, between 40 and 50 US delegates arrived in the Mexican capital via railway to take part in a road-building congress in the capital. Headed by Upham himself, the group included such prominent engineers as James H. MacDonald (American Road Builders' Treasurer), Charles M. Babcock (Minnesota Commissioner of Highways), and William A. Van Duzer (future American Road Builders' president). As railway cars filled with road-building machinery began passing over the international bridge on their way to Mexico City for display as part of a Machinery Exposition, on September 28, representatives of the National Highway Commission and *Compañía Constructora Anáhuac* met the visitors in Laredo and together headed off for the capital.[404] Two years later, Charles Upham would again visit Mexico as head of the American Road Builders' delegation in order to participate in the Third Mexican National Road Congress.[405]

The cozy relationship between US and Mexican road engineers was made clear not only by frequent visits by American delegates, but by the fact that from the late 1920s through the 1940s, Mexicans would frequently serve as presidents of the American Road Builders' Association's Pan-American Division. Following the tenure of National Highway Commission chief Octavio Dubois, in 1935, Secretary of the Treasury and president of the Mexican Automobile Association Luis Montes de Oca would likewise head the Association's Pan-American section.[406]

The Struggle for Country Roads

[403] "Nuevo director de obras en la gran carretera," *El Porvenir*, June 5, 1926, 5.
[404] "Los Delegados Norteamericanos a la Convención de Caminos que se reúne en México, pasaron ayer por esta cd.," *El Porvenir*, September 29, 1928, 5; "Los Delegados Norteamericanos," *El Porvenir*, September 29, 1928, 5.
[405] "Delegados de EE.UU. vienen a la convención de caminos," *El Porvenir*, April 16, 1930, 2.
[406] "El Congreso de Caminos estudia la construcción del Internacional," *El Informador*, January 16, 1930, 1.

Inter-state highway construction, offered up by the federal authorities as proof of post-revolutionary progress, had significant consequences for rural Mexico. For all the passionate talk of salvaging agriculture and civilizing the countryside through road building, the federal government would grant precious little aid or technical assistance to local communities until the end of the 1940s. Inattention to small towns and villages in desperate need of better communications facilities was shaped in large measure by the logic of road financing. Once the gasoline tax was instituted, virtually all funding amassed by the National Highway Commission came directly from consumers. Although taxation of consumption was nothing unusual at the time—indeed over the course of the 1920s every state in the neighboring US would adopt the gas tax—it had a very particular result in Mexico, a country in which rural people consumed precious little gasoline.[407]

The gas tax had appealed to road-building authorities in and beyond Mexico, as it appeared to represent a fair way to fund construction. Users themselves would pay for the erection of new roads in direct proportion to use, as heavy drivers would pay more than the sporadic motorist. Meanwhile, the tax was both easy to collect and remained largely invisible to consumers. This proved particularly well suited to Mexico, a country with long-standing problems of tax collection, as direct collection from wholesalers was much less demanding than a sales tax levied on consumers at the pump, or often, at the barrel. Making the transition all the more painless, passage of the new legislation paralleled a decline in world oil prices, such that consumers often witnessed no change in the retail prices they paid.

Between the onset of the Revolution and the middle of the 1920s, consumption had increased from near insignificance to over 100 million liters a year, and by 1929 the country was

[407] Christopher W. Wells, "Fueling the Boom: Gasoline Taxes, Invisibility, and the Growth of the American Highway Infrastructure, 1919–1956," *Journal of American History*, 74.

consuming 260 million liters per year.[408] Within the first year of the federal tax on gasoline, initially set at 3-centavos per liter, over three million pesos were channeled into state coffers, a figure that would double by 1928, and reach 10.4 million in 1929 when the tax was increased to 4 centavos.[409] Consumption, however, remained highly uneven over space. After Mexico City, the nation's unrivaled center of gasoline use, many of the country's largest consumers were located in the north, while Guadalajara, Veracruz, and Mérida also represented markets of significance. Indeed, when US consuls examined the retail market in their respective districts during the mid-1920s, they found, for example, that while the Mexicali district on the US border consumed nearly 700,000 gallons per year, Acapulco in the south used a minuscule 36,000.[410]

Knowing that consumers themselves would provide the government with its most important revenue stream for additional construction, policymakers resolved to build roads in areas that promised high returns.[411] The gasoline tax thus disincentivized construction of a network of small roads (caminos vecinales) connecting rural hamlets to the railways, as the inhabitants of small towns and villages consumed very little gasoline. The quickest method by which the National Highway Commission could capture new funds, engineering consultants determined, was through construction of inter-city trunk lines.[412] Meanwhile, as new highways began to generate new traffic, the revenues channeled into state coffers were legally reserved for

[408] AGN, SCOP, G, Caja 279, Exp. 550/75
[409] AGN, SCOP, G, Caja 279, Exp. 550/75
[410] Homer S. Fox, *World Trade in Gasoline. Department of Commerce. Trade Promotion Series–No.20* (Washington: Government Printing Office, 1925), 19–21.
[411] As Cristopher Wells finds for the United States, "beginning in the interwar period, state and federal gas–tax policies, coupled with new highway–planning techniques, reconfigured the American environment by funding the growth of a vast automotive infrastructure that was designed explicitly to stimulate near–constant growth in American demand for gasoline." Christopher W. Wells, "Fueling the Boom: Gasoline Taxes, Invisibility, and the Growth of the American Highway Infrastructure, 1919–1956," *Journal of American History*, 73.
[412] In the United States, as farmers had constituted some of the earliest advocates of road–building a massive federally funded rural road construction developed early on. Yet in contrast to Mexico, rural US citizens had become some of the most avid consumers of automobiles. Indeed, when one rural farmwomen was asked by a US Department of Agriculture inspector why her family had purchased a car rather than indoor plumbing, she replied: "You can't go to town in a bathtub." Shane Hamilton, *Trucking Country: The Road to America's Wal–Mart Economy*, 45.

construction of new national highways.[413] Emphasis on long-distance highway building was further encouraged by the fact that the federal government alone collected all funds from the gas tax, and only after 1934 would it grant states the right to a share of earnings.[414]

In the meantime, state and municipal governments were forced to search for alternative resources or simply rely on private initiative and civil society groups to build the necessary country roads. During the summer of 1923, for example, the state government of Coahuila decreed a regressive 3 peso per ton tax on the consumption and sale of wheat, the proceeds of which would be used for the construction and repair of local highways.[415] By the end of the decade the state of Sonora had initiated its own construction effort employing "expensive and modern machinery."[416] Meanwhile, in northern Baja California, local government built a series of roads linking the state to the growing transportation network in southern California, and in Jalisco, Nuevo León, and Veracruz authorities likewise developed their own construction programs. Many states, however, emphasized construction interurban routes much like the federal government.

Rural townspeople were eager to build feeder roads to the railways, however, and they quickly sought technical assistance, tools, and funding from the federal government. During 1921, for example, the town of Tetela de Ocampo, Puebla, requested aid from the Obregón administration in order to build roadways to neighboring communities, as good communications constituted the "basis of development in all its forms," while the petitioners praised the new

[413] Christopher W. Wells, "Fueling the Boom: Gasoline Taxes, Invisibility, and the Growth of the American Highway Infrastructure, 1919–1956," *Journal of American History*, 72.
[414] In the United States, state governments had been the first to institute gasoline taxes, while the federal government would only later establish a federal gasoline tax of its own.
[415] Cámara Nacional de Comercio de la Comarca Lagunera, "Impuesto sobre el trigo," *El Siglo de Torreón*, July 27, 1923, 2, 5.
[416] "Informe que el C. General de División Juan Andreu Almazán, Secretario de Comunicación y Obras Públicas, Rinde al C. Presidente de la Republica con Relacion a su Viaje por el Occidente del País, 1930" AGN, SCOP, EM, Caja 202, Exp 537/10

government for its "reconstruction of means of communications."[417] Similarly, during September 1925, following the arrival of the first automobile in the town, the municipal president of Axtla, San Luis Potosí, wrote to SCOP to request that an engineer be sent to help with the building of a route between the town and Vicente Guerrero.[418] In other cases, local *agraristas* had organized roadwork around Los Mochis, San Blas, and Choix, where Juan Andrew Almazán observed rural people laboring during 1930 "with great enthusiasm."[419]

Local Chambers of Commerce, meanwhile, soon became important promoters of local reconstructive efforts, and as early as 1920, the Municipal President of Aguascalientes had contacted the federal government on behalf of "some people in this city, associated with the Chambers of Commerce and National Agriculture," in order to request help building a road from Calvillo to Juchipila.[420] Similarly, during September 1921 the National Camber of Commerce of Huachinango, Puebla, sought the "official intervention" of the Obregón administration in order to build a roadway connecting the town to the Beristáin railroad station.[421] Finally, in 1925, merchants Arámburu and Saavedra of Teziutlán, Puebla, organized a local "road improvement committee."[422]

Meanwhile, local entrepreneurs, good roads organizations, and auto clubs organized initiatives of their own, at times seeking concessions from the federal government for construction of private toll roads. Organizations like the La Laguna Automobile Club, for

[417] AGN, SCOP, G, Caja 280, Exp 550/85
[418] AGN, SCOP, G, Caja 281, Exp 550/99
[419] "Informe que el C. General de Division Juan Andreu Almazán, Secretario de Comunicación y Obras Públicas, Rinde al C. Presidente de la Republica con Relación a su Viaje por el Occidente del País, 1930" AGN, SCOP, EM, Caja 202, Exp 537/10
[420] AGN, SCOP, G, Caja 281, Exp. 550/104
[421] AGN, SCOP, G, Caja 280, Exp. 550/87
[422] AGN, SCOP, G, Caja 280, Exp. 550/85

example, built roads financed through members' fees.[423] During April of 1926, Martín Moctezuma E. of Cárdenas, wrote to president Calles to request a subsidy for the construction of a 20 kilometer highway connecting the towns of Cárdenas and Alaquines, both in San Luis Potosí, which he estimated would cost around 30,000 pesos. He planned to form a Junta Pro-Carretera Cárdenas Alaquines, which would include members of the National Chamber of Commerce and "residents of recognized honorability." Initially having sought to convince residents of Alaquines to buy 100 peso stocks to fund the venture, he latter sought their support by arguing that the benefits of highway travel were "of a much greater interest than trains themselves. Many may view this as a lie, but witness the highways in the United States and then you will appreciate their value."[424]

Good roads committees soon sprang up as well, and in 1925 a Comité Pro-camino Carretero of Lagunillas was formed in San Luis Potosí in order to build a roadway between the community—which found "itself at a standstill due to its isolation from commercial centers"—and the neighboring town of Arroyo Seco, in the state of Queretaro. The Committee, as it noted in a request for federal aid, had collected 332 pesos and secured the cooperation of the "proletarian classes," who had "disinterestedly" offered their support for the project.[425] Meanwhile, during April 1928, a recently established "Comité Pro-Carrertera Saltillo-Oriente" requested "moral and material" help in building a road linking local communities and ranches to the state capital. The committee noted the "great benefits" such a route would bring small

[423] Automóvil Club de la Laguna, "Evitarse el paso indebido por el camino a Lerdo," *El Siglo de Torreón*, May 9, 1923, 1.
[424] AGN, SCOP, G, Caja 281, Exp 550/95
[425] AGN, SCOP, G, Caja 281, Exp 550/96

farmers by allowing them to transport their own products and thus avoid selling at "scornful prices."[426]

The requests of local road builders for aid met almost universal rejection from the federal government during 1920s and the 1930s. Authorities argued that the "local" character of such roadways did not correspond to the obligations of the Secretariat of Communications and Public Works. In June 1925, for example, when the President of the Junta de Administración Civil of Cosautlán, Veracruz, wrote to SCOP Secretary Adalberto Tejeda to tell him of the town's "great need" to open a road in the area, his request for help fell on deaf ears. As the community argued, such a route would "expand commerce" and allow residents in the region to transport their own agricultural products, thus avoiding the abuses of local "*acaparadores*" (local loan sharks) who often left agricultural producers profitless and unable to meet their basic needs. Promising that every Monday between 500 and 800 men would work on the road, they nevertheless requested tools and an engineer from the federal government. SCOP replied, however, that no tools were left in the Secretariat's warehouses and that all engineers were working on other projects.[427] A year later, when the Saltillo Chambers of Commerce and Agriculture sought support for construction of a system of local roads linking wheat producers to the El Chorro railway station, aid was likewise refused.[428] The Federal government's tendency to reject requests for financial aid for the construction of local roads was made clearest in a letter sent by the National Highway Commission to SCOP sub-secretary Francisco L. Terminel, which noted succinctly: "The great efforts pursued by the Federal Government to provide the nation with a basic system of good

[426] AGN, SCOP, G, Caja 281, Exp 550/98
[427] AGN, SCOP, G, Caja 278, Exp 550/47
[428] AGN, SCOP, G, Caja 281, Exp 550/98

roods would fail completely if its resources were used to offer partial help along local isolated roads."[429]

In rare instances the federal government sent consulting engineers to small communities to help with surveying efforts. In 1922, for example, although the town of Tetela de Ocampo, Puebla had hoped for 4,095 pesos to aid the community in construction of a local highway, they were instead set an engineer to design the road and help establish a budget.[430] But provision of government experts did not address the fact that, in many instances, communities simply lacked the basic tools—shovels, picks, dynamite, and so on—which led to the use of inappropriate and inefficient methods. In 1925, for example, although 800 men were working on a road connecting Amixtlán to San Andres Tlayehualancingo, in the state of Puebla, in all they had only 150 shovels and pick axes. Many workers were thus forced to employ the only other tool available locally: the coa, a pointed stick used for sowing seeds. [431] Toward the end of the decade the newly formed Compañía Constructora del Camino Saltillo Oriente wrote to the Secretariat to request a subsidy of 25,000 pesos for the construction of 30 kilometers of road connecting Saltillo to the wheat and corn producing Sierra de Arteaga. The company observed that the route would help bring down the price of wheat—which had to be transported via "carts pulled by beasts of burden"—and limit the need to import wheat from abroad. Although the National Highway Commission suggested that engineer Salvador Toscano would be encouraged to visit the site, no financial support was extended. [432] Finally, in 1929, a Junta de Conservación del

[429] AGN, SCOP, G, Caja 279, Exp 550/72
[430] AGN, SCOP, G, Caja 280, Exp 550/85
[431] Ibid.
[432] AGN, SCOP, G, Caja 281, Exp 550/98

Camino de Escalerillas request for financial help to facilitate "the transport of products" in the region was likewise rejected.[433]

In the meantime, the few SCOP engineers sent to offer their technical expertise as consultants were consistently frustrated by the low-tech, informal, apparently inefficient qualities of construction at the local level. In 1925, an engineer sent by the Departamento de Caminos y Puentes to Puebla complained of the poor design and construction methods used employed by local communities, noting, "The engineer that has to plot a road in these areas is powerless to remedy so many imperfections, since he can only plot the road, and does not control any money for construction." Nevertheless, the inspector argued such roads, for all their problems, ought to continue to be opened as "the towns want them" and "they are anxious to have a means of communications more modern than the old roads for beasts of burden which are in many places in a deplorable state."[434]

After five years of nearly undivided federal attention to the construction of interurban roadways, in 1930 Veracruzan Congressman Guillermo Rodríguez criticized the state for having completely overlooked rural communities' urgent need for tributary routes the railways. Speaking before congress, he presented his colleagues with a letter from the National Highway Commission regarding a road requested by a group of his constituents. Following a request for road-building aid, the Commission had responded by informing the petitioners that their proposed route was "unnecessary" as it was not a "national" roadway. How could such a road not be necessary, Rodríguez questioned, when it aimed to make possible and more cost-efficient the shipment of local agricultural products.[435]

[433] AGN, SCOP, G, Caja 279, Exp 550/72
[434] AGN, SCOP, G, Caja 280, Exp 550/85
[435] Diario de los debates de la Cámara de Diputados de los Estados Unidos Mexicanos, Legislatura XXXIV, Período Ordinario, Número de Diario 10, September 23, 1930.

As congressman Rodríguez argued, "The National Highway Commission" had erroneously emphasized construction of routes along the old *caminos reales* "without paying attention to the fact that in many cases this produces a terrible form of competition for the railroads, which also form part of the nation, and that we are also obliged to protect." The congressman reiterated the long-standing argument that the federal government needed emphasize the construction of tributary roads as he affirmed, "From today on I want the Highway Commission to know of our fervent desire that instead of planning roads parallel to our railway lines, they plan to build branch roads to the railways."[436]

Road-building in Economic Depression

In October 1929 the Wall Street stock market crash plunged the world economy into the Great Depression, and as the Mexican economy contracted, the decade-long ascent of gasoline consumption came to a halt. While it had peaked in 1930 at 326 million liters per year, three years later consumption had fallen to a low point of 245 million.[437] The drop in gasoline use effectively deprived the government of the most important revenue stream at its disposal for the expansion of its road-building agenda. Faced with a clear need to reassess its long-term financial strategy, the National Highway Commission sponsored a variety of internal studies aimed at stabilizing the program, and over the next decade federal engineers would redouble their earlier efforts to complete a basic network of interstate highways. Far from adopting an isolationist attitude, the Commission sought a deeper integration of the national road network with that of

[436] Ibid.
[437] For 1923 see Homer S. Fox, *World Trade in Gasoline. Department of Commerce. Trade Promotion Series–No.20* (Washington: Government Printing Office, 1925), 19. For 1926 to 1934 see Ulises Irigoyen, *Gasolina a $0.15* Litro (Mexico, 1935).

the United States, believing that greater traffic between the two countries promised to expand gasoline tax earnings and the economy more generally.

During July 1930, Commission member Alfredo Becerril Colín presented a report to SCOP in which he argued that the roads of most critical importance were those which united the capital with the nation's northern and southern borders and provided direct communication with the nation's two shores. He emphasized completion of routes from Mexico City to the border city of Laredo, as well as those between Matamoros and Mazatlán, Mexico City and Acapulco, Mexico City and Guadalajara, Mexico City and Veracruz, Nogales and Guadalajara, and Puebla and Suchiate on the Guatemalan border, and a branch road from San Cristóbal, Chiapas, to Mérida, Yucatan. These eight highways, he found, would require an investment of 195,000,000 pesos.[438]

During the following year Becerril Colín presented a second study to SCOP officials, in which he proposed a more limited plan for five trunk highways, that would jut out from the nation's capital, weave through the majority of state and territorial capitals, and conclude at either ports or international borders. Totaling 8,100 km, these routes included Mexico City–Pachuca–Ciudad Victoria–Monterrey–Laredo; Mexico City–Toluca–Guanajuato–Aguascalientes–Zacatecas–Durango–Chihuahua–Ciudad Juarez; Mexico City–Toluca–Morelia–Guadaljara–Tepic–Culiacan–Hermosillo–San Luis–Tijuana; Mexico City–Cuernavaca–Oaxaca–Tuxtla Gutiérrez–San Cristóbal–Tapachula; and Mexico City–Puebla–Orizaba–Veracruz. In addition to the trunk highways, the National Highway Commission engineer proposed construction of 7,655 kilometers of branch roads that would provide links to those state capitals and ports that did not touch a main trunk line.[439]

[438] AGN, SCOP, G, Caja 279, Exp 550/75
[439] Ibid.

Having rejected the idea of establishing privately run toll roads, Becerril Colín argued that the state had two options: It could either increase the gasoline tax or contract a loan. A year later the tax was increased from 4 centavos to 6. With this particular financial mechanism affirmed, the National Highway Commission carried on with its earlier emphasis on building roads perceived to be lucrative, while it deemed construction of routes that would take a long time to develop heavy use inadvisable.[440]

In order to generate greater resources for the road program, engineers and government advisors looked northward to a market of potential gasoline consumers, as they made plans to attract motorists from the United States. Cognizant of the growing practice of automobile tourism in the US, the Commission adopted a belief that roadways linking Mexico to its northern neighbor would produce an increase in gas tax earnings. Indeed, as Becerril Colín argued, it was "a certainty" that upon completion of the Laredo road, "a great number of US tourists" would use the route and "the number of automobiles that travel along it will be much more than those that currently use the road between Monterrey and Laredo." He predicted, moreover, that expanded foreign tourist traffic would "probably increase revenues from the gas tax," and the "current of foreign tourism" would leave behind "a great sum of money, and surely would in great part pay, albeit indirectly, for the cost of our own roads."[441]

In the meantime, the Secretariat of Communications and Public Works contracted two additional advisors, Eugenio Elorduy and A.J. Armstrong, to produce a study of their own. Written in 1931, the report argued, much as Becerril Colín, that tourism promotion constituted the best of the few options available to the Mexican government. All funds, they recommended, ought to be spent on the construction of inter-state roads, while the construction, improvement,

[440] Ibid.
[441] Ibid.

and maintenance of interior routes should be financed by states or at the local level. The federal government, in this view, needed to center its attention on building roads that would produce the greatest "net earnings" (*ingresos efectivos*), including routes that linked centers of consumption with regions of "major agricultural importance or those that are susceptible to this development." Yet the authors held out little hope that agriculture could constitute a dynamic economic activity within the near future. For the time being, they suggested, it did not appear "to present very promising prospects, as long as the agrarian problem is not definitively resolved." Manufacturing and mining, they found, similarly held out few prospects. "[O]nly tourism," they noted, "remains as a source of income for the federal government." As Elorduy and Arrmstrong informed Communications and Public Works authorities, "the opening of highways that encourage such visits to Mexico" represented the most promising method by which to "provide direct and indirect income" to the federal government.[442]

By the early 1930s, there was one automobile for every 4.9 people in the United States, and a total of 25 million passenger cars and 100,000 buses. Residents of the border states of Texas, Arizona, California, and New Mexico alone owned 3 million cars. As Elorduy and Arrmstrong remarked, since 1926, 20 million cars had visited he US national parks due in large measure to the construction of good roads in and around such destinations. "The American tourist," they argued, travels "almost exclusively in automobile," while "a large percentage of the US population makes trips in automobiles exclusively for pleasure." For the most part, however, they were unable to visit much of neighboring Mexico, and during 1929, three quarters of the 40 million dollars spent by Americans in Mexico went to Baja California alone. The ten million that

[442] "Plan para Financiar la Construcción de un Sistema de Caminos Nacionales," AGN, SCOP, G, Caja 277, Exp. 550/34, March 23, 1931.

made its way to other areas was, in the consultants' estimation, "truly insignificant," and much less than what the country ought to receive.[443]

The economic crisis demanded a solution that would have an immediate effect. Yet as Elorduy and Arrmstrong insisted, such immediacy was not to be expected from the agricultural sector, which demanded multiple years of constant labor as well as peace. It could not be hoped to come from mining either, an industry that essentially depended on international markets that were "out of our hands." It could not come from the oil industry, nor from national industry, as the latter suffered from the limited purchasing power of campesinos. In this context "the only means that remains to inject sufficient life into the country, while we wait for things to recover and while the many other problems are resolved, is the promotion of highway construction at its maximum level in order to attract foreign tourists and with it a few hundred million dollars that will bring incalculable benefit to our economy." Given "the current conditions of the country, the main objective that the roads should meet is that of meeting the needs of the tourist in order to attract him."[444]

Conclusion

In 1932, authorities disbanded the National Highway Commission and integrated it back into the Secretariat of Communications and Public Works as it became the Bureau of National Highways (Dirección Nacional de Caminos). The Bureau promptly began a program of collaboration with state governments, channeling a limited amount of earnings from the gas tax to projects administered by the states. Yet from the early 1930s through the onset of the World War, the federal road-building program would largely follow the logic outlined by Becerril Colín,

[443] "Plan para Financiar la Construcción de un Sistema de Caminos Nacionales," AGN, SCOP, G, Caja 277, Exp. 550/34, March 23, 1931.
[444] Ibid.

Elorduy, and Armstrong, as federal engineers continued to favor completion of the national highway system, while roads connecting central Mexico to the US border received the lion's share of financial support. By 1941, the national road network had reached 10,379 kilometers in length. Nevertheless, fewer than half (4,083 kms) of the federal roads were passable throughout the year. Of these 1,463 formed part of the Pan-American Highway from Laredo–Mexico–Suchiate.[445] Only under the presidency of Miguel Alemán would the federal government engage in a significant effort to integrate the country's agricultural producers with national consumers through the construction of local farm-to-market roads, and between 1948 and 1951, nearly 1,700 kilometers were built in poorly accessible rural areas.[446]

The federal road-building program fit nicely, and seemingly with little controversy, into the post-revolutionary state's discourse of national progress. The National Road Commission and the Secretariat of Communications and Public Works, followed by historians themselves, hailed the road construction effort as clear effort to bring the benefits of the revolution to the masses. Nevertheless, the work of the National Highway Commission and its successors was both more contentious than has often been recognized and less effective at uniting the country. Indeed, as early as 1931 Luis Cabrera would argue that Mexico's dramatic territorial transformation through automobile use had not been the result of the activities of the federal government, but was instead the consequence of cheap automobiles and the eagerness of local people to improve their travel options. As the former Carrancista and *persona non grata* suspected, for every kilometer built by the government, ten had been constructed at the local level by private initiative and at times by local authorities.[447] To be sure, by 1933, Mexican statisticians determined that

[445] AGN, SCOP, CPC, Caja 2, Exp. 100678, p. 2–3.
[446] Enrique C. Ochoa, *Feeding Mexico: The Political Uses Of Food Since 1910* (Lanham: Rowman & Littlefield, 2000), 105.
[447] Cabrera, "El balance de la Revolución," 121–6.

although the country had at total of 884 kms of asphalt-paved highway and 1,013 kms or road passable year round, there were 31,572 kms of non-asphalt paved roads usable during the dry season.[448] The vast majority of these had been built by local towns people.

[448] AGN, SCOP, CPC, Caja 2, Exp. 100678, p. 2.

Chapter Six

The Long Haul

The early embrace of inter-state road construction along routes largely served by the railways had a profound effect on the expansion of motorized travel from the late 1920s through the onset of the Second World War. Rather than a revolutionary intervention in the landscape, aimed at bringing about the densification of travel facilities and the attendant increase in mobility for a greater number of Mexican citizens, authorities initially responded to the particular demands of a minority of motorists who sought to venture beyond urban confines in their private vehicles. This tendency only accelerated following the adoption of the gas tax and the formation of the National Highway Commission in 1925, as federal engineers and planners aimed to connect the largest consumers of gasoline, the vast majority of whom were located in cities like Puebla, Monterrey, Guadalajara, the nation's capital, and, of course, the United States. To be sure, many motorists extended the frontiers of mechanized travel as they ventured beyond the newly built national highways. Yet in the face of their countless requests for financial and technical assistance, the more enterprising pathfinders earned little support from the federal government.

During the year before the state formalized its road program through the 1925 establishment of the National Highway Commission, there were fewer than forty-five thousand motor vehicles operating in Mexico (32,531 passenger cars, 5,525 trucks, and 4,802 buses).[449] The vast majority of these were private motorcars employed in and around cities by the wealthy as well as a growing number of upwardly mobile bureaucrats. Having embraced the practice of leisurely touring in the countryside, automobile tourists, much as their Porfirian predecessors, quickly demanded good roads from post-revolutionary authorities. While policymakers boasted

[449] *50 años de revolución mexicana en cifras* (Mexico: Presidencia de la Republica, 1963), 100.

of plans to rationalize the nation's transportation network through the promotion of rural automobility, this core group of pleasure-seeking motorists would successfully persuad the federal government to invest heavily in construction of an infrastructural network that met their particular demands. As better roads expanded beyond and between cities, the country's thousands of city buses began to establish interurban lines, while trucks, not yet the massive road machines of the post-war era, largely continued to confine their activities to delivery and cargo transport within and shortly beyond cities.

Within little more than a decade and a half Mexico's fleet of motorized vehicles more than tripled in number, reaching nearly 146,000 in 1940. Use nevertheless continued to be dominated by the drivers of passenger automobiles—they owned 93,623 in all—as their cars represented two thirds of all vehicles. The number of buses in the country, meanwhile, had more than doubled over the same years, reaching a total of 10,141. Due to the fact that makeshift buses had already been introduced in large numbers in urban areas, much of this increase came as the result of an explosion in inter-city bus services beginning in the late 1920s. The most rapid increase had, however, taken place in trucking as these machines grew by over seven fold—reaching 41,935—and constituted nearly thirty percent of all motor vehicles in the country.[450] In the meantime, gasoline consumption had expanded faster than the acquisition of motor vehicles, suggesting heavy use.

Although the pace of motorization in post-revolutionary Mexico was far from spectacular—car ownership rates in the country continued to be dwarfed by those of the US and were significantly less than Argentina's—the rise of intercity transit and cargo transportation nevertheless dramatically altered practices of travel, logistics, and consumption. Most notably,

[450] Ibid., 100; Sergio Ortiz Hernán, *Los Ferrocarriles de México. Una vision social y económica. II. La rueda rumorosa* (Mexico: Ferrocarriles Nacionales de México, 1988), 333.

along the federally financed network of national highways, tourists, bus companies and passengers, and cargo-hauling trucks began to displace the previously indispensable railways. This process was uneven, however, and it proceeded faster in certain regions than in others. As the network of roads was most dense in central Mexico, this is where motorized travel produced its most significant impact. Although buses would begin to capture much of the railroad's passenger business, trucks, alternatively, centered their activities on the hauling of high-value products, often over short distances, and left cumbersome and low-value cargo to the trains. As a result, railway freightage would continue to expand throughout the post-revolutionary period, while passenger travel on the trains would enter a progressive decline.

This chapter examines the influence of users as shapers of infrastructure design and mobility, and argues that private motorists, bus lines, and small-scale trucking operations did not only grow up alongside the federal road-building program, but shaped its spatial logic and altered the character of motorized travel in Mexico for decades to come.

The Automobile and National Tourism

During the years immediately after the Revolution, the practice of leisurely motoring by the recently wealthy and the surviving Porfirian elite expanded dramatically, due largely to the new abundance and affordability of automobiles. These pleasure-seekers continued the late Porfirian boom in excursioning that had led Mexican citizens to trek out to remote locales of cultural, historical, and natural interest, from mountaintops like the Nevado de Toluca and the Popocatépetl volcano, to the Pyramids of Teotihuacán and the Desierto de Los Leones. Soon they were not only driving around their chic suburban neighborhoods and nearby recreational

destinations, but heading well beyond the confines of cities on jaunts into the countryside as they searched for cultural and natural curiosities as well as refuge from congested urban environs.

Growth in domestic tourism coincided squarely with the fluid, unpredictable years of early post-revolutionary reconstruction. In this context motor excursioning was quickly imbued with the vibrant cultural nationalism that flourished in the aftermath of the decade-long upheaval. Rural folkways, indigenous arts and crafts, pre-Hispanic motifs, and pastoral landscapes had begun to proliferate not only in the murals of Diego Rivera, but had drawn the attention of Mexican folklorists like Dr. Atl and anthropologists like Manuel Gamio. Similarly, upper and middle class consumers began to exchange their old Parisian furnishings for new and "typically" Mexican decorations, including tapetes, woven fabrics, and hand-made pottery.[451]

Much as Rivera would use photographic cameras to capture scenes he later painted through archaic methods of fresco, automobile tourists blended the use of modern machines with the pursuit of the past.[452] Heading out into the countryside as amateur collectors of folkways and seekers of *lo mexicano*, tourists captured typical *paisajes* through the use of modern photography. Indeed, the motoring magazine El Automóvil en México frequently included advertisements for Kodak cameras, replete with illustrations depicting the use of photography during countryside auto excursions. Like the real estate developers who had sought to fuse the urban and the rural in their "garden" suburb designs, automobile tourists pursued a pastoral ideal during their countryside outings even as they happily embraced the most modern conveniences at their disposal. At pleasant getaways like the "Gran Hotel y Restaurant" in San Angel, for

[451] See for example, Helen Delpar, "Mexican Culture, 1920–1945," in Michael C. Meyer & William H. Beezley, eds., *Oxford History of Mexico* (New York: Oxford University Press, 2000): 543–72; Helen Delpar, *The Enormous Vogue of Things Mexican: Cultural Relations Between the United States and Mexico, 1920–1935* (Tuscaloosa: University of Alabama Press, 1992); Rick López, *Crafting Mexico: Intellectuals, Artisans, and the State after the Revolution* (Durham: Duke University Press, 2010); Mary Kay Vaughan and Stephen E. Lewis, eds. *The Eagle and the Virgin: Nation and Cultural Revolution in Mexico, 1920–1940* (Durham: Duke University Press, 2006).

[452] On Rivera's use of cameras see Rubén Gallo, *Mexican Modernity: The Avant–Garde and the Technological Revolution* (Cambridge: MIT Press, 2005), 43.

example, they could enjoy open spaces and plenty of parking alongside the mechanical melodies of a "fotoplayer musical apparatus" that played up to 18 Jazz Band instruments at once.[453]

The peculiar relationship between the modern/urban and the traditional/pastoral during the early post-revolutionary period was also evident in the tourists' motivations for fleeing the city. During the 1920s provincial touring allowed the wealthy and upper middle classes to escape the underside of life in the increasingly complex and populated capital. Although the wealthy had found refuge in new suburbs, the proliferation of transportation options within the capital led to a constant flouting of socio-spatial divisions. Meanwhile, the disconcerting consequences of urban expansion were revealed in, among other things, the emergent discourse on the "pelado," a type of urban "bum" characterized by Samuel Ramos as the "human detritus of the big city."[454] With little sense of irony, however, pleasure-seeking motorists looked to the very countryside from which these recent rural migrants had arrived, in search of rejuvenation.

Although sites like the Villa de Guadalupe, Xochimilco, Los Viveros, Las Fuentes Brotantes, Chapultepec, and the Desierto de los Leones had become frequent destinations on the itineraries of tourists, soon motorists set about lobbying public authorities for help in rebuilding roadways to more remote locales.[455] One of the more influential advocates of leisure travel during these years was the magazine El Automóvil en México, a publication that also established one of the first post-Revolutionary auto clubs, the Automóvil Club de México. Initially founded in 1907 by English auto enthusiast A.R. Hogg, the magazine had been taken over by Rafael Aldúcin (later director of Excélsior newspaper), and then acquired by Gustavo Alaña in 1918. By 1923, the publication claimed to have a few thousand subscribers, up from three only five years before, and by 1928 there were 25,000 issues of the magazine circulating. By March 1923, El

[453] "Hacienda de Guadalupe Inn," *El Universal Ilustrado*, September 8, 1921, 57.
[454] Samuel Ramos, *El perfil del hombre y la cultura en México* (Mexico: Espasa–Calpe Mexicana, 1988), 55.
[455] Jacobo Dalevuelta, "Los paseos campestres de la ciudad de México," *El Universal Ilustrado*, July 7, 1921, 20.

Automóvil en México had completed an extensive surveying effort, producing a total of 23 road maps, and in October participants established the Asociación Automovilística Nacional (National Automobile Association) in order to continue fighting for "the rights of automobilists."[456]

In addition to advocating on behalf of auto importers and encouraging the construction of good roads, El Automóvil en México became an active promoter of excursioning in rural areas as it populated magazine issues with critical information on provincial roadways and appealing destinations beyond the capital.[457] Throughout the 1920s the publication featured recollections and images of auto excursions into the countryside, discussions of rural road conditions, and recommendations on sites of particular interest. Meanwhile, articles appealed to the wealthy and emergent middle class's desire to see the nation's natural wonders, to view the ways of traditional peasants and indigenous peoples, and visit the relics of the colonial and pre-Columbian past. In so doing the magazine did much to help map and catalogue the cultural geography of an increasingly esteemed rural world, and thus became an active participant in the larger post-Revolutionary effort to expand the visibility of the rural nation.

El Automóvil en México confirmed its pastoral orientation by frequently illustrating its covers with representations of ostensibly rural people and folkways. The May 1925 issue, for example, featured a girl with long braids, replete with traditional skirt and indigenous blouse (huipil), pulling back a curtain to reveal a representation of the Palace of Fine Arts. Next to her appeared an eagle and a cactus, two unmistakable emblems of the nation.[458] Other images that commonly appeared in the magazine included the famous chapel in Cholula, Puebla, the Chichén Itzá and Mitla ruins, photographs of charros (cowboys), and the snow-covered Popocatépetl volcano. Together these icons reproduced easily recognizable tropes of Mexicanness, which,

[456] *El Automóvil en México,* October 1923, 9.
[457] *El Automóvil en México*, September 1921, 20.
[458] *El Automóvil en México*, May 1925, n.p.

while predating the Revolution, had nevertheless become increasingly common during the 1920s as part of the revival in traditional Mexican culture.

In the meantime, touring in the countryside was imbued with ethnographic significance as discussions emphasized the ability to use motoring in order to learn about the country's various racial and linguistic groups. Pseudo-anthropological discussions on questions of racial and cultural evolution filled issues during these years, and on the May of 1928 cover readers encountered a young boy holding a small guitar and wearing a belt with a set of arrows, with a caption stating: "A type of Huichol indian that populates in great extensions the states of Jalisco and Nayarit. This race of indians, which is still purely preserved in the departments of Totatiche and Mezquitic, speaks the Huichola or Huichichil language." Meanwhile, in December 1927, the magazine published a series of pictures captured along Mexico City–Acapulco road, one of which featured a tourist next to an afro-Mexican man and several children.[459] The caption confirmed the anthropological significance of the photograph, advising readers that "If the natural beauties along with numerous other interesting aspects were not a sufficient motive to stop off on any spot along the road to Acapulco, we publish here these photographs to show that the aficionado in historical studies will find numerous reasons in which to put to test his erudition, since he will constantly have occasions in which to discover archaic humanities and lost cultures, ancient customs, primitive clothing, etc., etc." As the decade came to an end, in March 1929, the publication offered a series of images from the Isthmus of Tehuantepec, which depicted a group of local women and a caption that stated: "The traveler interested in typical spectacles and in local color will find great pleasure in the village curiosities and the customs of the local natives. In the region of the Isthmus de Tehuantepec, in addition to Spanish,

[459] *El Automóvil en México*, May 1925, n.p.

Tehuantepecano, Chontal, Trique, and Suave are spoken."[460] The magazine thus conveyed to readers and would-be tourists that pleasure driving in rural Mexico would prove to be not only enjoyable but also provided the prospect of learning about idyllic folkways.

Of course promotion of rural touring was not the exclusive province of private advocates, but attracted the attention of the Mexico's budding social scientists and progressively-minded reformers employed by the federal government. Indeed, automobile tourism captured the interest of father of Mexican anthropology, Manuel Gamio. Discussing the Department of Anthropology's work at the Valley of Teotihuacán site, Gamio predicted that as tourists were attracted to the "archeological monuments" of the region, they would furnish locals with a needed source of income. To promote visits to the pre-Hispanic site, the Department encouraged the construction of "a wide automobile highway" between the capital and Teotihuacán, a bridge over the Oxtotipac River, and a new train station along the Interoceanic Railroad. In the meantime, the department helped to establish several workshops "to exploit the natural resources of the region." Clays were gathered to produce porcelain, glazed tiles, and "polychrome ceramics, with typical Indian designs," while Gamio found that there was "an excellent market" for obsidian jewelry and silver-inlaid objects. Meanwhile, the Department developed guidebooks, descriptive pamphlets, and carried on an "extensive publicity campaign with very brilliant results." By the winter of 1922–1923, an average of 500 visitors had begun to arrive daily, injecting an estimated 15,000 pesos per month into the local economy.[461]

Although the alliance between anthropology and automobility constituted one of the more striking features of rural tourism promotion during the 1920s, advocates also characterized motoring as a way of promoting geological and ecological knowledge. In one such case, during

[460] *El Automóvil en México*, March 1929, 19.
[461] Manuel Gamio, "The Present State of Anthropological Research in Mexico II," *Bulletin of the Pan American Union* 59 (January–December 1925): 23–4

1922 the Instituto Geológico de México published *A la caverna de Cacahuamilpa en automóvil*. The cavern system, located in the Alarcón, Guerrero, near the border between Morelos and the State of Mexico had recently been linked to the Capital by "an automobile road that makes access to this picturesque site easy." Following an initial excursion to the cave by the "Centro de Ingenieros," the professional association had sponsored construction of the route.[462] In similar fashion, guides produced by the National Highway Commission during the 1920s like *Guía histórica y descriptiva de la carretera México–Acapulco* (1928), written by the civil engineer and historian J. R. Benítez, emphasized the association between exploration of natural features in the landscape with the practice of leisurely motoring.[463]

In the meantime, advertisements produced by the country's auto dealers emphasized the use of motorcars as tools for the exploration of Mexico's past. The Standard Motor Company, for example, presented readers with a picture of one of its impressive four door Chryslers in front of an image of the colonial water tower of Los Remedios on the outskirts of the capital. The advertisement stated: "TWO ERAS. The Colonial Era and The Era of the Modern Automobile. The 'CHRYSLER' a perfect example of human domination over speed and mechanical energy, at the foot of the historic aqueduct tower of Los Remedios."[464]

During the 1930s, the early exploratory character of automobile tourism began to give way to more standardized travel beyond the cities, and destinations like the spring waters of "Agua Hedionda," for example, became increasingly popular. Located on the outskirts of Cuaútla, in the state of Morelos, one observer described the recreational complex as the "fashionable place for tourism" in the country. Its warm, "radioactive" waters, considered by

[462] L. Salazar Salinas, *A la caverna de Cacahuamilpa en automóvil* (Mexico: Instituto Geológico de México, 1922), 3, 17.
[463] J. R. Benitez, *Guía histórica y descriptiva de la carretera México–Acapulco* (Mexico: Editorial Cultura, 1928).
[464] *El Automóvil en México*, March 1925, 5.

"authorized opinion" to be unique in the country, received hundreds of thousands of visitors each year. Indeed, during 1937, over thirty-seven thousand tourists traveled to the balneario each month, a rate that continued to increase during the next year following road improvements.[465] Meanwhile, many thousands more headed further south to Acapulco during official holidays like Semana Santa and during the vacation periods granted to federal workers.

By the end of the 1920s, leisurely motoring in the countryside and between cities had become a common activity among the wealthy and upper middle classes. After 1925, when federal road construction funding was linked to gasoline consumption, the federal government would seek to encourage greater use of its expanding road network by this minority of motorists. To do so it adopted an explicit policy of linking the country's urban-based pleasure drivers. Yet as the National Highway Commission finished reconditioning the major roadways in the center of the country, entrepreneurial bus operators would quickly utilize the new infrastructure to pilfer passengers from the railways lines that covered similar routes.

On the Bus: The Rise of Intercity Transit

During the later years of the 1920s, an incipient inter-city network of buses operated by private carriers began to appear in and around the Federal District. Between 1924 and the beginning of the following decade, the number of buses in the country would grow from 4,802 to 6,261, a rate slower than that of both trucks and passenger cars. The protracted growth in these vehicles, rather than a sign of sluggish acceptance of bus travel, was in fact the consequence of the industry's early birth during the armed Revolution. By the end of the 1920s many of the buses and jitneys covering urban routes had been doing so for at least a decade. With little room for

[465] José Urban, "Camino México–Suchiate Tramo del Estado de Morelos," *Caminos: Publicación Bimestral* 1.2 (Marzo–Abril, 1938): 263, 270.

growth in congested markets like that of Mexico City, the expansion in the country's fleet of buses during these years was largely the consequence of acquisition of additional vehicles in regional cities and the rise of new inter-city bus lines. As the bus industry extended its geographical reach, ridership on the railways declined dramatically. After peaking in 1921, railway passenger traffic fell until 1932 and would only reach 1921 levels by the early 1940s.[466]

Experimentation in interurban busing had, however, begun in limited fashion prior to the road program of the Calles administration. As early as 1922 a group of Americans started running a line along the route road between Mexico City and Cuernavaca.[467] Beyond the Valley of Mexico in Baja California, Ramón Martínez requested a concession to establishment an "automobile-diligence service" between Ensenada, Mexicali, and La Bomba during 1921. Local authorities granted the concession on the grounds that, among other things, the business would be "entirely Mexican," revealing an early tendency to favor national capital in the autotransportation sector. The company planned to charge passengers 30 pesos for the trip from Mexicali to Ensenada, 20 to Tijuana, and 12 to Tecate, while 10 pesos would be charged for the trip from Mexicali to La Bomba. Martínez also intended to offer a cargo service and establish "expendios" along the roads that sold gasoline, oil, and other motoring essentials. By October of that year, however, the business had failed.[468]

Simple knowledge about the location and status of the nation's roads was woefully lacking through much of the 1920s, and when authorities considered Ramón Martínez's petition, although they confirmed that the route from Mexicali to Tecate and Ensenada was indeed a "national" road, they could not even locate the route from Mexicali and Mayor to La Bomba on

[466] Ortiz Hernán, *Los Ferrocarriles de México*, 100, 327.
[467] "World–Wide Markets for Bus Products," *Bus Transportation*, November 1922, 621.
[468] AGN, SCOP, G, Caja 281, Exp. 550/93

of the Secretariat's most up-to-date maps.[469] Although buses had quickly spread out along newly built national highways, many others endeavored to serve areas beyond the radius of government involvement. Indeed, as Frank Tannenbaum reminded observers during the mid-1920s, "anyone who knows Mexico knows that buses in Mexico travel almost where no roads exist. No driver from the United States would venture his bus on roads, at least during the rainy season, that are utilized in Mexico."[470]

With completion of the first roads by the National Highway Commission, ambitious bus companies quickly began providing services along these major corridors, and a dramatic expansion in the industry occurred during the late 1920s. Meanwhile, local, state, and the federal government alike, held a favorable attitude toward the new industry—even as it threatened to rob the railways of passengers—not least because it provided them with a new source of income in the form of vehicle taxes. By 1926, buses from Mexico City were serving Toluca, Xochimilco, Texcoco, Pachuca, Puebla, and Cuernavaca. Lines beyond the capital included Guadalajara to Ixtlán, Ixtlán to Topia, Teziutlán to Nautla, Toluca to Valle Bravo, Toluca to Tenancingo, and Iguala to Chipancingo. Meanwhile, vehicles in Tampico operated between the city and the oilfields, and as early as 1926 agencies had also been established in Acapulco in anticipation of the opening of the new highway linking the pacific port to the capital.[471]

With the onset of the 1930s, Eyler Simpson would marvel that interurban bus lines were "springing up as if by magic all over the country."[472] By that time all major cities in central Mexico could be reached by bus, as well as destinations further afield such as Acapulco and

[469] AGN, SCOP, G, Caja 281, Exp 550/93
[470] Frank Tannenbaum, "Technology and Race in Mexico," *Political Science Quarterly* 61:3 (September 1946): 376.
[471] Herman Charles Schuette, *Motor–Bus Transportation. Part II – Canada and Latin America* (Washington: Government Printing Office, 1926), 41–45.
[472] The road to Acapulco was official opened during the following year. Eyler N. Simpson, "What Mexico Offers to the Tourist," *Bulletin of the Pan American Union* 65 (January–December 1931): 1039–1052; *Almanaque Nacional* (Mexico: Excelsior 1934).

Morelia. In 1931 passenger services between Mexico City and Puebla were being covered by 134 vehicles (mainly buses), while 93 were operating between Mexico City and Pachuca, 230 between Monterrey and Laredo, 53 between Mexico City and Toluca, and 73 between Mexico City and Cuernavaca.[473] Within three years demand was robust enough that buses were making trips every 30 minutes from Mexico City to Puebla, Pachuca, Texcoco, and Toluca, from the early morning to the late afternoon.[474]

Bus travel had become so ingrained in everyday life that when the song "Camioncito Flecha Roja" hit the airwaves in 1930, it became an instant hit. Many Mexicans no doubt identified with the sentiments expressed by the song's Guerreran composer Rafúl Krayem Sánchez when they heard radios and musical groups belting out lines like "Little Flecha Roja bus/ don't take my darling away" ("Camioncito Flecha Roja/ no te lleves a mi amor") and "Don't forget, my dear/ that you're leaving me in the station" ("no se te olvide amorcito/ que me dejas en la estacion").

The industry, however, functioned quite differently from its US counterpart. The standardized and spacious machines of the country's northern neighbor were "practically unknown" south of the Rio Grande. Only around 400 large buses that comfortably seated between 10 to 18 passengers operated in the country, eighty of which worked the routes in and around Mexico City alone. Most buses were instead of a small type that employed bus-like bodies erected atop a variety of chassis, including those of standard passenger-cars and trucks. Due to their high cost and the limited capital available to petty transport entrepreneurs, specially built bus chassis were seldom employed. The demands of crowded and narrow streets, so common in the country, meant that so-called "safety buses," built with an extra-wide wheelbase,

[473] AGN, SCOP, G, Caja 279, Exp 550/75
[474] *Almanaque Nacional*, n.p.

were not used either. Owing to the particular needs of the industry, the availability of cheap labor, a 20 percent import duty, as well as the high costs of transportation, nearly all bus bodies were built locally, a business that had grown so dramatically during the early 1920s that by the middle of the decade only around 5 percent were imported from the United States.[475]

As bus lines were established along major routes, additional small-scale entrepreneurs gathered forces to offer ancillary services. In June 1930, for example, a group of residents of Tacubaya, DF—owners of touring cars ("coches de turismo")—contacted the Secretariat of Communications and Public Works to express their desire to establish a cooperative that would transport passengers between Mexico City and the town of Almoloya in the State of Mexico. The petitioners observed that although one line reached Santiago Tianguistenco, none provided service to Almoloya. Only two cars, in fact, connected the town to the nearest bus terminal. Planning to use five seat sedans on a route from Mexico City through Ocoyoacac, Capuluac, Santiago Tianguistenco, and on to Almoloya, the group requested issuance of 15 permits. With no intention of "harming the interests" of the established bus line on the "national road" from Mexico to Toluca, they reported that they would provide only direct service to the town. Channeling the official language of reconstruction, they made their case by reminding authorities of the "indispensability of well-organized means of communications and transportation" in order to further "the progress of the pueblos," and promote "tourism in the Republic."[476]

As the residents of Almoloya were well aware, bus lines had helped to spur an expansion in leisure travel among Mexican citizens. As soon as buses began to spread out beyond cities, they offered urban residents unable to afford a private automobile of their own the chance to take part in provincial excursions. By 1934, travelers could catch a roundtrip bus on Sundays and

[475] Schuette, *Motor–Bus Transportation*, 41–45.
[476] AGN, SCOP, G, Caja 279, Exp 550/76

holidays to such leisurely destinations as El Nevado de Toluca or El Chico (Pachuca) for 5 pesos, Puebla for 4.50 pesos, El Desierto de los Leones, the Pyramids, or Zoquiapan for 1.50 pesos, Rio Frio for 2.50 pesos, Las Grutas de Cacahuamilpa for 5.50 pesos, and Molina de Flores (Texoco) for 1 peso.[477] By the early 1930s, lines had begun to organize special tours to popular recreational destinations outside of Mexico City, including Zacualtipán, el Nevado de Toluca, Tlaxcala, and Atlixco, among others. During the first three years of the decade, Flecha Roja organized 30 excursions to different destinations in central Mexico, transporting between 300 and 600 passengers on each trip. Sensitive to the new business possibilities represented by group excursions, the Alianza de Camioneros de México called on all inter-city lines (rutas foráneas) to give their full support to organizers of such activities. In addition to helping to improve the Alianza's reputation, leaders were eager to capture the new market before it was "exploited by foreign capitalists."[478] In the meantime, bus companies themselves frequently used their own vehicles to take their workers on excursions or picnics as was the case on March 5, 1933 when the employees and investors of "Auto-transportes México Iztapalapa y Anexas, S.C.I." visited "El Chico" in the State of Hidalgo where the enjoyed a lunch in the countryside.[479]

As travel costs declined and roads improved, provincial touring quickly spread beyond the wealthy and upper middle classes to the capital's unassuming laborers and lower middle class. By the early 1930s touring had become so popular that during Semana Santa (Holy Week) of 1933 around one hundred thousand people left Mexico City for such destinations as Acapulco, Veracruz, Guadalajara, and Pátzcuaro. Aiming to escape the city in search of "sun, oxygen, exoticism, and hospitality," vacationers sought what one magazine described as "deserved compensation" for the "energies they had used up in their daily work." As the Heraldo

[477] *Almanaque Nacional*, n.p.
[478] "Excursiones Mexico–Puebla 'Flecha Roja'," *Heraldo Camionero*, March 1933, 17–8.
[479] "Dia de Campo," *Heraldo Camionero*, March 1933, 3.

Camionero put it, "even if it's only for a week," escape from the city offered tourists a needed "break from their monotonous routines."[480]

Vacationing outside of the capital became so common during the later half of the 1930s that it seemed to present a safety concern. Indeed, during May 1937, two children and seven adults were killed and several others injured when a truck carrying May Day celebrants plunged into a ravine along the Mexico–Acapulco highway en route to the beach resort. The party had included mainly employees of the Interior Ministry and their families.[481] A study carried out that year found that highway accidents occurred most frequently during March, May, and December, as March coincided with Semana Santa, while May and December were vacation periods of federal employees. Around those dates accidents increased dramatically as people left the city in large numbers in search of "relaxation and distraction," employing passenger vehicles and adapted cargo trucks. The latter, as authorities found, were most dangerous since such vehicles were frequently used to transport as many as fifty or sixty people each. Crowded together, on foot or sitting down, on improvised seats, and consuming alcohol, authorities found that passengers often distracted drivers and threw vehicles off balance. Danger, it seems, was greatest for men, as they were injured or killed at three times the rate of women.[482]

In the meantime, buses—which amounted to around 8,000 by 1938—began to penetrate increasingly remote areas of the country.[483] During the later years of the decade, for example, a bus line began offering year round service over "very bad roads" from Tehuantepec to San Jerónimo, while another line covered the "rough, poorly graded road" from Tehuacán to Oaxaca.

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[480] "El Turismo Local," *Heraldo Camionero*, April 1933, 25.
[481] "9 Die in Truck Plunge in Mexico," *New York Times*, May 3, 1937, 6.
[482] "Cuando la Respiración se Corta," *Caminos: Publicación Bimestral* 1.4 (July–August 1938): 459.
[483] W. Rodney Long, *Transport Control Abroad. Recent Outstanding Measures, Trends, and Developments. Department of Commerce.* (Washington: United States Government Printing Office, 1939), 224.

[484] A decade later intercity buses, twice as many as ten years earlier, were carrying over half of the country's passengers, as only around ten percent of travelers used private passenger automobiles.[485]

Trucking

Although small-scale entrepreneurs had attempted to put hauling machines to use along interurban roadways since the first decade of the century, trucking over long distances remained a negligible activity until the mid-1930s. It lagged behind both automobile tourism and inter-city busing due in large measure to the technological limitations that prevented motor vehicles from engaging in cost-efficient, long-haul cargo transportation. By the mid-1930s, however, companies like the Cuauhtémoc and Moctezuma breweries had begun to use the new national roads to transport their high-value products to consumers. The railways, meanwhile, continued to dominate the business of moving cumbersome, low-value cargo. Indeed, throughout the first half of the century the country's trains would continue to transport the lion's share of tonnage.

Trucking's slow expansion was not for want of enthusiasm, and as soon as auto exporters began to enter the Mexican market they sought ways to encourage the use of hauling machines in everything from mining operations to agriculture and urban delivery services. During the late Porfiriato, promoters of automobility had already aimed to demonstrate the usefulness of these new contraptions, and during June of 1910 a "White" model truck garnered attention by transporting two tons of cement from Mexico City to Toluca in three hours and fifteen

[484] Herbert C. Lanks, "The Inter–American Highway," *Bulletin of the Pan American Union* 72 (January–December 1938): 700–713.
[485] William P. Tucker, *Mexican Government Today* (University of Minnesota Press, 1957), 236. In the United States, alternatively, 85 percent of traffic was covered by private passenger automobiles during the 1950s.

minutes.[486] Following the collapse of Díaz, the US automotive industry had quickly recognized the possibility of promoting trucks as tools for reconstruction of the country. Indeed, during the latter years of the decade Harry Dunn would assert that what Mexico needed was not in fact cars, but machines for the hauling: "She needs motor trucks to transport her crops and her merchandise where the railroads do not reach, great sections of the country now served only by mule-train and by slow-moving boats on the natural watercourses. She looks to the automobile manufacturers of the United States to furnish these automotive vehicles and to American distributors to put them into service." In similar fashion, during a survey of agricultural methods in the US south, Alberto García Cadena of the Department of Public Works commented on Mexico's need for a great number of vehicles in order to transport farm products to public markets, as nearly all continued to be supplied by mule trains and animal-drawn carts.[487] Finally, with the onset of the 1920s, Jaques E. Blevins of the Southern Motor Manufacturing Association would note the particular need in and around Guadalajara for trucks, as there was only one automobile for every 300 residents.[488]

Enthusiasm followed on the heals of a critical test during 1916 and 1917 when the US Army put "motor wagons" and automobiles to use during its abortive campaign to capture Pancho Villa. Denied access to the national railways by Venustiano Carranza, the American military turned to the power of internal combustion, thus providing the army with "a tactical laboratory to test the capabilities of motor trucks in an operational setting."[489] The Army set about organizing auto-truck companies, contracted drivers and mechanics from around the

[486] *El Diario*, June 20, 1910, n.p.
[487] Harry Dunn, "It's Trucks and Tractors, Not Cars, That Mexico Needs," "Many Conditions Limit Automobile Exports to Mexico," *Automotive Industries–The Automobile*, August 14, 1919, 321–323.
[488] "Mexico Offers a Broad Field," *Los Angeles Times*, March 20, 1921, VI7.
[489] Marc K. Blackburn, *The United States Army and the Motor Truck: A Case Study in Standardization* (Westport: Greenwood Publishing Group, 1996), 17.

country, and soon began accepting bids for construction of dozens of machines, including motorcycles, wrecking-machines, and other road-building utensils. The first vehicles added to the Army's arsenal were fifty-four trucks, built by the White Motor Company and the Jeffery Company, while hundreds more were later delivered to the border. Traveling in motorized wagon trains, they moved along at around fourteen-miles per hour, largely over natural roadways. Yet with little experience in such conditions, drivers frequently overworked their machines, overloaded them with cargo, and improperly maintained oil and radiator fluids, thus leaving many trucks stranded and inoperable along the desolate terrain of northern Mexico.[490]

Following the Punitive Expedition, entrepreneurs experimented with commercial uses for trucking, and during 1918 the *Tampico Auto Sales Company* began a regular motor truck service for the transport of baggage and cargo. The new service soon displaced the area's cargadores, dubbed "human trucks" by the US vice consul at Mexico City.[491] Meanwhile, in 1919, reports suggested that Richard F. Bibb of Saltillo would soon have a truck line running between San Antonio and Monterrey.[492] Others began hauling cargo more surreptitiously, and during 1920 a storeowner from Caborca, Sonora was using a 4-ton truck to smuggle an average of $20,000 dollars worth of goods into Mexico each month, while he was also known to smuggle cattle back into the United States by the same means.[493] During August of that year B.H. Zetina of Mexico City requested a concession from the Secretariat of Communications and Public Works for establishment of a "rapid communications service, easy and constant" that would link the

[490] Joseph Allen Stout, *Border Conflict: Villistas, Carrancistas, and the Punitive Expedition, 1915–1920* (Fort Worth: Texas Christian University Press, 1999), 43; Eileen Welsome, *The General and the Jaguar: Pershing's Hunt for Pancho Villa: A True Story of Revolution and Revenge* (Lincoln: Univesity of Nebraska Press, 2007), 182.
[491] "Where Motor Trucks Vie with Cargadores," *Motor Age*, July 4, 1918, 46; "Pulque and other Maque Products," *Bulletin of the Pan American Union* 48 (January 1919): 275.
[492] "Mexico Doubles Use of Motor Trucks," *Automotive Industries–The Automobile*, December 18, 1919, 1243.
[493] National Association for the Protection of American Rights in Mexico, "Border Smuggling Totals $20,000,000 Yearly," in *Investigation of Mexican affairs. Preliminary Report and Hearings of the Committee on Foreign Relations* (Washington: Government Printing Office, 1920), 467.

Interoceanico Railroad with the Cantón de Huatusco region in Veracruz, as he planned to offer a passenger and cargo truck service between the Chichicaxtle train station and Huatusco.[494] Meanwhile, in 1925 a SCOP inspector found residents of Aquixtla, Puebla using a Dodge truck for daily passenger and cargo transportation, but reported that the initiative was losing money as its expenses doubled earnings.[495] Much as early interurban bus lines, most of these efforts failed and nearly all trucking operations would remain largely confined to the smooth streets of cities well into the next decade.

As late as 1924, there were only 5,525 trucks in all of Mexico. Yet during the later half of the decade, as vehicle imports grew, the number expanded by three fold. As roads spread out from cities and vehicles grew into larger and sturdier machines, trucking increased dramatically, and by 1940 there were 41,935 trucks operating in the country. Less than a decade later, in 1949, they had more than doubled in number, reaching 106,321 in all. Trucks, however, could not do away with certain advantages offered by the trains, and indeed, cargo hauled on the Mexican railways grew by 55 percent (ton-km) from 1921 to 1930. Although tonnage declined during 1931 and 1932—due to the effects of economic depression—by 1933 it was picking up again and by 1934 had surpassed pre-1930 figures. Less than a decade later, by 1943, the railways were transporting twice the cargo they had a decade and a half earlier.[496]

Where truck operators left their most prominent mark was in the shipment of small, high-value goods and manufactures. During the 1930s private businesses began to purchase their own fleets of motor trucks in order to avoid having to limit production due to the limited reliability of

[494] AGN, SCOP, G, Caja 278, Exp 550/45
[495] AGN, SCOP, G, Caja 280, Exp 550/85
[496] Ortiz Hernán, *Los Ferrocarriles de México*, 333, 325; *50 años de revolución mexicana en cifras*, 100; Tucker, *Mexican Government Today*, 236.

the railroad system.[497] Having benefited directly from the National Highway Commission's propensity to construct roads between large cities, truck operators quickly captured the market for moving high-value goods between producers and urban consumers. By the second half of the 1930s, trucks were in many instances charging prices considerably below those of the trains. Between Mexico City and Puebla, for example, shipment of one ton of flour cost $9.40 pesos, while the trucks reportedly charged $5.35. Between Tultenango and Mexico City a ton of wood ("maderas corrientes") cost $7.63 pesos, while the trucks charged $4.84. Express shipment of a ton of beer between Monterrey and Ciudad Victoria cost $34.00 pesos on the train, and $16.70 on the trucks, while the same shipment from Monterrey to Laredo cost $31.80 on the train and $8.00 pesos via truck. Shipment of a ton of oranges between Yurécuaro and León, meanwhile, cost $18.80 pesos on the train and $7.65 on the trucks.[498]

Although economists like M.T. de la Peña recognized the benefits of low fairs for the public, he expressed concern over the long-run impact of the railway-trucking competition on the national economy.[499] Alarmed at the "destructive competition" produced by motorized vehicles, De la Peña called for an end to the "ruinous" contest caused by trucks, and argued for the establishment of a comprehensive plan for the construction of new railway lines and branch routes, as well as roadways that linked into the rail network.[500]

The concerns expressed by De la Peña were confirmed over the following years as trucks took over an increasing amount of cargo due to road improvements and advancements in trucking technology. Indeed, between 1938 and 1950, the number of truck companies operating along the highway from Mexico City to Laredo grew by two and a half times, while the total

[497] M. T. de la Peña, "La Expropiación de los Ferrocarriles Nacionales de México," *El Trimestre Económico* 4.15 (1937), 216, 225–6.
[498] M. T. de la Peña, "Crítica de las Tarifas Ferrocarrileras," *El Trimestre Económico* 4.13 (1937), 20–1.
[499] Ibid.
[500] De la Peña, "La Expropiación de los Ferrocarriles Nacionales de México," 216, 225–6.

number of trucks in operation expanded by six and a half times. Around mid-century, estimates suggested that trucks were hauling around the same tonnage as the trains, or 20 million metric tons annually. One firm, Express Anáhuac, hauled more than 8 percent of the total ton-kilometers shipped by the National Railways each year.[501] By 1950, 123 trucking companies operated on the federal highways, while 12,778 permits covering one vehicle each had been issued to owners of private trucks for the hauling of their own goods. [502]

The shift to trucking was motivated in large measure by the inefficiency of the railways and the coincident technological advancement in heaving hauling machines. Although often more expensive, the use of trucks saved money for investors and shippers, as they were faster, while cargo shipped was less susceptible to damage or pilfering. In the meantime, shippers incurred less interest on their investment, turnover of capital at a faster rate, and they wasted less time and money engaged in litigation with the railroad over damaged or stolen items.[503]

Conclusion

By the early 1940s the post-revolutionary federal government had spent around two decades building roads with the express objective of crushing rural and regional isolation. Yet as engineers Salvador Galindo Navarro and Ramón Domínguez Cuevas found, the vast majority of national roadways had passed through zones "of least productivity" and low population density. As a result, some of the roads built did not even generate enough income from the gasoline tax to pay for their conservation. The two engineers, members of the Bureau of National Highways,

[501] Tucker, *Mexican Government Today*, 236; Raymond J. Barret, "Bus and Truck Transportation in Mexico," *Foreign Commerce Weekly*, December 17, 1951, 3–5. During the final years of the 1940s, truck sales increased more rapidly in the north than in the rest of the country. In the state of Chihuahua, for example, privately owned trucks grew by nearly 200 percent from 1944 to 1950, while they grew by 135 percent in Tamaulipas. Although residents of northern states made up 13 percent of the country's total population, they owned 30 percent of its trucks.
[502] Raymond J. Barret, "Bus and Truck Transportation in Mexico," *Foreign Commerce Weekly*, December 17, 1951, 3–5.
[503] Ibid.

centered their critique on the Laredo highway, which had cost the federal government dearly and taken over a decade to build. Its construction, they argued, had clearly been shaped by motivations of a "political character," but was also informed by the lack of proper planning and the "excessive importance" given to tourism. To be sure, the tourist industry had injected a considerable amount of money into the economy, yet, as they argued, it remained unstable. Traffic on the Mexico City–Laredo route had also been weaker than other main roadways, having remained practically stable since 1938. While authorities found a 30 percent increase in traffic on the highway to Guadalajara during 1940, 6 percent on the highway to Acapulco, 17 percent on the highway to Puebla, and a 10 percent increase on the highway to Suchiate, traffic on the Laredo road had only grown by two percent. All other roads registered a greater number of vehicles per kilometer during the same year. While 462 vehicles per kilometer covered the Laredo road each day, there where 587 to Suchiate, 597 to Guadalajara, 792 to Acapulco, and a spectacular 1030 to Puebla. Along all roads except the highway to Acapulco, trucks constituted the smallest percentage of traffic on the Laredo route.[504]

Rather than aiding in the densification of transportation infrastructure and the expansion in mobility for the bulk of Mexican citizens, the federal roads largely acted to simply increase the efficiency of cargo transportation along corridors already served by the railways. Even along the Laredo line, a "freight fee war" had been unleashed that led to a decline in the costs of shipping cargo. In the meantime, passengers headed out over the national highways in buses, along many of the same routes first covered by the railways during the nineteenth century. The privileged attention to interurban routes in central and northern Mexico had its most striking effect in regions far from the railway network. These areas, desperate for good travel facilities,

[504] "Estudios Previos para la Construcción de Caminos," Ponencia de Salvador Galindo Navarro y Ramón Domínguez Cuevas del Departamento de Proyectos y Construcción de la Dirección Nacional de Caminos de la República de México, AGN, SCOP, CPC, Caja 2, Exp. 100678, Agosto 23, 1941.

were forced to simply make do with poor, locally constructed roads, suffering from slower travel and greater shipping costs. Most lamentable, Galindo and Domínguez argued, was the situation in the "tropical" zones of the country where local residents produced agricultural products like henequen, coffee, and bananas. Although they cultivated some of the country's most important exports, the producers of tropical agricultural products continued to endure difficult transportation conditions and gain little help from the federal government. In the face of such an clear imbalance in the transportation network, the engineers wondered if the federal government would continue to "crisscross deserts with new transport lines" by building in the country's temperate and arid zones.

Chapter Seven

Motoring Among Good Neighbors

On the morning of July 1, 1936, governmental representatives and private citizens gathered on the international bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas to mark the inauguration of the long-awaited highway from the US border to Mexico City. Three decades had passed since the idea had been invoked by Venustiano Carranza and over a decade since the Mexican government had signed its ill-fated contract with the Byrne Brothers Construction Company for completion of the route. Heading delegations from their respective countries were Secretary of Foreign Relations Eduardo Hay and US Vice-President John N. Garner, while Mexican national and Travel Division chief José Tercero represented the Pan American Union.[505] The three men were joined by engineers from the Secretary of Communications and Pubic Works, American Automobile Association representatives, members of various US Chambers of Commerce, politicians from California, Texas, Arizona, and Oklahoma, the Mayor of San Antonio, and Guatemala's ambassador to Mexico. Following the morning's events, a procession of 100 automobiles headed for Monterrey where the sprawling motorcade arrived early that afternoon. The governor of Nuevo León, long-time road builder Juan Andrew Almazán, and the mayor of Monterrey greeted them, after which they attended an elaborate banquette held at the Chipinque Restaurant. The next morning the convoy continued its southward journey while taking part in various ceremonies and celebrations along the way. In the meantime, President Cárdenas had gathered state governors for lunch at the Chapultepec Castle

[505] José Tercero, "Practical Pan Americanism: The First Inter–American Travel Congress and the Latin American Good Will Tour," *Bulletin of the Pan American Union* 73 (January–December 1939): 137–150; "José Tercero–In Memoriam," *Bulletin of the Pan American Union* 73 (January–December 1939): 478–9.

and an inspection of the new roadway north from the capital. Finally, on the 4th of July, the procession of motorists arrived in the town of Atzacoalco, immediately north of Mexico City, where police bands and mariachi groups welcomed them, as well as a troop of motorcyclists that escorted the visitors to the center of the capital.[506]

The opening of the Pan American Highway to Mexico City constituted a watershed event in the history of travel in Mexico as its completion at last made motoring from the border to the heart of the nation not only possible but relatively comfortable as well. Indeed, over the following years, US car owners would flock southward in growing numbers and soon constitute the vast majority of the country's visitors. As the Banco de México found in a study of the emergent industry, the percentage of foreign tourists arriving in automobiles increased from 58 to 86 percent between 1934 and 1939.[507]

Although determined automobilists and road promoters had long sought to unite the countries via motorized travel, only under Cárdenas would their ambitions reach fruition. In a twist of fate, the sitting Mexican president would happen to be one of the most radical in the country's recent history. By the time the Pan-American motorcade arrived in the capital, an unprecedented redistribution of land to hundreds of thousands of rural families had been initiated, the state had extended significant support to workers, and reformation of the 1917 Constitution had allowed the regime to adopt a "socialist" educational model. In the meantime, the federal government pursued an interventionist economic agenda that would eventually result in the nationalization of the petroleum industry and the nation's railways. Although fear and fury abounded north of the border in response to the Cárdenista reform agenda, the regime was nevertheless greeted with a conciliatory tone from the Roosevelt administration, aided by the

[506] See *El Porvenir* July 1 to 4.
[507] Berger, *The Development of Mexico's Tourism Industry*, 45–70; Banco de México, *El turismo Norteamericano en México, 1934–1940* (Mexico: Gráfica Panamericana, 1941), 42–45.

pronunciation of the Good Neighbor Policy in 1933 and confirmed by New Dealers' active encouragement of international collaboration and cultural exchange.

While the intercontinental Pan American Highway constituted an exemplary illustration of hemispheric good neighborliness, in practice Mexico would long-remain the only country in the region within reach of US motorists except for the island nation of Cuba. The latter was made accessible following the extension of the Overseas Highway south from the tip of Florida and on to Key West. From the tiny outpost, tourists could board specially adapted ferries to Havana, capable of transporting passenger automobiles. Mexico, however, represented the destination of choice for the vast majority of Pan American motorists, and even the more adventuresome travelers aiming to traverse Latin America in its entirety—a handful attempted the feat—all began their journeys on the US-Mexico border. Physical travel nevertheless coexisted with an alternative, "virtual" form of conveyance, as promoters of Pan Americanism called on US citizens to simply dream of heading off in their motorcars from Texas to the Straits of Magellan. Indeed, James O. Spearing of the New York Times would remark as early as 1928 that "many people" had already begun "taking imaginary rides on a concrete highway that runs through their minds from Canada to Southern South America."[508]

This chapter traces the rise of real as well as imagined motoring in Mexico by foreign travelers, and its relationship to tourist industry promotion and the politics of Pan Americanism. It begins by tracing the incipient development of tourism in the country during the late nineteenth century, followed by a post-revolutionary shift to bohemian travel by a cosmopolitan group of intellectuals, artists, and radicals. During the late 1920s, an early form of mass tourism began to emerge when the Mexican state sought to attract foreign travelers in order to counteract the effects of a growing economic crisis. Under the Roosevelt and Cárdenas administrations,

[508] James O. Spearking, "At the Wheel," *New York Times*, May 6, 1928, 144.

these efforts converged with the Good Neighbor Policy and the opening of Mexico's section of the Pan American Highway. The chapter concludes with the rise of concerns over hemispheric defense due to fears of fascist expansionism in the Americas, a period in which the US government not only redoubled its road construction efforts in the region but actively encouraged leisurely motoring in "Pan America" as well.

The Origins of Foreign Tourism in Mexico

The expansion in foreign automobile tourism in Mexico during the 1930s was preceded by a decades-long history of leisure travel south from the United States, which left an indelible mark on later tourist practices. During the late nineteenth century foreign visitors had begun to arrive in the country in greater numbers, due in large measure to improvements in oceanic and railway travel facilities. Consciously following in the footsteps of past visitors from Hernan Cortés and Alexander von Humboldt, to Joel Roberts Poinsett and Winfield Scott, many of these leisurely pathfinders embarked on international visits in order to see expatriate family members or to engage in business and commerce, as the new practice grew up alongside an expansion in foreign business activities in the country.[509]

The growth in leisure travel as well as expatriotism produced an explosion in travel writing, and new monographs, memoirs, and guidebooks were rolled out each year during the two decades surrounding 1900. Although William H. Prescott's *History of the Conquest of Mexico* had long been required reading for visitors, soon, would-be tourists were able to purchase dozens of meditations on Mexico's past and present, as well as practical information on lodging, cost of living, etiquette, railway timetables, ticket costs, and immigration

[509] On Mexico in the writings of travelers, see Jürgen Buchenau, *Mexico Otherwise: Modern Mexico In The Eyes Of Foreign Observers* (Albuquerque: University of New Mexico Press, 2005).

requirements.[510] Modern guidebooks began to appear, including such essential titles as *Terry's Mexico: Handbook for Travelers*, *Campbell's New Revised Complete Guide and Descriptive Book of Mexico*, *Appleton's Guide to Mexico*, and *Fitzgerrell's Guide to Mexico*. In order to further encourage southward travel, railway companies offered prospective visitors additional publications, including the Pennsylvania Railroad's *Tour to Mexico: Affording Four Weeks in the Land of the Aztecs* (1891) and the Mexican Central Railway Company's *Mexico?: Sí, Señor* (1893).[511]

Almost invariably travel writers presented the nation as a land fundamentally different from the United States or Western Europe. As Charles Reginald Enock would remark, "In many respects it is an atmosphere of charm and interest which the traveller encounters in Mexican life, especially if he has recently arrived from among the prosaic surroundings of Mexico's great northern neighbor, the United States. Indeed, the transition from the busy Anglo-Saxon world which hurries and bustles in strenuous life northward from the Rio Grande, to that pastoral and primitive land of Spanish-America is as marked as that between Britain and the Orient."[512] To be sure, writers frequently employed comparisons with the "orient," while many onlookers began to describe Mexico as a close-to-home "American Egypt" or an "Egypt of the New World."[513]

In similar fashion foreign observers regularly characterized a journey beyond the Rio Grande as nothing less than time travel. Writing in 1909, Enock found that upon crossing the

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[510] On the use of Prescott's widely read book, see H.S. Stone, *Mexico City: An Idler's Note–book* (Chicago: H.S. Stone & Co., 1901), and for a later example, Sir Robert Hugh Kirk Marett, *An Eye–witness of Mexico* (New York: Oxford University Press, 1939).

[511] Pennsylvania Railroad, *Tour to Mexico: Affording Four Weeks in the Land of the Aztecs* (Philadelphia: Allen, Lane & Scott, 1891); Mexican Central Railway Company, *Mexico?: Si, Señor* (Boston: Collins Press, 1893).

[512] Charles Reginald Enock, Mexico, *Its Ancient and Modern Civilisation, History, Political Conditions, Topography, Natural Resources, Industries and General Development* (New York: Charles Scribner's Sons, 1919, 5th Edition)

[513] Reau Campbell, *Mexico: Tours Through the Egypt of the New World* (New York: C.G.Crawford, 1890); Channing Arnold and Frederick J. Tabor, *The American Egypt: A Record of Travel in Yucatan* (London: Hutchinson & Co., 1909).

boarder one left behind the twentieth century and moved "back in time some hundreds of years—a change, it maybe said *en passant*, which is not without benefit, and attractive in some respect." Visitors could escape the "aggressive struggle for life," and arrive in a place where acquisition of wealth was "not necessarily the only business of all men and all nations; for the patient *peon* lives in happiness without it."[514]

The timeless, static world depicted in travel literature coexisted, nevertheless, with a distinct awareness that the Porfirian era had constituted a period of rapid modernization. Mexico City was customarily depicted as a progressive capital, not so much of the US variant, but rather "Americo-Parisian." Visitors praised its handsome public buildings, wide boulevards, parks, and "historical and foreign colour," while they admired the "order and progress" achieved under the hard-fisted but prudent guidance of Díaz.[515] Indeed, titles appearing during these years channeled a triumphalist narrative promoted by the Porfirian administration as they characterized the country as a "Wonderland of the South" and a nation "Coming Into Light."[516]

Following the interruption in travel brought about by the revolutionary violence of the 1910s, as peace began to be reestablished under Obregón and later under Calles, foreign visitors quickly returned to the country. Musings on the country's exotic aspects and its fundamental difference from anything encountered in the US were, meanwhile, imbued with new meanings shaped by the events of the preceding decade. Not merely the Mexico of the early 1920s, but much of the world as well, had been radically altered. The First World War had devastated Europe and challenged the continent's status as *the* center of civilization, while Russian

[514] Enock, *Mexico, Its Ancient and Modern Civilisation*.
[515] Ibid.
[516] William English Carson, *Mexico: The Wonderland of the South* (New York: The Macmillan Company, 1909); Charles Macomb Flandrau, *Viva Mexico!* (New York: D. Appleton and Company, 1908); Owen Wallace Gillpatrick, *The Man who Likes Mexico: The Spirited Chronicle of Adventurous Wanderings in Mexican Highways and Byways* (New York: The Century Company, 1912); John Wesley Butler, *Mexico Coming Into Light* (Cincinnati: Jennings & Graham, 1907).

revolutionaries had begun to put into practice radically different notions of economic and social organization. Avant-garde artists, in the meantime, had begun to question the assumptions of what constituted art, literature, and music, while the emergent vogue of primitivism sent observers to Africa, the Americas, and Asia in search of intellectual inspiration.[517] Finally, the Mexican Revolution itself had captured the imagination of artists, thinkers, bohemians, and social reformers in both Europe and the Americas, while the nation's capital became a hub for radicals, revolutionaries, and exiles from around the hemisphere and beyond.[518]

The diverse cast of characters that arrived in Mexico City during these years included such figures as Carleton Beals, Joseph Freeman, Frank Tannenbaum, Frances Toor, Anita Brenner, Langston Hughes, Waldo Frank, Edward Weston, D. H. Lawrence, Robert Haberman, Ernest Gruening, Tina Modotti, Bertram and Ella Wolfe, Jean van Heijenoort, Andre Breton, Aaron Copland, Leopold Stokowski, John Dewey, Eyler Simpson, Winold Reiss, and Robert Redfield, to name only the more well known visitors.[519] Their sympathy with the aspirations of the Revolution filled their writings, while many allied with local artists, intellectuals, and literary figures. Bertram and Ella Wolfe made friends with Diego Rivera, Salvador Novo took John Dos Passos on a tour around central Mexico, Aaron Copland collaborated with Oscar Chávez, and Langston Hughes befriended Carlos Pellicer.[520] Together they began to forge new visual, acoustic, and textual representations of the nation and its people, which soon spread out along

[517] On primitivism in the Americas, see Fredrick B. Pike, *The United States and Latin America: Myths and Stereotypes of Civilization and Nature* (Austin: University of Texas Press, 1992), 235–6.
[518] Barry Carr, "Radicals, Revolutionaries and Exiles: Mexico City in the 1920s," *Berkeley Review of Latin American Studies* (Fall 2010): 26–30; Delpar, *The Enormous Vogue of Things Mexican*.
[519] Mauricio Tenorio Trillo, "The Cosmopolitan Mexican Summer, 1920–1949," *Latin American Research Review* 32.3 (1997): 224–242.
[520] Bertram D. Wolfe, *The Fabulous Life of Diego Rivera* (New York: Stein and Day, 1963); Rubén Gallo, "John Dos Passos in Mexico," Modernism/Modernity 14.2 (2007): 329–45; Elizabeth Bergman Crist and Wayne D. Shirley, *The Selected Correspondence of Aaron Copland* (New Haven: Yale University Press, 2006); Arnold Rampersad, *The Life of Langston Hughes: Volume I: 1902–1941, I, Too, Sing America* (New York: Oxford University Press, 2002), 47.

transnational intellectual channels that stretched throughout Europe and North and South America.

Following nominal improvements in travel facilities and political stability during the late 1920s, the peculiar cosmopolitanism of the immediate post-revolutionary period began to give way to an incipient form of mass tourism. Although the automobile age had begun to make its presence felt in many cities and certain rural areas, motoring from the US border to the center of Mexico remained the stuff of daredevils and expeditionaries. Not only were the roads in poor condition or simply non-existent, but tales of pervasive banditry had long filled the pages of US dailies and magazines, further dissuading motorists from venturing beyond the beaten path.[521] The train and the steam ship thus constituted the only effective means by which to get to the country's capital until the 1935 opening of the Laredo–Mexico City highway.

In the meantime, popular treatments of the country began to hit the presses in the US and beyond, functioning as handbooks to a nation increasingly accessible to the curious traveler. The intense intellectual exchanges of previous years had done much to lay the groundwork for this shift in foreign travel, and the bohemians of old helped to give way to the new guidebook-toting tourists. Tannenbaum's close acquaintance, Stuart Chase, for example, penned *Mexico: A Study of Two Americas*, which quickly became a bestseller in the United States. Meanwhile, expatriate intellectuals like Anita Brenner and Frances Toor, would eventually write guidebooks of their own. Brenner's *Your Mexican Holiday: A Modern Guide* first appeared in 1932, and revised editions were printed until the end of the 1940s.[522] Not to be outdone, Frances Toor, who had first made a name for herself as the editor of *Mexican Folkways* magazine, published *Guide to*

[521] See for example two of hundreds of reports on banditry during the 1920s and 1930s reported on by the New York Times. "25 Bandits Raid Town in Mexico," *New York Times*, November 3, 1926, 24; "Mexico City Express Wrecked by Bandits," *New York Times*, March 21, 1932, 34.
[522] Anita Brenner, *Your Mexican Holiday: A Modern Guide* (New York: G. P. Putnam's Sons, 1932)

Mexico: Compact and Up-To-Date (1934) and *Frances Toor's motorist guide to Mexico* (1934), followed by *Spanish for your Mexican Visit* during the following year.[523] These former trailblazers, attentive to the complexity of the country, slowly began to reduce what Tannenbaum had once called Mexico's "so many sided[ness]" into a series of easily recognizable iconic images and simplistic tropes.[524]

Others, of course, resented the expansion of mass tourism and its consequences. During 1931, Katherine Anne Porter, the American writer who had first arrived in Mexico during the Madero administration, reviewed Chase's book for the *New Republic* magazine. In her appraisal of the fantastically popular volume she offered a sobering declaration. "Mexico," she announced, "is not really a place to visit any more, or to live in." The "uproar of publicity," she lamented in a review the magazine deemed unpublishable, had done much to "change, commercialize, [and] falsify" the country. The reservations of skeptic like Porter, however, had little practical impact, as the tourist expansion would continue apace over the following decades.[525]

Tourism and the Mexican State

Although she leveled much of the blame for Mexico's adulteration on the American tourist—"They swarm over the place and tear the heart out of it like a plague of locusts"—by the time Katherine Anne Porter offered her remarks, the Mexican federal government had spent around

[523] Frances Toor, *Guide to Mexico: Compact and Up–To–Date* (Mexico: El Bufete, 1934); Frances Toor, *Frances Toor's motorist guide to Mexico* (Mexico: Frances Toor studios, 1938); Frances Toor, *Spanish for Your Mexican Visit* (Mexico, 1935).
[524] *The Survey*, May 1, 1924, 129. On the development of Mexican stereotypes, see Ricardo Pérez Montfort, *Expresiones Populares y Estereotipos Culturales en México, Siglos XIX y XX: Diez Ensayos* (Mexico: CIESAS, 2007).
[525] Originally submitted for publication in the *New Republic* for its September 1931 issue. "Parvenu… Review of Mexico: A Study of Two Americas by Stuart Chase," in *Uncollected Early Prose of Katherine Anne Porter*, eds. Ruth M. Alvarez and Thomas Francis Walsh (University of Texas Press, 1993), 252–255.

three years engaged in an aggressive campaign to attract foreign visitors, largely from the United States.

The transformation of the state into a promoter of tourism had its origins in an economic crisis that began to sweep over Mexico during the late 1920s. Well before the Wall Street stock market crash of 1929, the Mexican economy had begun to show signs of decline. After a half-decade of favorable economic growth, export earnings began to fall dramatically, and from 1925 to the end of 1927 bank reserves were nearly cut in half, dropping from 135 million pesos to 73 million. By August 1928, the federal government defaulted on interest payments on its foreign debt, and as the treasury was emptied, spending on public works declined and payments to the armed forces were effectively frozen.[526] Traditional exports, meanwhile, appeared to hold out little hope of quick recovery, as agricultural production suffered from stagnation, mining was in crisis, manufacturing remained restricted, and petroleum prices had fallen off greatly.

In order to generate needed foreign exchange and encourage economic diversification, the federal government turned to the US tourist. For some time motorists had crossed the nation's southern border, and towns like Tijuana, Mexicali, and Agua Caliente had become popular destinations on the itineraries of pleasure-seekers. Yet travel to Mexico continued to pale in comparison to the United States' other neighbor, Canada. Although William L. Cooper of the US Bureau of Foreign and Domestic Commerce would observe that Americans had become "the greatest travelers in the world"—indeed, they were expending nearly 840 million dollars a year (1929) on foreign travel—to the dismay of Mexican officials only as small fraction (46 million

[526] Jean Meyer, "Mexico: Revolution and Reconstruction in the 1920s," in *The Cambridge History of Latin America, C. 1870 to 1930*, ed. Leslie Bethell, (Cambridge: Cambridge University Press, 1986), 175–7.

dollars) flowed southward each year. Annually US citizens spent over five times more in Canada—a country with a notably short tourist season—than they did in Mexico.[527]

In this context, during 1928 the Portes Gil administration inaugurated a new Pro-Tourism Commission aimed at streamlining immigration, health, and customs requirements for visitors. In April, the federal government sponsored a First National Tourist Congress, held in Mexico City, which coincided with the country's Third National Road Congress. During the summer of the following year, the president decreed the establishment of a permanent Mixed Pro-Tourism Commission, headed by the Secretary of Interior. Finally, following the forced departure of Portes Gil, newly inaugurated President Pascual Ortiz Rubio formed the National Tourist Commission during March 1930, presided over by representatives from government and business. Its duties included coordination of local tourist organizations, provision of "every protection" to travelers, and the simplification entrance requirements, while it would also lead an international advertising campaign and direct promotional efforts by consuls and commercial agents. In the meantime, the Federal Government created visitor information centers and encouraged hotel building. Based out of Mexico City, the new federal entity was funded through a 200,000-peso a year subsidy, in addition to donations, fees collected from visitors to public monuments, and the proceeds from advertising along the national highways.[528]

Private interests and local authorities, meanwhile, engaged in their own campaigns, and by the end of the 1920s cities such as Juárez, Tampico, Cuernavaca, and Durango, among others, had established a series of local tourist commissions. During the summer of 1929, for example,

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[527] Herbert M. Bratter, *The Promotion of Tourist Travel By Foreign Countries. U.S. Department of Commerce. Trade Promotion Series–No. 113* (Washington, D.C.: United States Government Printing Office, 1931), 1–2.
[528] Bratter, *The Promotion of Tourist Travel By Foreign Countries*, 1–2, 43–45; Eyler N. Simpson, "What Mexico Offers to the Tourist," *Bulletin of the Pan American Union* 65 (January–December 1931): 1039–1052; Alex Saragoza, "The Selling of Mexico: Tourism and the State, 1929–1952," in *Fragments of a Golden Age: The Politics of Culture in Mexico Since 1940*, eds. Gilbert Michael Joseph, Anne Rubenstein, and Eric Zolov (Durham: Duke University Press, 2001), 101.

Tampico residents organized a "Tampico for Tourists" movement following widespread concern over the economic downturn in the petroleum industry. Meanwhile, in Ciudad Juárez, the city government began to regulate visitor services by placing all tour guides under bond "in order to make the visits of the tourist more safe." The trade, which had quickly developed into one of the city's more important industries, was estimated to have generated 1.9 million dollars during 1929. To the west, in Baja California, authorities established a Department of Commerce, Industry, and Tourist Traffic and sought to eliminate inconveniences faced by travelers at the border. The city of Durango, in the meantime, organized a "pro-tourist" committee during early 1930, concentrating its activities on improving local highways and encouraging the construction of a modern hotel through the extension of tax breaks to investors. Around Guadalajara representatives from the Cámara Agrícola Jalisciense, the Comité Pro-Turismo, the Auto Club Occidental, the Guadalajara Rotary Club, Jalisco Motors Company, and the Compañía Manufacturera de Artefactos Metálicos formed a Junta Local Pro-Camino México–Guadalajara during October 1929. Automobile clubs, which had first encouraged leisurely touring among Mexican nationals, shifted their attention to the United States, and during 1929 motoring interests in Monterrey established the Mexican American Automobile Association (Asociación Automovilística México Americana, AAMA), later renamed the Mexican Automobile Association (Asociación Mexicana Automovilística, AMA). Following a convention held in the same city, participants organized the Asociación México-Americana Pro Turismo Automovilística and studied entry requirements for tourists. Finally, the American Chamber of Commerce in Mexico City set about collecting funds to publish a guidebook, send photos to newspapers in the US, and produce a special radio program aimed at prospective US tourists.[529]

[529] "Se constituyó la Junta Local Pro–Camino México–Guadalajara," *El Informador*, November 2, 1929, 3; Herbert M. Bratter, *The Promotion of Tourist Travel By Foreign Countries. U.S. Department of Commerce. Trade*

By the beginning of the next decade the transformation in official thinking was unmistakable, and as Elyer Simpson observed, Mexico had "begun to awaken to the fact that in her sunshine, her incomparable scenery, her profusion of historical monuments, and the variegated patterns of her culture she has a treasure which may, if properly exploited, prove to be more valuable than all of her silver and copper mines and oil wells put together." With little road access to interior Mexico, however, the largest increases in tourist traffic took place within the border region itself. American consular officers found, for example, that entries along the border had increased from 32,041,8000 during 1928 to 55,642,000 in 1930. Many traveled to Monterrey by motorcar, while some had begun to venture as far as Saltillo. Meanwhile, buses had begun shuttling passengers between San Antonio and Monterrey, leaving the US daily at seven in the morning and arriving in Monterrey at five in the evening.[530]

Although the National Railways had improved rolling stock and cut down the running times to Mexico city by several hours, while border entry formalities had been reduced to a minimum, observers continued to emphasize that construction of national highways remained the "most important contribution to the solution of the problem of opening up Mexico's tourist market." Indeed, as the New York Times reported in 1932, Mexican officials had come to regard the road from Laredo to Mexico City "as the greatest single item" in the country's "vast plans for attracting tourists."[531]

Promotion Series–No. 113 (Washington, D.C.: United States Government Printing Office, 1931), 43–45; Eyler N. Simpson, "What Mexico Offers to the Tourist," *Bulletin of the Pan American Union* 65 (January–December 1931): 1039–1052; Dina Berger, *The Development of Mexico's Tourism Industry: Pyramids by Day, Martinis by Night* (New York: Palgrave Macmillan, 2006), 23.

[530] Eyler N. Simpson, "What Mexico Offers to the Tourist," *Bulletin of the Pan American Union* 65 (January–December 1931): 1039–1052; Herbert M. Bratter, *The Promotion of Tourist Travel By Foreign Countries. U.S. Department of Commerce. Trade Promotion Series–No. 113* (Washington, D.C.: United States Government Printing Office, 1931), 43–45; "The Pan–American Highway in Mexico," *New York Times*, February 4, 1930, 20.

[531] Eyler N. Simpson, "What Mexico Offers to the Tourist," *Bulletin of the Pan American Union* 65 (January–December 1931): 1039–1052; "Mexico to Return Railroad at Once," *New York Times*, September 26, 1932, 6.

Much work remained to be done, however, as the highway had only been surfaced with gravel as far as Monterrey by 1930. Although reports suggested that year that tourists would soon be able to "drive in comfort from the Mexican border at Laredo, Texas, right through to Mexico City," two years later engineers had only been able to extend all-weather roads as far as Ciudad Victoria. Further to the south motorists encountered a mixture of poorly graded dirt roads and "practically impassable" routes still under construction. Drivers willing to flout expert advise could travel to Mexico City—"not exactly in comfort"—by heading west from Monterrey to Saltillo, southward to San Luis Potosí, through Queretaro, and then to the capital. Yet the road was made of little more than packed dirt and during the rainy months between June and October, it became an impenetrable bog. By early 1934, confident that the decade-long effort was nearing its end, Ángel Aragón, José Rivera R., and William Harrison Furlong announced that the Pan American Highway through to Mexico City would be open for traffic in a matter of months, while a fifteen-car motorcade would inaugurate the new roadway with a road trip from Mexico City to Washington, D.C.[532]

As late as 1935, however, unfinished sections of the road continued to obstruct motorists' adventures southward. That summer, Connecticut resident Carveth Wells set out on a trip along the route after having read an article about the highway in a catalogue for covered-wagon trailers. No longer "relish[ing] the idea of roughing it," he was happy to find that one of "those new-fangled trailers" would allow him all the comforts of home. His vehicle, which he picked up in Detroit, was outfitted with a 30-gallon water tank, an ice box, cupboards, a convertible living-bedroom, bookshelves that he had loaded up with reference books dealing with Mexico and Central America, and a short- and long-wave Zenith Radio capable of receiving programs from

[532] Leon A. Dickinson, "Highway Penetrating into Heart of Mexico," *New York Times*, February 2, 1930, 134; Leon A. Dickinson, "Motoring in Mexico," *New York Times*, February 28, 1932, XX6; "To Finish Mexican Road," *New York Times*, February 4, 1934, XX6.

the US, news reports from London, and Berlin's "symphony orchestra." Like many before him, Wells "soon discovered that it was almost impossible to obtain any definite information as to the condition of the Pan American Highway." Although motor travel agencies assured him that the road was in "excellent condition," railway and ocean liner representatives insisted that it was "absolutely impassable." Others reported that the road was "littered with the wrecks of automobiles" and that bandits had stripped and cut off the ears of one party. Meanwhile, a motorist just back from Mexico City told of landslides, unbridged rivers, and dangerous detours. Heeding the diversity of recommendations, Wells decided to put his car and trailer on a ship and sail to the country.[533]

Once the highway from Laredo, Texas to Mexico City was inaugurated, travel conditions improved, and tourists commonly drove first from Laredo to Monterrey, on to Valles or Tamazunchale—dubbed Thomas-and-Charlie by Anglophone visitors—and then to Mexico City. Throughout the 1930s, however, the highway effectively ended 150 miles southeast of Mexico City in the town of Tehuacán. Travel any further required skill and a willingness to put up with poor road conditions. The stretch from Tehuacán to Oaxaca, for example, was made up of a variety of cart roads and trails, and varied "from stretches of rough, poorly graded road with native bus service, to desert trail and steep pitches with no grading." Although local road-building efforts had been taking place for some time, conditions were similarly poor beyond Oaxaca, along the route to Tehuantepec. After the 1935 inauguration, it would take another 15 years for the Pan American Highway to reach Guatemala.[534]

[533] Carveth Wells, *Panamexico* (New York: R. M. McBride and company, 1937), 25–6.
[534] Lanks, "The Inter–American Highway," 700–713; On the inauguration of the highway in 1950, see J. Brian Freeman, "'La carrera de la muerte': Death, Driving, and Rituals of Modernization in 1950s Mexico," *Studies in Latin American Popular Culture* 29 (2011).

Motoring Through the Good Neighborhood

The Mexican federal government's promotion of foreign tourism benefited from and coincided squarely with a reorientation of US foreign policy in the hemisphere. Following the tense tenure of Ambassador James R. Sheffield (1924–1927), one that included hints at military intervention and accusations of "bolshevism," Calvin Coolidge replaced the firebrand diplomat with the amicable Dwight Morrow. During October 1927 the new ambassador arrived in Mexico City where he would spend the next three years attempting to repair relations between the two countries. Within his first year he had invited Charles Lindberg to participate in a goodwill flight, begun to promote peace between the federal government and Catholic militants, and acted as an advisor on critical financial matters.[535] Morrow's efforts were consolidated and extended to the scale of the hemisphere under administrations of Hoover and Roosevelt, as both presidents publicly repudiated military intervention in the region. Adopting a term first articulated by his predecessor, in 1933 FDR pronounced his new Good Neighbor foreign policy for the region. [536]

The United States' growing diplomatic interest in Latin America was quickly followed by renewed attention to the question of inter-American transportation and communications. Aiming to make real the "non-place" of Pan America, the Roosevelt administration turned to the power of machines and the know-how of engineering experts in order to forge deeper political and commercial relations as well as "better Pan American understanding."[537] Modern highways,

[535] Russell Owens, "Lindbergh Impetus Decides Mexicans to Use Air Lines," *New York Times*, December 22, 1927, 1. On Morrow in Mexico, see Susan Danly, *Casa Mañana: The Morrow Collection of Mexican Popular Arts* (Albuquerque: University of New Mexico Press, 2002) and Rick Anthony López, *Crafting Mexico: Intellectuals, Artisans, and the State After the Revolution* (Durham: Duke University Press, 2010), 115–19.
[536] On the Good Neighbor Policy, see Fredrick B. Pike, *FDR's Good Neighbor Policy: Sixty Years of Generally Gentle Chaos* (Austin: University of Texas Press, 1995).
[537] Salvatore, "Imperial Mechanics," 662–691.

automobiles, radio, long-distance telephony, film, and aviation constituted the "hard machines" that would do the heaving lifting needed to construct Pan America's material infrastructure.[538]

It fell to the US consumer, however, to put the new infrastructure to use. Between the mid-1920s and Second World War, the White House would, with the aid of the Pan American Union, encourage Americans to help build Pan America by taking part in a host of activities from radio listening and reading to movie going and tourist travel. As Pan American Union head Leo Rowe argued in 1933, shortly after promulgation of the Good Neighbor Policy, it was "highly desirable that the people of the United States in ever increasing numbers should become better acquainted not only with the marvelous natural beauties of the countries of Latin America but should learn more of the culture of the great nations, members of the Pan American Union."[539] Listening to Latin American music, watching foreign films, studying the region's history and literature, and learning Spanish or Portuguese, all became increasingly praiseworthy pursuits in the new era of hemispheric conviviality.[540]

Of all activities, however, inter-American travel was "best of all," Henry A. Wallace declared.[541] A month after announcement of the Good Neighbor Policy, the Pan American Union had already dedicated an issue of its official bulletin to "Travel in the Americas."[542] In the meantime, the Union joined in on the boom in guidebook writing by distributing *Motoring in Mexico* (1936), while it published a series of accessible studies of countries and cities in the region, as well as books and pamphlets on national and regional dances, musical traditions,

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[538] Franklin D. Roosevelt, "Statement on the Conference of American States," in John T. Woolley and Gerhard Peters, *The American Presidency Project* (Santa Barbara, CA: University of California), http://www.presidency.ucsb.edu/ws/index.php?pid=14549 (Accessed, February 1, 2010); Salvatore, "Imperial Mechanics," 662–691.
[539] L.S. Rowe, "Travel in the Americas," *Bulletin of the Pan American Union* 67 (January–December 1933): 221.
[540] Henry A. Wallace, "Neighbors Working Together," *The Rotarian*, December 1942, 8–10.
[541] Ibid.
[542] L.S. Rowe, "Travel in the Americas," *Bulletin of the Pan American Union* 67 (January–December 1933): 221; Roosevelt, "Statement on the Conference of American States," in Woolley and Peters, *The American Presidency Project*.

holidays, and festivals.[543] During June 1935, in order to facilitate travel, delegates signed a Pan American Passport Convention during the Pan American Commercial Conference in Buenos Aires. Four years later, in 1939, the First Inter-American Travel Conference was held in San Francisco. Organized in part to encourage the simplification of passport and immigration requirements for tourists in "America as a whole," the weeklong conference was inaugurated on April 14, Pan American Day, and coincided with the Golden Gate International Exposition. That year, however, Union Travel Division head José Tercero would lament that there was "still much to be done before the current of tourist travel can move freely between the nations of America." Nevertheless he confidently anticipated that "in no far distant day the Americas will unquestionably be connected by a vast network of highways traveled by motorists in increasing numbers."[544]

Throughout the 1930s and 1940s Mexico remained the most practical (and practically the only) Latin American destination accessible to the US automobile tourist. In addition to the lack of an international roadway, travel to nearly all countries in the region required a confusing mixture of visas, passports, photos, vaccinations, pre-purchased return tickets, and exit permits, documents that usually had to be obtained prior to departure. A visit to Mexico, on the other hand, constituted "a very simple matter for tourists from the United States."[545] By the beginning of the 1940s, costs of entry had been reduced dramatically, and during 1941 a tourist card cost 81

[543] Pan American Union, *Motoring in Mexico* (Washington: Pan American Union Technical Unit on Tourism, 1936); Pan American Union, *Holidays and Festivals in Latin America* (Washington: Pan American Union. Travel Division, 1940)

[544] José Tercero, "Practical Pan Americanism: The First Inter–American Travel Congress and the Latin American Good Will Tour," *Bulletin of the Pan American Union* 73 (January–December 1939): 137–150; "José Tercero–In Memoriam," *Bulletin of the Pan American Union* 73 (January–December 1939): 478–9; Robbie P. Wakefield, *Taking Your Car Abroad: Customs Entry, Baggage Exemptions, Local Touring Regulations* (Washington, D.C.: United States Government Printing Office, 1938), 107

[545] Charles Curtis Munz, "Travel Law in Mexico," *New York Times*, Jan 26, 1941, XX8. On travel requirements for other countries during the 1950s, see Norman D. Ford, *The Fiesta Lands: Through Mexico and Central America on a Shoestring* (Greenlawn, NY: Harian Publications, 1954), 74.

cents (as little as 20 cents each for groups of ten or more), while the required car permit, issued by customs officials and the Mexican Automobile Association, cost fifty cents.[546]

Maintaining the flow of tourists was, however, more than a matter of easing entrance requirements. It required good publicity as well. Yet the reforms pursued by the Cárdenas administration, which included the extensive expropriation of foreign-held lands and their redistribution to rural families, generated an aggressive response from US business interests with a stake in the country. In addition to seeking the help of the US government, disaffected American investors and their allies quickly began to draw attention to the destabilizing effects of radical reformism in Mexico, while characterizing the Cárdenas administration as incompetent and unpopular. Shortly after the inauguration of the Pan American Highway, articles highlighting not only the threat to property posed by the actions of the Mexican federal government, but life as well began to appear in newspapers and magazines, and indeed, throughout the Cárdenas administration, reports on regional rebellion and banditry remained prominent in the US press.

The growing importance of foreign tourism demanded quick suppression of negative depictions of the country. The Mexican government benefited, initially, from the rapid response by Americans sympathetic to the Cárdenista cause. On June 30, 1936, for example, Frank Tannenbuam wrote to the Editor of the New York Times to protest a "misleading article" that described the pillaging of villages by thousands of scattered rebels operating in Mexico, information he characterized as simply untrue. He argued, instead, that the country was "more at peace" than in the previous thirty years, while it was clearly benefiting from the leadership of President Lázaro Cárdenas, "one of the kindest and gentlest of human beings, devoted to giving his people an orderly and progressive government."[547] Robert Hammond Murray quickly wrote

[546] Charles Curtis Munz, "Travel Law in Mexico," *New York Times*, Jan 26, 1941, XX8.
[547] Frank Tannenbaum, "Another View of Mexico," *New York Times*, July 2, 1936, 20.

in to the paper to defend Gordon Gordon, the author of the original article, and accuse Tannenbuam of acting as little more than a propagandist for "revolutionists."[548][549] The later would promptly inform Cárdenas of the journalist squabble and provided him with a translation of his rebuttal.[550] Later that year Cárdenas established the Departamento Autónomo de Prensa y Publicidad (DAPP), the propaganda arm of the administration, charged with shaping public opinion within and beyond Mexican borders.[551] One of DAPP's principal jobs would be to defend the Cárdenas administration from unfriendly depictions of the country in the foreign press by funding publication of informational articles in foreign newspapers, broadcasting radio announcements and programs via short-wave radio, and sending intellectuals abroad to give lectures presenting the standpoint of the Mexican state.

During 1937, the propagandistic battle unleashed by the land reform program was imbued with new concerns over conflicts between the Mexican state and foreign oil producers. That year oil companies had clashed with their Mexican employees over demands for a pay increase. The dispute eventually made its way to the Mexican Supreme Court, which ruled on March 1, 1938 in favor of the workers. When the foreign oil companies refused to abide by the decision, the Cárdenas administration nationalized their assets, which together accounted for around ninety percent of the industry's productive capacity. The affected companies quickly organized a boycott of Mexican petroleum and sought the aid of the US government, while they withdrew foreign management and technical staff from the country, prevented equipment sales to the country, and refused to lease oil tankers to Mexico.

[548] Robert Hammond Murray, "Mexico's Status," *New York Times*, July 12, 1936, E9
[549] Gordon Gordon, "Mexico Turbulent in Social Change," *New York Times*, June 29, 1936, 3.
[550] Frank Tannenbaum to Lázaro Cárdenas, AGN, Fondo Lázaro Cárdenas, Exp. 135 1/3, Junio 29, 1936.
[551] Lázaro Cárdenas, "Declaración de Motivos," AGN, RP, LC, Exp. 545.2/33, December 25, 1936.

Although the response of the US petroleum industry to expropriation has been well studied, little attention has been given to the oil industry's active intervention in the tourism industry following the quarrel. Yet as soon as Cárdenas decreed the take over of foreign petroleum firms, the US oil industry organized an aggressive campaign to dissuade Americans from visiting the neighboring nation. By discouraging tourist travel to Mexico the industry aimed to sanction the Cárdenas regime for its actions by depriving the administration of needed foreign exchange as well as revenue from gasoline consumption. Within two months following expropriation, US oil interests had begun an aggressive effort to advise motorists against travel south of the border.[552]

The rapidly expanding tourism industry had, however, begun to form a set of interests of its own within the United States, and during May 1938 W.M. Prescott Allen wrote to President Cárdenas to notify him of the oil industry's activities. Allen, owner of the Laredo Times, called the president's attention to what he described as "things that we in Laredo are able to see and conditions being created in the United States which is directly costing the people of your great country around five million American dollars per month." Noting that he had "positive evidence" that the American oil industry was using "every gasoline station in the United States" to advise "tourists not to go to Mexico as their lives will be in danger as long" as Cárdenas remained president of the country. In order to counter the initiative, the Laredo Times organized an automobile caravan to Mexico City that would leave in early June, headed by members of the Texas state highway commission, including its chairman, General Robert Lee Bobbitt. As Allen notified Cárdenas, the trip was "meant to try to help your great people by showing the tourist that they should go to Mexico."[553] In the meantime, domestic tourist interests joined in on the

[552] AGN, SG, IPS, Caja 31, Exp 10, May 20, 1938.
[553] AGN, SG, IPS, Caja 31, Exp 10, May 20, 1938.

struggle and during July 1938, manager of Hotel Reforma, Antonio Pérez O., organized a "Caravan of Good Will" that traveled form Mexico City to Atlantic City, New Jersey, where participants met with US journalists and officials and argued that Mexico was secure and open for business.[554] By the beginning of the 1940s, the new state petroleum company, PEMEX, would join the fight to promote tourism, as it produced guidebooks dealing with Mexican cultural and historical attractions and established the PEMEX Travel Club.[555]

During the final year of the Cárdenas administration, negative depictions of the regime began to emphasize the threat of fascist conspiracy in the country. During May 1940, when Ramón Beteta spoke before "businessmen" at the Town Hall Club in New York City, for example, a group of tourist promoters approached the Mexican representative and notified him of a recent wave of cancellations by visitors due to "rumors of a revolution in Mexico." Newspapers had for some time spoken of what Beteta described as an "uprising with Nazi-Communist objectives." As "absurd" as the allegations appeared to Beteta, he perceived not only the economic threat to the country such rumors represented, but feared that if tourists failed to arrive the government would lose one of its "best ways to counter rumors about instability in Mexico and to make friends." In a letter to Cárdenas he encouraged the president to publicly address questions regarding the stability of the country and "invite visitors who want to see for themselves."[556]

During the last two years of the 1930s the discursive battle over Mexico's safety and stability was increasingly shaped by geopolitical concerns associated with the buildup to the Second World War. An emphasis on hemispheric defense became all the more apparent within

[554] Dennis Merrill, *Negotiating Paradise: U.S. Tourism and Empire in Twentieth–Century Latin America* (Chapel Hill: University of North Carolina Press, 2009), 92.
[555] Berger, *The Development of Mexico's Tourism Industry*, 104.
[556] Ramón Beteta to Lázaro Cárdenas, AGN, LC, Exp. 432.2/253–9 Leg 3, Mayo 25, 1940

the Roosevelt administration, as roads, railways, radio networks, and landing strips became necessities of military preparedness. From the late 1930s through the early 1940s the US government would funnel millions of dollars into the completion of not only the Pan American Highway, but construction of airplane landing fields and other infrastructural improvements as well.[557] Yet due to Mexico's proximity to the United States and its quality as a critical bridge to Central and South America, securing the country's cooperation became critical to the larger war effort. To that end, the Roosevelt administration intensified the language of cooperation and its earlier efforts to forge greater interconnectivity between the nations.

During the year prior to the United States' declaration of war against the Axis powers, Roosevelt declared 1940 Travel America Year, and called on US citizens and "friends from other lands, to join in on a great travel movement so that our peoples may be drawn even more closely together in sympathy and understanding."[558] Mexico, again, became the destination of choice for citizens eager the head the call of the president by visiting the lands of Latin America.

That fall Mexico gained its most high-profile "tourist" when FDR designated Vice-president-elect Henry A. Wallace official ambassador to the Presidential inauguration of Manuel Ávila Camacho. On November 25, he and his wife arrived in Laredo by motorcar. Speaking with the Mayor of Laredo, Wallace boasted that the trip would greatly benefit the Mexican tourism trade, as he promised that he alone could increase the country's tourist revenue by some 35 million dollars a year. On his way southward, large crowds turned out to view the ambassador. At a gathering in Zimapán, attended by the Governor of Hidalgo, the vice-president

[557] In 1941, for example, the U.S. Congress appropriated 20 million for construction of the inter–American highway through Central America, and other 12 million two years later for the same purpose. Thomas M. Leonard, "Central America: On the Periphery," in *Latin America during World War II*, Thomas M. Leonard and John F. Bratzel, eds. (Lanham: Rowman & Littlefield, 2007), 45; F.W. James, "A Quarter Century of Road–building in the Americas," *Bulletin of the Pan American Union* 79 (November 1945): 609–18.
[558] "Travel America Year Proclaimed by FDR," *The Palm Beach Post*, January 14, 1940, 1.

was met by soldiers who lined the street and costumed girls who hurled flowers and confetti at the visitors. Speaking before the crowd, Wallace affirmed, "National Highway No.1 over which I have been traveling […] makes me think of the significance for our two peoples of the Pan-American Highway. This asphalt ribbon is symbolic of the spiritual and material ties that happily join our two peoples."[559] As the vice-president-elect continued southward, he was met at the highest point on the route to Mexico City—8,250 feet above see level—by Ambassador Daniels, Pierre Boal, Stephen Aguirre, George H. Shaw, and a variety of Mexican officials. Thirty-five vehicles joined Wallace's 15-car motorcade for the last leg of the trip. Early in the evening, they arrived at the Indios Verdes monuments, on outskirts of Mexico, where they were met by representatives of the federal government and the Federal District. Once within the city limits, however, the US delegates were met by the partisans of Mexican presidential contender Juan Andrew Almazán, as several hundred protesters followed the motorcade on its way to the US embassy.[560] Notwithstanding the initial controversy over the US government's recognition of Ávila Camacho's election, the visit helped to break much of the tension in US Mexican relations, and following Wallace's visit travel reservations by plane, train, and bus dramatically increased.[561] By the end of 1940, Thomas Lask of the New York Times reported that American tourists "will find little to worry them in motoring from Laredo to Mexico City,"[562] and during September 1941, delegates from around the hemisphere arrived in Mexico City to participate in the Fourth Pan-American Highway Congress.[563] Finally, during November of that year, the

[559] During 1939 Henry A. Wallace had already described highways as one "of the greatest culture–spreading institutions." Henry A. Wallace, "Toward an Inter–American Culture," *New York Times*, July 9, 1939, 83.
[560] Arnaldo Cortesi, "Mexicans Storm Embassy As Wallace Party Arrives," *New York Times*, Nov 29, 1940, 1.
[561] Helen Dallas, "New Era in Travel to Mexico," *New York Times*, Dec 1, 1940, XX1
[562] Thomas Lask, "On the Mexican Highway," *New York Times*, Dec 8, 1940, 191.
[563] *IV Congreso Panamericana de Carreteras. Memoria. Tomo II* (Mexico, D.F.: 1942).

United States and Mexico reached an agreement on the oil expropriation and the petroleum industry's campaign against the country came to a halt.

Throughout the war, which Mexico entered in 1942, automobile, tire, and gasoline shortages would make pleasure touring notably problematic for would be tourists, and indeed, during the war leisure travel by US citizens declined rapidly. In the absence of physical travel, however, the Roosevelt administration and their Pan Americanist allies encouraged Americans to simply imagine travel by reading of journalistic accounts and watching cinematic representations of the embryonic highway network. Herbert Lanks, who later produced a film of his own on Pan American Highway, called on automobile-owners to "Dream of getting into your motor car and driving over a continuous fine paved highway through eighteen foreign countries as inexpensively as traveling in your own United States, all within a summer's vacation!"[564] Just as Roosevelt's fireside chats of the Second World War would provide Americans with lessons in world geography, these imaginary motoring excursions through the Americas helped to popularize knowledge about a region little-known to most US citizens, while discussions of tourist road travel became opportunities to instruct Americans on the histories, cultures, economies, and political systems of their neighbors to the south. In the long run, the wartime explosion in information about Latin American functioned to place the region on the mental maps of tourists, who would engage in a boom in hemispheric travel during the post-war era.

Conclusion

The development of mass tourism in Mexico was born of the inter-war automobile age and consolidated in the midst of world war. The project had required the building of hard infrastructure like roads and bridges, the reformation of administrative practices that inhibited

[564] Lanks, "The Inter–American Highway," 700–713.

international travel, and the promotion of a knowledge project that transformed popular impressions of a Mexico of bandits and chaos into one in which tourists were safe to roam freely through exotic and pleasurable environs. By the onset of the post-war period, the necessary "hard" and "soft" infrastructures, essential to the modern tourism industry had been largely consolidated. A network of paved roads connected the United States to central and southern Mexico, entry difficulties faced by foreign travelers had been reduced to a minimum, and popular knowledge of the country had been conveniently packaged into a host of guidebooks, illustrated road maps, and tourist promotional material. Paralleling the "peace" of the early cold war, former soldiers, families, and a new generation of post-war bohemians soon spread out over the durable infrastructure of international tourism.

Conclusion

The Mechanics of Miracles

In 1950 Mexican engineers put the finishing touches on a roadway between the US and Guatelmalan borders, accomplishing what federal authorities and motoring advocates had proposed nearly a half-century earlier. In the decade prior to its completion more roads had been built in the country than in the first four decades of the century, as the highway network expanded from 10,000 to 25,000 kilometers. In order to celebrate completion of the country's two thousand-mile-long section of the Pan American Highway, that year public authorities and an assortment of private interests from the US and Mexico joined forces with the Asociación Nacional Automovilística (National Automobile Association) to organize an international automobile race.[565] On opening day, May 5th (Cinco de Mayo), forty thousand spectators gathered in Ciudad Juarez to watch racers head off to central Mexico and on to the Guatemalan border. As the aerodynamic inventions of the US automobile industry barreled down a ribbon of asphalt laid by Mexican civil engineers and racers burned fuel refined by the twelve-year-old state oil company, observers packed in dangerously close to the roadway to view what Petróleos Mexicanos (PEMEX) characterized as "another step in the aggrandizement of Mexico."[566] Meanwhile, in Mexico City, a third of the capital's five million residents—"Men, women and children, of all social classes"—settled in to await the drivers.[567] When the contest came to an end in the Chiapanecan outpost of El Ocotál (later renamed Ciudad Cuauhtémoc), drivers quickly returned to the capital in order to participate in a lavish celebration at the Hotel del Prado. Later, at the presidential palace, competitors gathered with President Miguel Alemán

[565] "Carrera Automovilística Panamericana México," AGN, RP, MAV, Exp. 606.3/235, 1949.
[566] "Un paso más en el engrandecimiento de México," *Novedades*, May 5, 1950.
[567] "Proporciones Apoteóticas," *Novedades*, May 8, 1950, 1; "Psicosis de carrera," *Novedades*, May 3, 1950, 1.

where they accepted trophies and listened to a Navy band play renditions of participants' national anthems and a mariachi trio perform a specially-written song about the race.

The spectacular inauguration of the Pan American Highway reveals much about post-war Mexican politics, economics, and culture. Most notably, the international contest embodied the curious transnational collaboration that increasingly characterized the broader modernizing strategy pursued in the years after the Second World War. Over the course of four decades following the election of Manuel Ávila Camacho, the Mexican federal government would embrace a path to prosperity and stability rooted in an aggressive push to industrialize the country in alliance with foreign capital. Indeed, as the saying first uttered in the 1940s goes, during these years the Revolution got down from its noble horse and settled into the pillowed seat of a Cadillac. The metaphor of a shift from animal flesh to machine power captured not only the country's progressive transition from an agricultural to an industrial nation, but the peculiar post-1940 alliance between US capital and the Mexican state. Following the radical administration of Lázaro Cárdenas, the federal government would largely abandon the politics of economic redistribution and instead favor the broader expansion and structural transformation of the national economy.[568] Under Ávila Camacho state-sponsored industrialization became official policy and the state formally adopted a program of import substitution industrialization (ISI), aiming to produce domestically much of what had previously been imported. [569]

As soon as advocates of large-scale industrialization set about encouraging domestic manufacturing, they granted particular attention to the automobile industry. Although vehicles had been built in the country since the mid-1920s, and new assemblers had arrived under the

[568] On the industrialization, see Susan M. Gauss, *Made in Mexico: Regions, Nation, and the State in the Rise of Mexican Industrialism, 1920s–1940s* (State College: Penn State University Press, 2010).
[569] It should be noted that domestic production of many previously imported goods had rapidly accellorated during the depression, while industrialization had first begun in earnest during the late nineteenth century.

Cárdenas administration, by the end of WWII the vast majority of cars and trucks still made their way to Mexico in fully assembled form. In order to hasten growth in the industry, the administration of Miguel Alemán established new tariffs on the importation of complete automobiles during 1947 and it reduced import duties on parts. In the meantime the federal government expanded is road-building activities, while it devised the nation's first rural road construction program. Finally, the price of gasoline paid by Mexican consumers began a dramatic decline in relation to prices in the United States, due in large measure to subsidization by the national petroleum company, PEMEX.[570] As the postwar economic boom converged with the state's encouragement of domestic production and consumption of automobiles, during the 1950s Mexico's fleet of motor vehicles grew at a rate unsurpassed during the entire twentieth century.[571]

Although assembly operations multiplied rapidly following the establishment of new tariffs on auto imports—by 1960 seventeen firms were building forty-one different car models—the vast majority of machines, nevertheless, continued to be imported from abroad and each year large quantities of capital flowed out of the country in the purchase of motor vehicles.[572] In order to hasten growth in the industry, the Adolfo López Mateos (1958–1964) administration issued a series of decrees aimed at further limiting importation of fully assembled vehicles as well as parts. Thereafter the introduction of complete motors from abroad was prohibited and manufacturers were required to use products of Mexican origin in 60 percent of their motor vehicles.[573]

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[570] P*latt's Oil Price Handbook and Oilmanac, 51st Edition* (1974).
[571] Carlos Bravo, *Apuntes para la historia del autotransporte* (Mexico: Secretaría de Comunicaciones y Transportes, 1982).
[572] Bravo, *Apuntes para la historia del autotransporte*.
[573] Yolanda Montiel H., *Industria automotriz y automatización: el caso de VW de México* (Mexico: CIESAS, 1987).

In the meantime, rapid urban-oriented industrialization produced a dramatic demographic shift. As job opportunities, massive infrastructure investments, and subsidization of basic consumer staples from energy to food pulled migrants toward the capital, a decline in small-scale farming pushed rural people from minor towns and villages to the metropolis. At the same time advances in public health allowed for longer lives and reduced rates of infant mortality. Together these forces produced a population explosion that would transform Mexico City into the fifth largest metropolis on the planet by the end of the 1960s, inspiring Octavio Paz to describe the capital as "a monstrous inflated head" that sat atop a brittle body.[574]

The disproportional growth of the city in relation to the country as a whole was reflected in striking fashion in the consumption of automobiles. By 1970, one half of the all cars in the entire country operated on the streets of the national capital, the result of an astonishing one thousand percent increase in passenger automobiles during the previous two decades.[575] In order to make way for the multitude of motor vehicles, planners and civil engineers engaged in a radical reconstruction of urban space. During the 1950s and 1960s authorities rebuilt and widened the Tlalpan causeway, carved out new urban highways like the Viaducto Río de la Piedad and the Viaducto Miguel Alemán, extended the Paseo de la Reforma, constructed a circular freeway around the city, and paved over some of the last urban rivers and canales, as was the case along Río Churubusco Avenue.[576] In the meantime work began on the modernistic

[574] Diane E. Davis, *Urban Leviathan: Mexico City in the Twentieth Century* (Philadelphia: Temple University Press, 1994), 2.
[575] Bravo, *Apuntes para la historia del autotransporte*, 180; Gustavo Garza y Fernando Aragón, "La contaminación atmosférica de la ciudad de México en escala megalopolitana," *Estudios Demográficos y Urbanos* 10:1 (January–April, 1995): 50; Gustavo Garza, "Evolución de las ciudades mexicanas en el siglo XX," *Notas. Revista de información y análisis* 19 (2002): 11; Tokue Shibata, "Los problemas de la contaminación ambiental en la ciudad de México," *Estudios de Asia y África* 19:4 (October–December 1984): 567.
[576] Novo, *Nueva grandeza mexicana*.

campus of the National University and the new suburb Ciudad Satélite, helping to increase the city's footprint by twofold in a matter of two decades.[577]

The massification of urban automobility in the aftermath of the Second World War was not, however, paralleled by a democratization of passenger automobile ownership. In Mexico City, for example, by the early 1970s only around one fifth of all daily trips in the city were made in private automobiles, as the vast majority of residents continued to use a diversity of public transportation options from taxis, peseros, combis, micros, and electric trolleys to the newly built Metro.[578] In this, the country's unrivaled motor city, the freedom and autonomy of the private motorcar remained the exclusive privilege of a minority of capitalinos. In the meantime, the countryside continued to suffer the consequences of infrastructural abandonment as policymakers sped headlong into the era of large-scale automotive production. When the geographer Angel Bassols Batalla studied Mexico's network of highways and railways during 1959, he found that only a little more than a fourth all towns (*poblados*) in Mexico were connected by roads suitable for vehicles of any type, a striking testament to the unevenness of not only Mexican automobility, but modernization more generally.[579]

[577] Javier Delgado, "De los anillos a la segregación. La ciudad de México, 1950–1987," *Estudios Demográficos y Urbanos* 5:2 (14) (May – Aug., 1990): 242; Gustavo Garza, *Una Década de planeación urbano–regional en México, 1978–1988* (México: El Colegio de México, 1989).
[578] Shibata, "Los problemas de la contaminación ambiental en la ciudad de México," 472–561.
[579] Ángel Bassols Batalla, "Consideraciones geográficas y económicas en la configuración de las redes de carreteras y vías ferreas en México." Revista Geográfica 24:50 (January–June 1959): 38.

Appendix One

US Motor Vehicle Exports to Mexico (values in USD)[580]							
Year	**Passenger Cars**		**Trucks & Buses[581]**		**All Motor Vehicles**		**Parts**
	Number	Value	Number	Value	Number	Value	Value
1907	465	681,086	–	–	465	681,086	131,553
1908	244	354,338	–	–	244	354,338	47,279
1909	200	282,462	–	–	200	282,462	104,984
1910	245	459,077	–	–	245	459,077	81,248
1911	350	614,160	–	–	350	614,160	35,506
1912	273	418,599	–	–	273	418,599	47,479
1913	235	423,123	35	83,363	270	506,486	46,743
1914	155	239,166	12	17,509	167	256,675	41,508
1915	70	66,830	8	14,492	78	81,322	30,819
1916	383	309,200	51	100,500	434	409,700	42,258
1917	2,807	1,642,011	218	198,151	3,025	1,840,162	125,823
1918	1,915	1,539,263	397	524,035	2,312	2,063,298	431,440
1919	2,850	2,360,346	938	1,205,664	3,833	3,566,010	704,873
1920	4,089	3,525,210	1,281	1,973,994	5,370	5,499,204	1,074,909
1921	6,750	5,183,791	1,482	1,554,554	8,232	6,738,345	1,528,729
1922	7,279	4,640,801	983	617,085	8,262	5,257,886	–
1923	7,559	4,255,000	1,011	661,000	8,570	4,916,000	–
1924	8,689	4,939,963	1,393	828,542	10,082	5,768,505	–
1925	12,560	8,050,285	3,569	1,971,875	16,129	10,022,160	1,637,349
1926	9,809	6,252,000	2,203	2,033,000	12,012	8,016,000	–
1927	6,028	4,129,000	1,743	1,460,000	7,771	5,270,000	1,455,000
1928	12,841	7,935,000	3,274	2,596,000	16,115	10,999,000	1,801,000
1929	12,676	8,004,000	3,796	2,848,000	16,472	10,852,000	2,534,000
1930	8,696	6,080,000	3,558	2,688,000	12,492	8,768,000	3,275,000
1931	2,339	1,410,000	1,162	830,000	3,501	3,152,000	1,106,000
1932	1,191	803,000	454	307,000	1,645	3,055,000	632,000
1933	2,423	1,482,000	917	587,000	3,340	2,069,000	985,000
1934	4,166	2,838,000	2,701	1,707,000	6,867	4,545,000	1,776,000
1935	7,493	4,834,000	4,392	2,898,000	11,885	7,732,000	2,438,000
1936	7,384	4,746,000	5,799	3,969,000	13,183	8,715,000	2,922,000

[580] *Automobile Facts and Figures* (1920–1950)
[581] Prior to 1913, Trucks were included under the general heading automobiles.

1937	13,649	8,905,000	9,931	8,813,000	23,580	17,718,000	4,554,000
1938	3,922	3,209,000	2,897	2,623,000	6,819	5,832,000	2,729,000
1939	–	–	–	–	–	–	–
1940	–	–	–	–	–	–	–
1941	–	–	–	–	–	–	–
1942	–	–	–	–	–	–	–
1943	–	–	–	–	–	–	–
1944	–	–	–	–	–	–	–
1945	2,631	3,654,000	6,742	10,493,000	9,373	14,147,000	–
1946	13,515	19,025,000	21,929	36,858,000	35,444	55,883,000	–
1947	18,494	–	23,750	–	42,244	–	–
1948	11,182	–	12,882	–	24,064	–	–
1949	10,785	–	11,551	–	22,336	–	–
1950	13,011	–	12,576	–	25,587	–	–

Automotive Production in Mexico[582]			
Year	**Passenger Cars**	**Trucks and Buses**	**Total**
1945	–	822	822
1946	3,619	6,835	10,454
1947	22,840	11,780	22,840
1948	–	–	–
1949	10,710	11,709	22,419
1950	10 384	11 191	21 575
1951	21 833	24 248	46 081
1952	20 687	27 300	47 987
1953	13 791	21 918	35 709
1954	13 325	20 055	33 380
1955	12 405	19 870	32 275
1956	13 134	26 253	39 387
1957	18 297	22 809	41 106
1958	20 373	18 582	38 955
1959	27 159	23 959	51 118
1960	28 121	21 686	49 807
1961	39 524	23 039	62 563
1962	40 801	25 836	66 637
1963	48 841	25 673	74 515
1964	65 869	32 566	98 435
1965	70 242	33 342	103 584

[582] Arnulfo Arteaga G., *Integración productiva y relaciones laborales en la industria automotriz en México* (Mexico: Plaza y Valdés, 2003), 74.

1966	84 673	33 091	117 764
1967	88 327	37 883	126 210
1968	102 679	41 507	144 186
1969	113 553	51 573	165 126
1970	133 218	56 768	189 986

Motor Vehicles Registration[583]				
Year	**Passenger Cars**	**Trucks**	**Buses**	**Total**
1919	–	–	–	16,500
1920	–	–	–	18,000
1921	–	–	–	–
1922	–	–	–	25,000
1923	–	–	–	–
1924	32,531	5,525	4,802	42,858
1925	40,076	7,999	5,476	53,551
1926	43,305	9,574	5,344	58,223
1927	44,161	11,712	5,137	61,010
1928	49,059	12,525	5,550	67,134
1929	62,461	16,031	6,299	84,791
1930	63,073	18,331	6,261	87,665
1931	62,085	19,523	6,287	87,895
1932	59,628	20,702	5,296	85,626
1933	65,445	24,497	6,607	96,549
1934	74,212	27,236	6,973	108,421
1935	64,663	23,792	6,828	95,283
1936	67,165	25,688	7,828	100,681
1937	78,155	33,746	8,489	120,390
1938	81,923	33,620	8,425	123,968
1939	89,372	39,472	10,015	138,859
1940	93,632	41,935	10,141	145,708
1941	106,327	50,572	11,257	168,156
1942	113,427	53,469	11,145	178,041
1943	112,041	54,780	10,996	177,817
1944	111,947	57,293	12,264	181,504
1945	113,317	59,814	12,407	185,538
1946	120,906	71,673	12,915	205,494
1947	134,079	86,188	14,790	235,057

[583]For 1920 to 1923 see *Automobile Facts and Figures*; For 1924 to 1970, see the Anuario Estadístico de los Estados Unidos Mexicanos.

1948	150,251	99,762	16,872	266,885
1949	160,580	106,321	16,169	283,070
1950	173,080	111,252	18,466	302,798
1951	209,270	132,708	19,326	361,304
1952	236,975	154,413	19,590	410,978
1953	253,354	179,564	19,898	452,816
1954	273,697	193,491	20,093	487,281
1955	308,097	220,229	22,320	550,646
1956	320,429	240,088	20,995	581,512
1957	365,796	272,523	22,421	660,740
1958	378,886	273,735	22,686	675,307
1959	437,657	300,856	25,921	764,434
1960	483,101	293,423	26,126	802,650
1961	549,795	318,845	33,389	902,029
1962	548,151	327,916	26,136	902,203
1963	617,960	352,681	27,573	998,214
1964	687,787	364,091	29,509	1,081,387
1965	771,118	388,684	30,702	1,190,504
1966	812,415	408,496	27,521	1,248,432
1967	917,374	440,292	27,611	1,385,277
1968	999,910	465,815	29,407	1,495,132
1969	1,133,084	505,847	31,549	1,670,480
1970	1,233,824	524,985	33,059	1,791,868

Appendix Two

Road Statistics (kilometers)[584]				
Year	**Total**	**Paved**	**Graded**	**Earthen Roads**
1910	644	–	–	–
1925–1928	695	241	245	209
1930	1,426	541	256	629
1935	5,237	1,559	1,918	1,760
1940	9,929	4,781	3,505	1,643
1945	17,404	8,163	6,842	2,399
1950	22,455	13,595	6,836	2,024
1955	32,224	18,817	9,164	4,243
1960	44,892	26,979	11,203	6,710
1965	61,252	34,431	18,373	8,448
1970	71,520	41,947	21,079	8,494
1975	186,218	60,643	77,723	47,852

Note: Statistics on roads, particularly those dealing with the first half of the twentieth century, should be used with caution, as no standardized criteria existed as to what constituted a road.

[584] For 1910 see Department of Commerce and Labor, *Foreign Market for Motor Vehicles. Special Consular Reports–No. 53* (Washington: Government Printing Office, 1912), 25. For 1925 to 1975 see Ortiz Hernán, *Los Ferrocarriles de México*, 329.

Appendix Three

Domestic Gasoline Consumption (liters)[585]		
Year	**Total**	**Imports**
1923	108,000,000	12,000,000
1924	–	–
1925	141,294,668	–
1926	179,812,044	33,080,081
1927	192,263,778	42,356,364
1928	218,699,334	41,327,200
1929	259,287,427	51,196,901
1930	326,469,696	90,571,060
1931	258,033,121	75,006,240
1932	273,976,783	78,874,974
1933	245,239,574	6,536,654
1934	316,696,313	16,256,588
1935	331,549,000	–
1936	397,917,000	–
1937	469,108,000	–
1938	527,595,000	37,536,000
1939	609,978,000	61,528,000
1940	682,777,000	70,223,000
1941	772,919,000	120,495,000
1942	826,538,000	77,949,000
1943	939,694,000	95,833,000
1944	944,853,000	101,048,000
1945	1,097,938,000	129,036,000
1946	1,340,068,000	238,565,000
1947	1,551,989,000	325,660,000
1948	1,764,321,000	315,810,000
1949	1,987,285,000	429,920,000
1950	2,199,541,000	494,365,000

[585] For 1923 see Homer S. Fox, *World Trade in Gasoline. Department of Commerce. Trade Promotion Series–No.20* (Washington, D.C.: Government Printing Office, 1925), 19; For 1926 to 1934 see Ulises Irigoyen, *Gasolina a $0.15* Litro (Mexico, 1935); For 1935 to 1937, see Miguel Manterola, *La Industria del petróleo en México* (Mexico: Secretaría de Hacienda y Crédito Público, 1938); For 1938 to 1950 see *Carreteras y Transportes de México* (Mexico: Asociación Mexicana de Caminos, 1974), 205.

Gasoline Tax Revenues[586]				
Year	**Total**	**For Federal Highways**	**For State Highways**	**Federal tax centavos per liter**
1925	3,179,142	3,179,142	0	3
1926	5,394,361	5,394,361	0	3
1927	5,772,219	5,772,219	0	3
1928	6,560,980	6,560,980	0	3
1929	10,371,497	10,371,497	0	4
1930	13,058,799	13,058,799	0	4
1931	15,481,987	15,481,987	0	6
1932	16,438,607	10,959,071	5,479,536	6
1933	19,619,166	10,653,619	8,965,547	8
1934	24,695,747	13,881,512	10,814,235	8
1935	26,043,461	14,649,629	11,393,832	8
1936	32,534,172	18,405,583	14,128,589	8
1937	38,898,973	21,997,447	16,900,626	8
1938	41,174,149	23,251,125	17,923,024	8
1939	46,431,873	26,142,951	20,288,922	8
1940	–	–	–	9

Retail Price of Gasoline (Liters in USD)[587]			
Year	**Mexico (cents)**	**USA (cents)**	**% Difference**
1938	4.0	5.3	32.7
1939	3.5	5.0	44.5
1940	4.3	4.8	11.7
1941	4.7	5.3	11.7
1942	4.7	5.0	5.9
1943	5.2	5.3	2.5
1944	5.6	5.5	–0.3
1945	5.6	5.5	–0.3
1946	6.2	5.5	–10.3
1947	6.2	6.1	–1.8
1948	5.2	6.9	31.4
1949	5.0	7.1	42.8
1950	4.6	7.1	54.3
1951	4.6	7.1	54.3
1952	4.6	7.1	54.3
1953	4.6	7.7	65.7

[586] "Revenues from Gasoline Tax," AHSCT, SCOP, AOP, CCCPN, SSO, Caja 1A, Exp. 7.

[587] Manuel Aguirre Botello, "Comparación del precio de la gasolina, México–USA, 1938–2012," Last modified March 14, 2012, http://www.mexicomaxico.org/Voto/GasolMexUSA.htm.

1954	4.9	7.7	58.0
1955	4.4	7.7	74.1
1956	4.4	7.9	80.1
1957	4.4	8.2	86.1
1958	4.4	7.9	80.1
1959	4.4	8.2	86.1
1960	4.4	8.2	86.1
1961	4.4	8.2	86.1
1962	4.4	8.2	86.1
1963	4.4	7.9	80.1
1964	4.4	7.9	80.1
1965	4.4	8.2	86.1
1966	4.4	8.5	92.1
1967	4.4	8.7	98.2
1968	4.4	9.0	104.2
1969	4.4	9.2	110.2
1970	4.4	9.5	116.2

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- RP Ramos Presidenciales
  - LC Fondo Lázaro Cárdenas
  - MAV Fondo Manuel Ávila Camacho
- FOP Fondo Fomento y Obras Públicas
  - IN Serie Industrias Nuevas
- SCOP Secretaría de Comunicaciones y Obras Públicas
  - TG Serie Talleres Generales
  - EM Serie Ensayos Materiales
  - F Serie Folleteria
  - G Serie Generalidades
  - CPC Serie Congreso Panamericano de Carreteras
- SCT Fondo Secretaría de Comunicaciones y Transportes
  - DGAC Seccion Dirección General de Aeronáutica Civil
- SG Fondo Secretaría de Gobernación Siglo XX
  - IPS Seccion Investigaciones Políticas y Sociales,
- AGO Archivo Genovevo de la O

AHSCT Archivo Histórico de la Secretaría de Comunicaciones y Transportes (Mexico City)
- SCOP Secretaría de Comunicaciones y Obras Públicas
  - AOP Administración de las Obras Públicas
    - CCCPN Construcción y Conservación de Caminos y Puentes Nacionales
      - SSO Solicitud y Seguimiento de Obra

AHPM Archivo Histórico del Palacio de Minería (Mexico City)
- AENI Archivo de la Escuela Nacional de Ingenieros

HN Hemeroteca Nacional, Universidad Nacional Autónama de México (Mexico City)

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