

# Cargo Transport Infrastructure and Urban Regional Development: The Fort Smith Metropolitan Area

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## ABSTRACT

**Abstract.** Small metropolitan areas of the U.S. are not sufficiently represented in the urban geography and regional development literature. The Fort Smith, Arkansas Metropolitan Area, historically an important manufacturing center and transport gateway to the southern Great Plains, has recently experienced layoffs of manufacturing workers, and even devastating plant closures. Local political and economic development officials and the private sector look to the region's cargo transport infrastructure as a catalyst to revive the five-county region's economy. Drawing on qualitative research methods, this article provides a summary of the multiple ways that manufacturing and transport businesses in the area utilize the region's two interstate highways, three Class I railroads, a "short line" railroad, and two barge ports. It discusses evaluations by local actors of the transportation infrastructure, and the improvements and expansions they desire. Open-ended interviews reveal ways that local elected officials and economic developers attempt to work together and with state and federal policymakers to enhance regional economic development, by improving the transport system through expansion of its inter-modal capabilities. These collaborations have been partly successful, yet roadblocks to planned improvements to the transport system remain.

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**Key Words:** Transport Infrastructure; Regional Development; Qualitative Research Methods; Fort Smith, Arkansas.

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## Introduction

The study of the evolving American urban experience has focused primarily on large cities, thereby making the body of research incomplete (Bell and Jayne 2009). This includes studies of changing urban form, the impact of globalization on cities, and the formation of urban regions. Studies of small cities have tended to be case studies that take as their starting point that the small city in question has failed to become a complete city. Such studies inappropriately diminish small cities to a lesser status, and therefore, arrive at an incomplete understanding of what it means to be urban. To appropriately broaden urban studies, small cities need not only greater inclusion, but theories of urbanism need to highlight the ways that local circumstances create unique small cities. Small-city urban studies need their own theories to draw on. Rather than showing what they are not, by evaluating them in the context of large-city theories, academic work needs to show what small cities in fact are (Bell and Jayne 2009).

From a practical standpoint, the absence of studies of small cities (roughly, places smaller than 100,000 population) makes it difficult for planners and others trying to understand small-city processes. They have little choice but to turn to studies of large cities for clues of how to address issues related to urban land use and planning, downtown vitality, and the function of a given city in the global system. These three broad areas of interest are not as well understood in small cities as in large cities on one hand, and small towns on the other. The few studies of small cities of the US that appear in the literature indicate that there is a wide variation in their land use, economic, and social patterns. That variety is justification for an expansion of the study of smaller urban places. For example, an important question that remains is why some towns grew into small cities and in some cases into intermediate and/or large cities, while other towns did not (Ofori-Amoah 2007).

Bell and Jayne (2009) argue that function is more important than the actual population in theorizing small-city urbanism. The multifaceted ways that neoliberalism functions in small cities is crucial to study. Thus, an emphasis on understanding what cities do to be competitive in the global economy is appropriate. The latter includes entrepreneurial governance. While comparison to large cities is valid, it is necessary to take it to the next step and emphasize how small city political, social, cultural and economic processes are unique in smaller cities. Case studies are helpful toward the ultimate goal of better understanding how small cities fit into and are impacted by national and the global economies (Bell and Jayne 2009). This paper utilizes that approach by examining the role of cargo transport infrastructure in the development of a small metropolitan area.

Fort Smith, the second largest city of Arkansas, is a small city whose metropolitan area encompasses three counties in Arkansas (Sebastian, Crawford, Franklin) and two in Oklahoma (Le Flore and Sequoyah). The city's population (2010 Census) is 86,000 and the metropolitan area's is 300,000. The Fort Smith Metropolitan Area represents a gateway city to the Great Plains. With the exception of Oklahoma City, Wichita, and Amarillo, most of the Great Plains transportation hubs are located at the margins and serve as gateways, including Kansas City, Denver, Tulsa, Omaha, and Dallas-Ft. Worth. Though smaller than these four, Ft. Smith represents an interesting case study of the importance of the geographic concepts of site and situation. The navigable Arkansas River, the 445-mile McClellan-Kerr Arkansas River Navigation System, with its 18 locks and dams, provides opportunities for a broad array of cargo handling from Catoosa, Oklahoma (Port of Tulsa) to the Mississippi River in Desha County, Arkansas. So too do the rail lines and interstate highways, both current and future, that offer the small metropolitan region favorable access to the Plains region (FMPO 2011). The two interstate

highways, three class I railroads, two short line railroads, and two barge ports of the Fort Smith Metropolitan Area provide the region more favorable transportation connections than anywhere in a 200-mile radius (Shell 2012).

Furthermore, adjoining the metropolitan area to the north is the four-county Northwest Arkansas Metropolitan Area, the fastest growing metropolitan area of the state, prompting discussion by some planners, public officials, and members of the business community of an emerging nine-county region that is among the fastest growing in the U.S. (FMPO 2011: 8; Gatling 2012). It is widely believed that the transport system of the Fort Smith Metropolitan Area is in fact utilized more by businesses of the Northwest Arkansas Metropolitan Area, including Wal Mart, Tyson, and JB Hunt, than local business (Shell 2012; Owen 2012; Higgins 2013; Beneux 2013; Krutsch 2013).

The Arkansas River provides not only enhanced transportation access, but generally produces a physical setting amenable to industrial expansion. Both Ft. Smith and Van Buren, the largest two cities of the metropolitan area, adjoin the river and have terrain that is flat to gently rolling. Away from the river, the terrain becomes increasingly mountainous (FMPO 2011). Extra-regional transportation linkages clearly boost Ft. Smith's locational advantages, and underlie its growth potential, though its five-county metropolitan area has not grown as rapidly as that of Northwest Arkansas (2010 Census), which enjoys somewhat less favorable transportation access. Thus, a question arises about the role of transportation linkages in the economic development and demographic growth of small metropolitan areas. Fayetteville-Springdale-Rogers-Bentonville have grown faster than Ft. Smith-Van Buren, despite the superior transportation interconnectivity within the latter.

The remainder of the paper includes a statement of the purpose of the research and the methods used. Following that is an overview of the metropolitan region's regional economy. An explanation of intermodal cargo movement follows. The next sections include overviews of, respectively, barge, rail and highway infrastructure in the study region. Case studies of companies and their usage of the infrastructure comprise the next section. The conclusion section summarizes the general findings of the study and broadly suggests themes for additional research.

### **The Purpose of the Research and Methodology**

The primary objectives of the study are:

1. To provide a brief overview of the historical development since the mid-twentieth century of Ft. Smith's industrial landscape and cargo transportation infrastructure;
2. To discuss changes in the urban landscape that have resulted and are expected to result from transportation infrastructure expansion and urban entrepreneurial activities, including the development of industrial sites and intermodal transportation facilities; and
3. To provide some insights of the trajectory of the metropolitan area's development by describing some of the ways that a sampling of companies utilizes the region's cargo transport infrastructure.

Key to the second and third objectives is that the study of economic regions increasingly involves interviews, especially of people within firms, as well as economic development officials, providers of producer services, and officials of trade associations. Markusen (1994) argues that data regarding inter-firm connections, connections between manufacturing and service firms, supply chains, transportation, and logistics can best be gathered through interviews, given that such data generally are scarce in secondary sources. This situation, of

course, is changing now that the Internet has become significantly more expansive over the past two decades, such that more aggregate regional data are indeed available. However, Markusen's primary point regarding the importance and usefulness of interviews has been indispensable in the present research on the Fort Smith Metropolitan Area.

The primary methodology involves the study of firms and related governmental and planning entities, using semi-structured interviews that allow respondents to provide greater detail than otherwise would be possible using structured interviews (Longhurst 2010: 103-105). The data gathered was triangulated with published trade and cargo shipment data and news articles discussing manufacturing, distribution, and transportation in the case-study region. Triangulation provides the advantages of inclusion of data from different sources using different methods and verification of information through overlaps and duplications (Johanasson 2003). The identification of appropriate interviewees was enhanced through snowball sampling, a technique that is particularly effective when random sampling is not possible due to lack of a large pool of potential experts to interview. Triangulation helps to verify the accuracy of data achieved through snowball, word-of-mouth identification of interviewees (Bernard 2013).

### **Characteristics of the Fort Smith Metropolitan Economy**

Minerals in the area served as one catalyst to growth in the late nineteenth and early twentieth centuries, including clay, kaolin, iron ore, manganese, slate, chalk, lime, lead, zinc, and sand used in manufacturing of glass (Patton 2004). Russell (1981) discusses coal in the area, and its role as a catalyst for rail connections. He also discusses the milling and ginning of cotton, which was the basis for early manufacturing in the first decades of the twentieth century (Russell 1981). Natural gas, discovered in the area in 1901, also attracted development and investment (Butler 1972).

Since World War II, Fort Smith has become the metropolitan area of Arkansas with the highest percentage of its workforce engaged in manufacturing. Dominant sectors included furniture and home appliances. However, the closure of the Whirlpool refrigerator plant in June 2012 and its associated loss of some 914 manufacturing jobs has left transportation and utilities as the prime employers (Jones 2012b). It is estimated that an additional 900 jobs related to the supply chain became jeopardized because of the plant's closure (Settlage 2012). As recently as 2006, the plant had employed 4,600, thus making it a major fixture of Fort Smith's once boastful post-war manufacturing history (Arkansas Business 2012). Furthermore, Mitsubishi has put on hold its plan to open the plant it constructed in Chaffee Crossing to manufacture hardware for wind energy, specifically the nacelle, where the different components of wind mill turbines are housed. Local public and economic development officials are attempting to attract more manufacturing, but recognize that transshipment of goods may be a more realistic area of economic growth (Owen 2012). Since the opening of I-40 in the 1960s, the region began to experience significant trucking activities. By 2004, eight major trucking companies and 16 smaller ones had operations in the region (Patton 2004).

In short, Fort Smith had developed into a leading manufacturing region in Arkansas in the post-War era, and the local transportation network both benefited from and relied on that activity. Not unlike other manufacturing cities of the Sunbelt, however, the manufacturing base dwindled such that by 2007, that sector's proportion of the local workforce was 16 percent, and by 2010 it had diminished to 14 percent, while the service sector gained in importance. At that time the more important manufacturing activities included large household appliances, air conditioning and other domestic climate control, poultry processing, and shipping cartons. While

total employment in services and retail declined during the Great Recession 2007-2010, their proportion of the total value of the MSA's economy grew, while that of manufacturing declined (Settlage 2012). The role of transportation in the metropolitan area's economic development needs to be inserted into the analysis as do such activities including wholesale trade, suppliers of inputs such as plastic parts, and transportation. Manufacturing limps along as an important sector of the MSA's economy, though lower-wage activities like poultry processing stand out, as do some lingering higher wage activities like metal fabrication (Settlage 2012).

The Associated Press reported on September 6, 2012 that Whirlpool sold its closed Fort Smith plant to Infinity Asset Solutions, Inc., a Canadian-based company that disposes of and recycles surplus assets of various companies, such as computers and other electronics. The existing and future transportation linkages of Fort Smith played a role in the company's interest in purchasing the facility. The company indicated that products in need of disposal or recycling could easily be shipped in to the facility, and the end product shipped out, by one of the region's several transport modes (Arkansas Business 2012). However, subsequently the Canadian company pulled out of the deal for reasons not elaborated upon in the news media. FFO Furniture ultimately bought a portion of Whirlpool's adjoining warehouse for its headquarters and distribution, citing the transportation advantages of the region as the basis for their move (Cook 2016). Despite the setback, local economic development officials remain optimistic, given the region's present and planned future cargo transport, industrial, and warehousing infrastructure.

The Fort Chaffee Redevelopment Authority (FCRA), consisting of a board whose nine members are ratified by the Sebastian County Quorum Court, oversees Chaffee Crossing, a significant mixed-use development that utilizes approximately 7,000 of the original 77,000 acres of Fort Chaffee, an important army base whose origins date back to the need for training bases during World War II. The remaining 70,000 acres are used for National Guard training (Owen 2012). The Department of Defense donated the remaining unused 7,000 acres to the City of Fort Smith, the adjoining City of Barling, Sebastian County, and three local school districts in 1998. Included were several old buildings, most of which were in disrepair. The Arkansas State Legislature established a public redevelopment trust to enable the new facility to raise funds and undertake construction and redevelopment. Chaffee Crossing draws on the principles of The New Urbanism, and includes areas for residences, retail, manufacturing, and warehousing. At present, three large manufacturing plants are in operation. These include Graphic Packaging, which employs 500 people and prints heavy food cartons for Coca Cola, Kelloggs and others; Umarex, a German firearms manufacturer; and Morris Pet Care, a high-end pet food manufacturer. The FCRA had been hopeful that Mitsubishi would revive its plans to open its wind turbine nacelle plant (Owen 2012), but the plant ultimately was sold in 2016 to a manufacturer of personal hygiene paper products (Cook 2016).

The Crawford County Industrial Park is located in southeast Van Buren, adjacent to the barge port operated by two private companies (FMPO 2011). Rail connection between the port and industrial park is provided by the Arkansas and Missouri (A&M) Railroad, which ties into the east-west Union Pacific route on the north side of Van Buren. The industrial park presently has some 75 businesses, many of which are manufacturing plants of a wide array of sizes, and warehousing, including that which directly serves the Port of Van Buren (Freeman 2016). "Furniture Row" and the Whirlpool plant complex that includes warehousing, located on the west side of Fort Smith near the city's barge port, serve as a de facto industrial district for metal fabrication and furniture manufacturing and distribution.

Presently the region is focusing on becoming an important transshipment point. The majority of cargo originates from outside the immediate region, and is destined for points outside the region (Shell 2012; Gottbrath 2012; Conklin 2012). Given the scope of importance of transportation to this two-state metropolitan area, the Frontier Metropolitan Planning Organization partners with the Arkansas Highway and Transportation Department and the Oklahoma Department of Transportation to carry out the planning and promotion of the region as transshipment point (FMPO 2012a). Businesses and elected officials throughout the Fort Smith Metropolitan Area express their desires to see the development of full intermodal capabilities.

### **Intermodal Transport--Basic Characteristics**

Intermodal transport involves the use of two or more transportation modes, including truck, rail, barge, and/or air cargo. In the US, the most common is the combining of trucking (which offers the advantages of speed and flexibility to access a high number of places, given the abundance of highways) with rail (which offers lower ton-per-mile cargo rates than trucking). Intermodal shipment using rail and truck adds time to the shipment, but reduces costs by up to 20 percent, given that truck hauls are shorter (Ozment 2001).

Intermodal shipping took off in the late 1950s, when Sea-Land Services began shipping truck trailers via water, followed by other carriers transferring first trailers, and later containers, between trucks and rail cars. For example, between 1961 and 1999, the number of trailers and containers involved in intermodal shipping in the US increased from just under 1 million to over 9 million, though shipment by truck alone always remained more prominent, given the infrastructure requirements of intermodal shipping. The trend has been toward fewer and larger intermodal terminals, resulting in longer truck hauls, referred to as drayage (Ozment 2001).

According to the Arkansas Waterways Commission, one rail car on average can carry the volume of four truck trailers, and one barge can handle the equivalent of 15 rail cars. Thus, a barge can carry the volume that 60 trucks can haul. In terms of freight costs, taking fuel efficiency into account, the cost per ton-mile varies considerably between truck, rail and barge. Barge is approximately \$1.00 per ton mile, rail is approximately \$2.53 per ton mile, and trucking is approximately \$5.35. Barge can achieve 514 ton miles per gallon of fuel, while rail yields 202 and trucking 59 (AWC 2012). One barge can haul 1,500 tons of cargo, 52,500 bushels, or 453,600 gallons of cargo. One rail car can haul 100 tons, 3,500 bushels, or 30,240 gallons. One large semi-truck trailer can haul 26 tons, 910 bushels, or 7,865 gallons (Tennessee-Tombigbee Waterway 2012).

### **An Overview of Intermodal Transportation and Economic Development**

It is widely regarded among academics and practitioners alike that there exists a strong two-way, mutually influential relationship between the quality of a transport system and the success of regional economic development (MacKinnon, Pirie and Gather 2008: 10). Furthermore, transportation is a part of the mix of ingredients necessary for capital investment and wealth accumulation in a locality, along with factories, offices, and communications infrastructure. It is a strong ingredient of the global supply chain. If one or more of these features is obsolete or lacking in a given place, investment will bypass or even leave that place (Harvey 1982; Rodrigue and Browne 2008). A cargo transport system that is effective in regional and urban economic development requires a combination of private investment and that by the public sector at the federal, state, county, municipal, and special purpose district levels (Shaw, Knowles and Docherty 2008). As transport systems become increasingly efficient, cities are able to specialize

in particular activities and have farther geographic reach because of reductions in overall shipping costs (MacKinnon, Pirie and Gather 2008).

Some localities built their fortunes on the strong roles they play in transport. This is as much the case with waterborne modes of transport as rail and trucking. As manufacturing and other tradable sectors of the global economy become increasingly routine, flexible, and capable of seeking out low-cost or highly specialized work forces, the spatial movement of goods becomes that much more important. Thus, capitalism is increasingly dependent on inter-regional transport that becomes more efficient yet less costly through time. Cities that can provide efficient transportation and avoid bottlenecks can benefit tremendously from their role in global supply chains. On the other hand, the omnipresence of efficient transport networks, coupled with declining per-ton transport costs through time, can expose a locality that relies too strongly on its transport systems to vulnerabilities. Among these is the increased chance that goods produced elsewhere can find their way more easily to a nearby location that relies on its own enhanced transport connections. Thus, for a locale to experience economic development as a cargo transport hub, manufacturing and distribution activities that can utilize it need to be in place (MacKinnon, Pirie and Gather 2008). Likewise, Banister and Berechman (2001) identified three preconditions for transport-related investment to enhance local economic development, including favorable links between local suppliers, availability of capital for investment in transport and proper timing of that investment, and a political environment supportive of the tie between transport and economic development.

Furthermore, efficient and broad intra-regional transport becomes increasingly important as firms seek to make quick, reliable movements of components between different plants within a region. The local state, therefore, strives to gain as much control as possible over investments in transport infrastructure. This is accomplished through such means as regional transport authorities or regional private-public transportation planning entities that lobby for federal monies but carry out the planning themselves to the greatest extent possible (MacKinnon, Pirie, and Gather 2008). This reality remains a challenge among Fort Smith's community leaders, as evidenced by the relative lack of intra-firm relations compared to larger, manufacturing-based transport hubs in the U.S. Such leaders are looking to boost the intermodal capabilities of the metropolitan area, including the increase in barge traffic, as a catalyst to building supply chains in the region (Owen 2012; Pitsch 2012; Shell 2012).

Because waterborne cargo transport, including by barge, is indispensable to global supply chains, businesses, especially shipping companies, often find it advantageous to develop the terminal infrastructure and the connections between the waterfront and the port's hinterland. Companies that ship products as well as the transport companies themselves take into account the degree of industrial development at a port, as well as its channel depth and hinterland access. Poor access faced by the maritime vessel, or trucks or rail connecting to the port, can cause higher costs or lower efficiency. Normally the land access part of the equation is the least problematic to fix, but the maritime access part can be quite expensive, because of the costs related to constructing docks, dredging, and the like (Rodrigue and Browne 2008).

### **Barge traffic on the Arkansas River**

In 2011, the Arkansas River (McClellan-Kerr Arkansas River Navigation System), from Tulsa to the Mississippi, handled 10.7 million tons of cargo, valued at \$3.11 billion (McKay 2012). In general, the cargo shipped on the Arkansas River has been heavily represented by agricultural inputs such as fertilizer. However, in recent years, higher value shipments have diversified this

form of transport, including scrap metal (steel), aluminum, and other metal products, much of which is focused on the Port of Little Rock. The development and/or expansion of ports, coupled with proximity of those ports to manufacturing plants, account for that shift. Sand for hydraulic fracturing is also a growing product shipped on the rivers of the state, including the Arkansas River. River barge traffic enjoys a cost advantage for big bulk shipments. Rail is on average 2.5 times and trucking is 5.3 times the cost per ton, and the cost advantages of barge increase with distance. Furthermore, a barge can haul the equivalent of what 15 rail cars and 60 truck trailers can haul (Jones 2012a).

The four main barge ports on the Arkansas River are, from west to east, 1. the Port of Ft. Smith; 2. the private port at Van Buren (located adjacent to the Crawford County Industrial Park, immediately downstream of the I-540 bridge), which is operated by Five Rivers Distribution and Consolidated Terminals and Logistics Co (CTLTC); 3. the Port of Little Rock; and 4. the Port of Pine Bluff (FMPO 2011; AWA 2012). The primary products handled by the Port of Fort Smith include various steel products, including ". . .coiled plate, coiled wire rod and bars. . ." (AWA 2012). Additionally, Consolidated Terminals and Logistics Co., a company with 15 barge facilities of the Mississippi/Ohio/Arkansas Rivers System, operates a private intermodal facility in Van Buren that includes two cranes and three barge docks, and allows for direct transfer between barge and truck. The company boasts of its favorable rail access for Union Pacific (UP), Burlington Northern Santa Fe (BNSF), Kansas City Southern (KCS) and the Arkansas and Missouri Railroad (A&M). The facility can accommodate 35 rail cars, and includes a 55,000 square foot warehouse. The facility handles livestock feeds, agricultural inputs, metals, coal, and "dry bulk goods" (CTLTC 2012). Although cargo handling continues to increase, monies available for improvements by the Army Corps of Engineers are scarce due to budget cuts (McKay 2012).

Advocates of intermodal transport in general, such as the Western Arkansas Regional Intermodal Transport Authority (RITA), and barge traffic in Ft. Smith and Van Buren in particular, point out two needs for enhancing the greater NWA-Ft. Smith economy. These include a channel in the Arkansas River with consistent twelve-foot depth, requiring dredging of silt and rocks in many areas, and the construction of a new slackwater harbor, or a deep harbor created at the edge of the river that enables precise handling of cargo free of the normal turbulence and flow of the river. Slackwater harbors make loading and unloading of larger, finished products easier. They also enhance accessibility to rail and road infrastructure (McKay 2012). The Army Corps of Engineers is presently undertaking feasibility studies, and initially has expressed support for a slackwater harbor. The optimal location for one has yet to be determined. Three possible locations include Chaffee Crossing in Fort Smith, a site just downstream of the Crawford County Industrial Park, and the smaller city of Lavaca, some 12 miles downstream from Van Buren. The Van Buren site seems most feasible in the eyes of RITA (Garrett 2012b; Garrett 2012c) and the Fort Chaffee Redevelopment Authority (Owen 2012). The FMPO's *2035 Metropolitan Transportation Plan* (2011) refers to a study conducted in 1999 regarding feasibility of an intermodal facility in the Fort Smith Metropolitan Area, which determined at that time that such a facility was warranted, preferably in Van Buren. The study concluded that a truck-rail facility should be emphasized, but it also advocated expansion of the Van Buren barge port as part of it (FMPO 2011).

### **Fort Smith and Van Buren Rail Connections**

The Little Rock and Fort Smith Railroad, originally a branch of the Cairo and Fulton Railroad Company, was chartered by the state General Assembly in 1855. In 1889, the St. Louis Iron



Mountain and Southern Railway Co. opened Fort Smith to Greenwood, MS. This became the Missouri Pacific (Patton 2004). The St. Louis and San Francisco Railroad completed a line to Fort Smith in 1884. Trains had to cross the Arkansas River by boat until the railroad bridge was built in 1891. In 1896, Kansas City Southern Railway built a line to Fort Smith. Because of all of this extensive rail connection, the steamboat became obsolete in the area by the late 1890s (Patton 2004). However, growth of the city was somewhat hampered by the 1870s because the Missouri, Kansas and Texas Railroad bypassed the city when it was built through the Indian Territory. Before that, Fort Smith was the primary transportation hub linking the US proper to the Indian Territory. Growth resumed in the 1880s and 1890s in tandem with a real estate boom and an increase in shops on Garrison Avenue (Patton 2004). In 1887, despite the continued lack of a bridge across the river, Jay Gould, whose rail operations had acquired the LR & FS RR, visited the city to explore possibilities for developing it as a site for manufacturing. Finally, in 1888, a group of citizens who recognized the need for a bridge set up a fund for the Missouri Pacific, conditioned upon that rail company constructing a bridge for rail, wagons and pedestrians. The bridge opened in 1891. In that year, the shops to service the Missouri Pacific were in Van Buren, while those for Frisco were in Fort Smith itself (Patton 2004).

By 1973, there were three main rail routes linking the Fort Smith Metropolitan Area: Missouri Pacific, St. Louis & San Francisco ("Frisco"), and Kansas City Southern. A secondary line existed, the Midland-Valley Railroad (later the Texas-Pacific) (Patton 2004). Within 50 miles of Ft. Smith were junctions between the Rock Island Railroad, and Frisco and Kansas City Southern (Patton 2004). As of 1992, the rail companies included the Arkansas Missouri Railroad, Kansas City Southern, and Union Pacific. The Fort Smith Railroad, a short line, was a division of UP (Patton 2004). Patton (2004) discusses a "Furniture District," a manufacturing district linked by the short line railroad on the southern periphery of the city that had disappeared by the early 1990s. The balance of industrial/manufacturing activities today remain at the southern periphery of Fort Smith (Patton 2004). In the mid-1990s BNSF leased its tracks to the Arkansas Missouri Railroad (Sypult 2007).

The UP line roughly parallels I-40 E-W north of the river. Switching infrastructure exists in Van Buren and in Sallisaw, OK, located nine miles west of the western boundary of the metro area. The KCS line runs N-S on the Oklahoma side of the AR-OK state line. KCS has switching at Sallisaw and another Oklahoma location 25 miles southwest of Fort Smith. The BNSF (Arkansas Missouri Railroad) line parallels I-540 just to its east. The metropolitan area also has two short line railroads, the A&M (Arkansas and Missouri), which utilizes the BNSF line that parallels US Highway 71 between Fort Smith and Springfield, MO, and the Fort Smith Railroad, which provides service within the city of Fort Smith (FMPO 2011). There is reciprocal switching between the three companies (Shell 2012).

A proposed expansion of rail connection to the Chaffee Crossing, a mixed-use residential/industrial/warehousing development traversed by the future I-49 on the southeast side of Fort Smith, was announced at the 2012 annual meeting of the Fort Smith Chamber of Commerce in February. Union Pacific is interested in creating in partnership with local private and public investors a 300-acre rail transfer station at the location, which would act as a catalyst for additional warehousing, and consequently, more rail and truck tonnage handled in Fort Smith (SW Times 2012). The facility would also allow for quick transfer of freight between rail and truck (Garrett 2012b). The existence of such a rail line is touted by its promoters as an amenity that would attract businesses needing such rail access, but otherwise not inclined to make the investment themselves (Garrett 2012a). One proposed idea is the establishment of a large,

regional automobile auction site at Chaffee Crossing, that could benefit from both rail and truck access (Garrett 2012a). Another proposed idea that is presently in the works is a trans-load facility to switch goods between rail and truck, expected to be completed early in 2014. The closest such facilities are in Kansas City and in the vicinity of Memphis in Marion, AR. A local company, Chaffee Logistics LLC, has been established to potentially invest in the Chaffee Crossing trans-load facility in partnership with Union Pacific Railroad (Owen 2012).

Presently, Chaffee Crossing is linked by a single eight-mile rail line, operated by the Fort Smith Rail Road (FSRR, a division of Pioneer Rail of Peoria, IL), that connects the location to the port of Fort Smith. The rail line was upgraded by FSRR in 2011. However, goods coming into and leaving Chaffee Crossing via the Port of Van Buren or the UP rail facility at Van Buren have to rely on drayage, or shuttling by truck (Owen 2012). Rail shipments between Van Buren and Chaffee Crossing would have to go by way of downtown Fort Smith, which would require an additional transfer and, therefore, additional costs (Owen 2012).

### **Fort Smith and Highway Connections**

Highway connections were somewhat slow to grace Fort Smith, given its location on the edge of the Indian Territory, where travel was discouraged. The Garrison Avenue "Free Bridge" over the Arkansas River was approved by the state legislature in 1913 and opened in 1922, providing a connection between downtown Fort Smith and eastern Oklahoma. The Sebastian Bridge District was set up to administer the bridge and its construction (Patton 2004). Today the Fort Smith Metropolitan Area can claim to possess the foundations of a transportation hub. The metropolitan area is accessed by Interstate 40 (which skirts Fort Smith's north side), Interstate 540 (an extension of I-40 that links the eastern and southern sides of Fort Smith), US 64, US 71, AR59, and four other state highways. In addition, the future I-49 is slated to pass east of the city of Fort Smith and link to I-540 in Van Buren, north of Fort Smith, thus connecting the metropolitan area to Northwest Arkansas, Kansas City, and beyond to the north, and Shreveport and New Orleans to the south (FMPO 2011).

Interstate 40 is a significant conduit of freight in the U.S. In 2009, the American Association of State Highway and Transportation Officials (AASHTO) determined that the segment of I-40 through Arkansas, from Fort Smith to West Memphis, was among the most freight-crowded stretches of interstate highway in the entire country. That stretch made up 23 percent of the most freight-crowded 1,000 miles in the entire country (AASHTO 2010). The business community and public sector officials stress the enhanced cargo capacity of the Fort Smith Metropolitan Area with the future opening of Interstate 49, especially because of its potential to expand the already increasing linkages with the Northwest Arkansas Metropolitan Area (FMPO 2011). Despite the economic downturn since 2008, in 2012, the region is home to nine trucking companies (Fort Smith Chamber of Commerce 2012).

Increasingly, highway and rail transport are becoming better connected. Union Pacific established a "paper ramp" at Fort Smith for intermodal shipping. A paper ramp is a collection point for containers and truck trailers driven to large intermodal facilities by contractors of UP. The process is referred to as drayage. Fort Smith is linked via drayage to UP's facility in Kansas City and West Memphis (Ozment 2001; Harshbarger 2013). Trucking firms such as Fort Smith-based ABF increasingly attempt to maintain and ability to track the shipments involved in this drayage once they leave trucks and are loaded onto rail, though this technology still is incomplete (Harshbarger 2013). Studies by The Arkansas State Highway and Transportation Department (AHTD) in the 1990s determined there was a greater potential for intermodal

expansion in Little Rock, Russellville, Van Buren, and Warren (a point in Southeast Arkansas), despite reluctance by rail companies to expand intermodal facilities in the state. Northwest Arkansas was not regarded by AHTD as a feasible place for intermodal expansion, given the proximity of Van Buren (Ozment 2001).

Members of the business community of the Fort Smith Metropolitan Area are counting on the future Interstate 49 as a catalyst to region's ability to attract business. The route is slated to join with I-540 North at I-40, and will be routed southwestward of that intersection through Fort Chaffee, and specifically through the Fort Chaffee Redevelopment District's business park, Chaffee Crossing (FMPO 2012b). Ground was broken in 2012 on a six-mile stretch of I-49 to link Arkansas Highway 22 and US Highway 71 on the southeast fringe of Fort Smith. That stretch, which runs through Chaffee Crossing and includes three overpasses, was completed in mid-2015 (I-49 Coalition 2016). In early 2016, two companies have announced their plans to invest in Fort Smith because of its favorable highway and rail infrastructure. One is Spartan Logistics, which will develop a million square feet of warehouse space in the vicinity of the shuttered Whirlpool and Riverside Furniture plants. The other is P.H. Glatfelter Company of York Pennsylvania, a manufacturer of paper products (Cook 2016).

### **Examples of Business Usage of the Region's Transportation Infrastructure: Seven Short Case Studies**

This section provides a brief overview of seven companies that utilize the Fort Smith Metropolitan Region's transportation infrastructure in different ways. These examples, demonstrate some of the varied requirements of different companies, identify different ways that companies desire the transportation system to be expanded, and therefore, insert cargo transport infrastructure into the theme of the metropolitan area's economic development.

1. The small city of Mulberry, with a population of 1,655 and located in the eastern portion of the metropolitan area, is home to the only plant in the U.S. to process and pack edamame, a soy-type bean popular as an appetizer and snack among health food enthusiasts (Brosius 2013). The plant opened late in 2012 in Mulberry's industrial park immediately west of the city and within a quarter mile of I-40. American Vegetable Soybean and Edamame, Inc. (AVSE), a division of Houston-based JYC International, chose Mulberry because of its transportation advantages, including I-40, the UP rail line, and the potential for refrigerated container shipping on the Arkansas River (Baxter 2013), and because of agronomic research support from the University of Arkansas and free land provided by Mulberry (Brosius 2013). The company provides seeds, herbicides, and other inputs to farmers in the Arkansas River Valley who plant in April and May, and harvest, using company-provided harvesting equipment, July through September. The packaged product is shipped for now by truck to Fort Smith for cold storage, and is later shipped by truck to domestic markets, including Sam's Club, who sells the frozen beans with the brand name Imperial Gourmet, and to ports for export to East Asia. The processing plant will eventually have its own cold storage facility, at which time the company hopes to make full use of interstate truck transport, rail, and refrigerated containers shipped from the Port of Van Buren. Some 900 acres were planted locally in 2012, and approximately 2,000 acres were planted in 2013 (Baxter 2013).

2. Five Rivers Distribution, a company that operates approximately half the area of the private Port of Van Buren, is strongly in favor of the deepening to twelve feet of the shipping channel of the Arkansas River. The company's capital-intensive section of the port, with its crane and excavator, competes with Consolidated Terminals, which operates the remainder of the private

Port of Van Buren, and with the public Port of Fort Smith, where Five Rivers is a tenant. Because of the competition, all three facilities are operating below capacity. The shallow channel reduces the economic efficiency of shipping by barge, which contributes to the under-capacity problem for Five Rivers (Shell 2012).

The primary activities of Five Rivers's port facility include inbound steel rod coils for end users primarily within a radius of 200 miles in three states. Most of it originates from China, Turkey, Brazil, Japan, Ukraine and Egypt. Inbound bulk feeds for the cattle and poultry industries, much of which is imported from outside the U.S., pass through the port. Scrap metal destined for foreign markets dominates outbound products sent through the port. Northwest Arkansas accounts for more cargo shipped through Five Rivers' port. The port relies heavily on goods shipped by truck (drayage) and by the Arkansas & Missouri Railroad from nearby locales, including NWA, and eastern Oklahoma. The shuttering of so many manufacturing plants in Fort Smith over the past three decades has caused Three Rivers to focus outside the immediate region for business, and the reciprocal shipping agreements the company has with the three Class I railroads facilitates that spatial expansion of the port's hinterland. That said, Chaffee Crossing, a mixed-use development on the east side of Fort Smith that includes four manufacturing plants, is increasingly bringing business to the Port of Van Buren, primarily by truck. Thus, Five Rivers sees the completion of I-49 as crucial for the development of Chaffee Crossing, the Port of Van Buren, and the Fort Smith Metropolitan Area in general (Shell 2012).

3. Consolidated Terminals and Logistics Company, a New Orleans-based firm that operates fifteen barge ports in nine states throughout the Mississippi River System, occupies about half of the space of the private Port of Van Buren. Because the port facility is operated by a sizable company, it benefits from surplus equipment, such as cranes and dock facilities, from other barge ports within the company. The company ships primarily bulk materials, like coal, salt, steel, fertilizers and grains through Van Buren, as opposed to finished products. Grains and scrap metals are the main products shipped out of its Van Buren port facility to other areas, while fertilizers and steel are brought into the immediate area and to Northwest Arkansas. The facility receives, stores, and bags salt destined for hardware stores and the Highway Department for use during inclement weather. Most of the shipment of goods coming into the port are destined primarily for NWA, Texas, and Oklahoma, and only marginally toward destinations to the southeast. Thus, the company is keen to see the completion of I-49. A deepening of the river channel to twelve feet, however, would enable Consolidated to export more grains, especially soy and corn, to East Asia and Latin America through New Orleans, and to diversify more easily into shipment of products like pulp and wood pellets. From a geographic standpoint, Consolidated presents an interesting case study, because the company presently relies on rail and trucking as much or more than on its barge traffic (Gottbraith 2012).

4. Brent Higgins Trucking Company, located in the Mulberry Industrial Park in eastern Crawford County, operates 11 trucks. The primary activity of the company is the shipment of agricultural products in refrigerated trailers to cold storage facilities in the US South and Texas. Because of the importance of shipments southward to Texas, the company is keen to see the expansion of I-49. Given that the plant is seven miles from the proposed I-49, the new interstate highway would provide the company much better access to Shreveport and Texarkana than is currently the case. As it is, the company ships on secondary roads such as U.S. Highway 69 in eastern Oklahoma, that are less direct, and in less favorable shape than interstate highways, which adds to the company's maintenance costs for its trucks and tires (Higgins 2013).

5. West Northwest Transport, located in the Mulberry Industrial Park in eastern Crawford County, is a small trucking company with 22 employees, 15 trucks and 25 trailers, all of which are refrigerated. The fleet ships food products, including poultry and frozen food, primarily from the Northwest Arkansas Metropolitan Area (NWA) to the American South (The Carolinas and Georgia) and to New Mexico, Arizona and Southern California. Return "backhaul" trips typically involve packing materials (cardboard, paper and wood) and ingredients like spices and flour for Northwest Arkansas's food processing plants, raw materials for hydraulic fracturing destined for Van Buren, and electronic parts destined for a client in Bentonville, at the northern end of NWA. The company's niche of serving NWA is based upon I-540, which connects with I-40 a mere eight miles from its headquarters (Beneux 2013).

The construction of I-540 in the 1990s enabled the company to shift its focus from the waning furniture industry of Fort Smith to the food processing industry of Northwest Arkansas. The company's business in Fort Smith is limited to shipping ingredients for the Gerber baby food plant from both the South and California, and occasional loads of frozen processed edamame from the local plant to cold storage in Fort Smith. Bryan Beneux, president of the company, indicated that the completion of I-49 would have modest impact on his company, given the latter's east-west (I-40 and I-540) orientation. I-49 would result in some traffic alleviation on I-40 that could help his drivers, and it would boost Fort Chaffee's business, some of which his company would hope to capture. The company would benefit from a bypass around the NWA Metropolitan Area, given all of the truck traffic on I-540 (Beneux 2013).

6. Oxane, located in the Crawford County Industrial Park, manufactured ceramic proppants that substitute for sand used in the hydraulic fracturing industry, until the company's closure in 2015. The company's head office, which conducts executive management, research and development, engineering, logistics, and accounting, is located in Houston. Proppants are small materials that when injected by water at high pressure, serve to break apart the rock that traps natural gas. The company claims that its ceramic version of proppant, derived from aluminum silicates, is stronger and lighter than sand, and can be custom shaped and sized smaller to provide deeper fracturing than sand, because of the reduced amount of space between grains. Thus, the company's product, invented at Rice University, is an example of nanotechnology. In hydraulic fracturing, different types of rock require different sized proppants. The company cites transportation advantages as the primary reason for locating in Van Buren, followed by incentives offered by the State of Arkansas and the City of Van Buren. An additional advantage of the location to Oxane was the abundant workforce, including engineers and skilled machinists who could be trained to fabricate and repair the company's proprietary machinery, designed to be re-tooled to meet varied customer needs (Hunter 2013).

The company sourced the raw material from a number of places, including Malaysia, China, the Caribbean, Russia, Holland, Italy, and the U.S. Most was imported through the ports of Los Angeles, Long Beach, Houston, New Orleans, and a small number of ports on the East Coast. The raw materials were subsequently shipped by rail, primarily Union Pacific (UP) and secondarily A&M (The Arkansas and Missouri Railroad), from those maritime ports to the plant in Van Buren. The complexity of procuring and shipping the raw material required sophistication on the part of the company's personnel in charge of logistics (Hunter 2013).

Much of the finished product was sold domestically in all areas of the U.S. where hydraulic fracturing occurs, and some is exported. First, the product was blown into rail cars and shipped by rail to various trans-load facilities where it was then unloaded, then reloaded onto trucks for final delivery to customers (Hunter 2013).

Rail was the primary mode of transportation directly connecting the plant for both raw materials and finished products, and the diverse rail connections of the Fort Smith Metropolitan Area, especially the rail yard at Van Buren, weighed heavily in the company's decision to establish the plant there. The existence of the river and the expectation that its shipping channel would be deepened and a slackwater harbor built also was taken into account by the company, given expected growth in production and sales (Hunter 2013).

7. Bekaert is a Belgium-based company whose Van Buren plant produces steel wire for agricultural fencing, strength member for connecting electric towers together, and cable for highway crossover guard barriers. The latter is comprised of 21 wire strands designed to absorb vehicular impacts, rather than bouncing vehicles back into traffic. All of the company's products are custom made for end users, including the coating. For example, highway guard wire varies by state because of different regulations and different amounts of federal monies each state receives for such infrastructure. Thus, each state has to bid separately for the product. Whether agriculture- or highway-oriented, the finished wire product is dyed, stretched and heated, and subsequently shrunken to the proper diameter (which depends on the finished product) for further processing, such as heat treatment and coating (Harshbarger 2013).

The Bekaert plant, which employs some 290 full-time factory workers, 60 "white collar" employees, and 50 temporary workers, is located immediately adjacent to off I-40 on the west side of Van Buren. The plant operates 24/7 for fifty weeks each year. The raw material for both fencing and highway barriers is domestic and imported steel in rod form shipped in giant coils that resemble the slinky toy. The diameter of unprocessed rod ranges from 5.5 to 13 millimeters. Rod typically is purchased three months in advance to ensure delivery just in time. Imported rod coils, which accounts for about half of the input, originate in China, Brazil, Italy, Chile, and Venezuela, and are shipped to ports such as Houston or New Orleans that accommodate ocean-going vessels. From there, the rod coils are reloaded onto barges that carry it to the Ports of Van Buren and Fort Smith. The steel rod sourced domestically, which comprises half the plant's input, arrives at the plant primarily by flatbed truck and secondarily by rail. Given that rail connections are not as favorable to the company as barge, the company located its plant on the river with the original intent of building its own port. The latter idea proved not to be cost effective, so the company relies on the two existing ports in Van Buren and Fort Smith (Harshbarger 2013).

As is the case with the raw material that arrives, most of the finished product leaves the Bekaert Plant in Van Buren by flatbed truck, which drays most of it to rail facilities for reloading and subsequent transport. The plant sees on average some 50 trucks arrive and leave each business day. Though most sales are domestic, exports to Mexico are typically done by truck, given the need for flexibility in transport modes when crossing finished product over the border and retrieving the reels and other packing material. Exports to other countries involve rail or truck shipments to ports, and subsequent maritime shipment. Given that a large portion of the raw material is brought to Van Buren by barge and the company desires to expand barge shipments of both raw materials and finished products, Bekaert is greatly interested in seeing the deepening of the river channel to twelve feet (Harshbarger 2013).

### **Conclusions and further research**

The different transportation requirements of companies like Bekaert, Oxane, Five Rivers Distributing, Consolidated Terminals and Logistics, and the two trucking companies in Mulberry illustrate the nuances and complexities of the micro-geography of cargo transportation within the

Fort Smith Metropolitan Area. They all indicate that local supply chain formation has yet to adequately occur, and yet the region continues to seek ways to exploit its potential as a transport hub based on highway, rail and barge. They look to intermodal activities as key to the region's development. Although the three transportation modes continue to experience increases in the region, as do logistics services, the full potential of cargo transportation infrastructure will not be realized without additional supply chain formation within the immediate area.

Perhaps equally complicated, and a topic in need of further research, is an understanding of the ways that local elected officials, economic developers, officials of local planning entities (FMPO and RITA), and members of the private sector interested in cargo transport infrastructure work with elected officials at the state and national levels to plan and lobby for the funding for the expansion of the transportation infrastructure that is seen as essential to the region's economy. Generally, it is the opinion of most of those interviewed for this study that partisan politics generally are downplayed in favor of cooperation and strong partnership, but earmarks from Washington, DC are increasingly hard to come by, and more involvement by local members of the Arkansas Legislature would be needed as a result. A focus on such inter-governmental and public-private leadership strategies would reveal much about the Fort Smith Metropolitan Area's economy of the recent past, the present, and the future.

This paper provides much of the basis for future research that will provide a comparative overview of the geography of transportation development in Fort Smith with those of Kansas City and Tulsa, two other Plains Gateway cities that have sought to expand their intermodal capabilities as a cornerstone of their economic development strategies. Despite the convergence of multiple transport modes, the Fort Smith region was slow to develop as a transport hub. In part this delay was due to a lack of marketing of the location as a transport gateway to the Great Plains, and insufficient recruitment of transport-related businesses (Pitsch 2012). Today the I-40 corridor carries a significant amount of the country's cargo. By some estimates, one-third of the national total passes through Arkansas on I-40 (Conklin 2012). Arkansas is one of six states that together account for 88 percent of US cargo haulage by truck, and I-40 is the state's busiest for freight (AASHTO 2010).

Local officials related to economic development continue to place a lot of emphasis on the region's relative transportation advantages. Three main ideas are mentioned. First, in light of efforts to boost the locality's intermodal shipping capabilities, it is widely believed that Van Buren and Fort Smith could become effectively an inland port or "brown port" to serve as a backyard storage and distribution area to the Ports of New Orleans, Houston or Mobile, especially when such nearby "blue ports" reach and even exceed their cargo-handling capacity when the Panama Canal is widened (Pritsch 2012). Second, local officials realize that routine manufacturing of consumer goods likely will not return to Fort Smith or to any other area of the U.S., so the goal should be to produce a highly educated and readily re-trainable workforce to bring about the kind of high value manufacturing that requires high levels of technological sophistication. The transportation advantages of the locality are expected to increase its chances of attracting such investment. Third, several (but not all) local officials believe the transportation infrastructure of the area will enable it to become a secondary or even primary distribution center along the lines of Memphis or Louisville, homes of Fed-Ex and UPS, respectively. The announced investment in significant warehouse space by Spartan Logistics in early 2016 would indicate that the region's transportation infrastructure is sufficient for future distribution activities. The key to the region successfully developing into such a transport hub would be the completion of I-49. However, skeptics point to the more developed intermodal transport

infrastructure of nearby larger cities such as St. Louis, Kansas City, and Memphis.

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