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Deflating Rural North Dakota: Mechanization, Industrialization, And Depopulation In The Small Community

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DEFLATING RURAL NORTH DAKOTA: MECHANIZATION, INDUSTRIALIZATION, AND DEPOPULATION IN THE SMALL COMMUNITY

by

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This thesis, submitted by Alyson Leas in partial fulfillment of the requirements for the Degree of Master of Arts from the University of North Dakota, has been read by the Faculty Advisory committee under whom the work has been done, and is hereby approved.

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Alyson D. Leas
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ABSTRACT

This thesis serves to examine the continued decline of population in rural North Dakota. In the face of a large oil boom in the state's western third, agricultural communities in the central third of the state continue to struggle. Through an examination of United States Department of Agriculture yearly agricultural censuses, experiment station notes, personal correspondence, local histories, and the United States decennial census from the first fifty years of the twentieth century, information regarding the rise and fall of communities in northern Towner County, North Dakota, has been tabulated. Results show that the better agriculture did in terms of production and profitability via mechanization, farm growth, and scientific advances the worse impact it had on the rural community in terms of farm and population loss. Population of laborers and small farmers were replaced by machines and large farms, while profits and mobility allowed rural citizens to expand their consumer spheres. Communities in Towner County, North Dakota, had fallen prey to Elwyn Robinson's "Too Much Mistake," creating their own decline.

CHAPTER I

INTRODUCTION

An Introduction to Rural Community

Throughout the last fifty years, the abandonment of rural North Dakota has become a growing concern for both citizens and scholars. Once-prosperous communities throughout the state have lost population en masse, with businesses, schools, and churches folding in response. In recent years, however, an oil boom in the state's western counties has overshadowed, and perhaps even reversed, the infamous problem of depopulation on the Northern Great Plains. The booming oil population is only one side of North Dakota's story, however. In the state's central counties, roughly those located north to south along the Highway 281 corridor, rural agricultural communities continue to decline. Interestingly, agriculture has continued to boom, providing the same sort of prosperous economy attributed to the oil fields.

This population decline in central North Dakota started decades ago in the 1940's, but shows roots in factors such as mechanization and industrialization that started at the turn of the twentieth century. As this thesis will showcase in the following chapters, the decline in population in rural North Dakota was often precipitated by agricultural success or, popularly, a "boom." As agriculture became increasingly successful and business-like, less of a population was needed to work and support the land. Larger farms overtook

small neighboring farms, and machines that could be operated by one individual replaced labor crews of thirty men. Rural North Dakota's success in agriculture led to its ultimate decline; a decline so permanent that it could not be undone by any subsequent booms or busts in agriculture. Unlike the oil industry the state has become so known for, agricultural success in North Dakota has led to prosperity for individuals that were able to harness innovation, while often breeding decline for the rural community as a whole.

Elwyn B. Robinson is, to many, the figurehead of North Dakota history. In his definitive *History of North Dakota*, Robinson outlines six themes that have governed the state's history throughout the last century.[1] The theme perhaps most pertinent to this study is that of the "Too Much Mistake." Robinson outlined this theory as such, ". . . too many farms, too many miles of railroads and roads, too many towns, banks, schools, colleges, churches, and governmental institutions . . . beyond the ability of the state to maintain."[2] In the early boom years of North Dakota, agricultural success and industrial speculation ignited an influx of settlement. It has been noted that if every post office established in North Dakota during the period from roughly 1890-1910 were to be represented as a dot on the map, certain areas in the state would appear solid. By the time focus of this study (1905-1950) however, this inundation of one thousand potential communities gave way to less than four hundred incorporated towns in the state. On the surface, Robinson's Too Much Mistake had come true; rural abandonment plagued North Dakota throughout the twentieth century.

In studying the history of community decline throughout North Dakota, two

[1] Elwyn B. Robinson, *History of North Dakota* (1966 Reprint. Lincoln: University of Nebraska Press, 1995), 9.
[2] --, "The Themes of North Dakota History" (speech, University of North Dakota 75th Anniversary Convocation, 1958).

schools of thought emerge as to the true cause of Robinson's Too Much Mistake. The first, more widely considered theory argues a direct correlation between the railroad and the community. Simply put, scholars of this theory– John C. Hudson, Melvin Kazeck, Joseph Schweiterman-- attribute town establishment on the Plains to the coming of the railroad and believe rural decline to be a result of rail lines pulling out or folding in smaller areas. This view has typically been held by rural historians, which is where this thesis disagrees. The second, less familiar consideration regarding rural abandonment is the general impact of an industrializing agricultural society. This view, supported in this thesis, is actually more popular amongst rural sociologists such as Wendell Berry and Walter Burr as well as social historian Hal Barron.[3]

This thesis seeks to prove how this sociological analysis actually outweighs the traditional view taken by historians, particularly in north-central North Dakota. It was not the railroad's closure that "busted" rural communities, but rather a combination of economic, technologic, and social factors. Agricultural industrialization included such things as the mechanization of farm work that had once been completed through manual labor, the application of scientific advancements to crop production, and a general business mentality that drove the farm economy toward capitalism. Upon examining certain rural communities in North-Central North Dakota, it is this latter, neglected school of thought that presents itself as the more realistic cause and deserves further study.

The reaction of many historians has been to blame the Too Much Mistake on the railroads and their need of communities every seven miles. Too many towns sprang up in

[3] Though Berry and Burr did not focus specifically on North Dakota, their examination of rural communities on the Northern Plains proves applicable to Towner County in many regards.

support of the railroad, only to fail when trains began to travel longer distances or when rail service was eliminated completely.[4] The arguments for the impact of the railroad on rural living are many, and are relatively sound. This is especially true for works relating the building of the railroad to the building of communities. John C. Hudson's *Plains Country Towns* solidly establishes the railroad as a true town builder on the Plains.[5] As Hudson and his adherents argue, no other community aspect would be possible if not for the availability of transportation. Trains allowed for the transportation of crops and livestock, leading to higher agricultural profit. Trains also transported the goods and materials necessary for businesses and services to establish in a community. Scholars like Hudson argue that the combination of higher farm profit with this increased ability to import goods helped to establish many communities in rural North Daktoa. Robinson himself was also a proponent of such an explanation for community building in the state. He did not, however, always attribute the decline of those same towns to the railroads' closure.

Many authors of rural abandonment have used the community building ability of the railroad to also explain the decline of rural North Dakota. Such scholars believe that because the presence of rail transportation encouraged profitability for both in-town businesses and the outlying farm areas, the loss of that transportation spelled the loss of the profitability. Once profit was lost, businesses folded, farms failed, and rural citizens flocked to urban centers of growth and employment. In his *North Dakota: a Human and*

[4] Prior to the advent of the railroad across North Dakota, this same argument could be made for river traffic along the state's Red River, its eastern border with Minnesota. North-central North Dakota is, however, widely devoid of rivers or developed waterways to support water transportation. The area in question was also settled relatively late, with most towns in question incorporating in 1905. By this year, the railroad had already largely replaced any water traffic that would have been required in the area.
[5] John C. Hudson, *Plains Country Towns* (Minneapolis: University of Minnesota Press, 1985).

Economic Geography, Melvin Kazeck worked to show the economic and social impact of the changing railroad geography of the 1950's.[6] Joseph Schwieterman's *When the Railroad Leaves Town: American Communities in the Age of Rail Line Abandonment* also spells out the economic, and therefore population, decline inherent with a community's loss of rail transportation.[7] The communities of this study simply do not support the town-building theory of railroads, all having been established before the coming of the rail line and surviving after the line's departure.

Hal Barron, Wendell Berry, and Walter Burr comprise the second school of thought, or that of agricultural changes impacting rural community.[8] Berry and Burr, sociologists, chronicle the changes in community structure caused by mechanization and the increased profits of farmers. Barron examines how this increased profit and production, while initially good, eventually "busted" the rural community.

As previously mentioned, Robinson seemed to agree that railroads built many communities in North Dakota, but the author points to various economic and social explanations for the decline of those same towns. What this thesis seeks to expand upon is a more generalized cycle of boom and bust in the agricultural economic realm of rural North Dakota; in essence, a melding of sociological input into Robinson's famous historical theories. The agricultural economy has experienced several boom and bust cycles throughout the last century. As shown by Sonya Salamon, Elvin Hatch, and Otto Hoiberg, farms and townspeople experience the effects together in terms of their broader

[6] Melvin Kazeck, *North Dakota: A Human and Economic Geography* (Minneapolis: Lund Press, Inc., 1956).
[7] Joseph Schwieterman, *When the Railroad Leaves Town: American Communities in the Age of Abandonment* (Kirksville, MO: Truman State University Press, 2004).
[8] Walter Burr, *Rural Organization* (Charleston: Nabu Press, 2010).; Wendell Berry, *The Gift of Good Land: Further Essays Cultural and Agricultural* (San Francisco: North Point Press, 1981).; Hal Barron, *Mixed Harvest: The Second Great Transformation in the Rural North, 1870-1930* (Chapel Hill: University of North Carolina Press, 1997).

shared community.[9] With each repetition of the bust cycle, communities across North Dakota falter. While a few fail entirely, others remain. It is within this context where the emptying of the state's rural areas comes into question.

R. Douglas Hurt, a prominent Great Plains researcher, argues that rural abandonment is not an economic reaction.[10] Agriculture continues on, regardless of a town's size or offerings. Abandonment according to John Hudson is a matter of population. The phenomena may never be fully completed as long as a semblance of population remains in the area. This population will be upheld by agriculture. However, as industrialization and the use of natural resources reshape farming, the population of rural areas becomes smaller while still maintaining a strong economy. While population may give life to a community, Hudson underestimates the impact that a surviving agricultural economy would have in maintaining a community.

This relationship can be showcased by rural communities throughout central North Dakota. While most of the available agricultural sources from the early twentieth century focus on the state as a whole, case studies of a smaller area will be utilized where possible. The mechanization and depopulation phenomenon impacted the state as a whole, but specific communities in Towner County, North Dakota, will provide detailed insight into mechanization's role in the Too Much Mistake, rather than the traditional focus of the railroad's role in the matter.

In a study of Towner County in North-Central North Dakota, many rural communities show signs of decline or perseverance in no direct relation to the railroad. Communities along the original rail line, such as Hansboro and Egeland, failed long ago,

[9] Otto Hoiberg, *Exploring the Small Community* (Lincoln: University of Nebraska Press, 1955).
[10] R. Douglas Hurt, *The Big Empty: The Great Plains in the Twentieth Century* (Tucson: University of Arizona Press, 2011).

while Rocklake, an inland community, started without a railroad, and did not seem to falter when the eventual rail line was pulled out.[11] The focus of this research will be to better determine what caused the abandonment of these rural areas, in hopes of displacing the long-held railroad assumption. Many factors often neglected by popular research seem to be at work in North Central North Dakota. Though possible factors are numerous, this work will focus on industrialization and how it impacted the communities of Rocklake, Hansboro, and Egeland.

In a broad sense, Rocklake, Hansboro, and Egeland seem to be inconsequential map dots within the state of North Dakota, which to many is a mere map dot itself. Rocklake, the largest of the three communities, only recorded 101 citizens at the time of the 2010 Census, a number that has since dropped even further. Hansboro, the smallest of the communities, had a 2010 population of 12. These sparse populations have left government officials from outside of the state wondering why and how North Dakota's "living ghost towns" hang on, an existence that costs both the state and federal government money for maintaining infrastructure in light of the communities' tiny tax bases. These small communities are not as inconsequential as these figures seem to suggest, at least not in an investigation of rural agricultural decline in North Dakota. Rocklake, Hansboro, and Egeland are positioned in the heart of North Dakota's "Durum Triangle," an area of increased agricultural productivity due to its unique production of durum, a hearty, profitable type of wheat used for making pasta.

As will be discussed below, within years of their founding each of these communities boasted numerous businesses and their highest recorded populations to

[11] For purposes of the this thesis, and inland community may be defined as one not established along a major railroad line.

support the large farming economy. By becoming so economically founded upon agriculture, the communities made themselves vulnerable to the rise and fall of farm markets in terms of profit, productivity, and labor needs. This tie to a nearly completely agricultural-based economy couples with a disconnect to the railroad theory in a way that makes these three communities indicative of the aforementioned mechanization theory of rural decline.

Rocklake, Hansboro, and Egeland were all established in 1905 and would soon thereafter be served by the Farmers' Line Railroad of the Farmers' Grain and Shipping Company. Hansboro was the initial terminus of the line, which originated in Devils Lake, ND. Sometime in the early 1940s, the Farmers' Line was bought out by the Great Northern Railroad and turned into a subsidiary branch for that company. The railroad would actually eliminate service to Hansboro by the 1960s, making Rocklake the new terminus. The railroad would eliminate service to both Rocklake and Egeland by the late 1980s. Egeland was, however, bypassed by another railroad at this time, linking it to a larger grain cooperative in neighboring Bisbee.

As previously mentioned, the communities of Rocklake, Hansboro, and Egeland are located in Towner County, North Dakota. Towner County is located in North-Central North Dakota. It is bordered by Cavalier County to the east, Ramsey and Benson counties to the south, Pierce and Rolette counties to the west, and the Canadian province of Manitoba to the north. Towner County appears to fall on the western edge of the eastern third of the state, but it more closely resembles central North Dakota in terms of population, geography, agriculture, and economy. The county occupies 1,044 square miles, of which this paper will focus on the northern half. Southern Towner County is

more densely populated, containing the county seat of Cando. Cando and its surrounding communities were established in the mid-1880's, while communities in the county's northern half were generally founded in 1905 and are more rural, agriculturally focused. These include the communities of Rocklake, Hansboro, and Egeland.

This thesis will focus on Towner County because of both its uniqueness and its normalcy. The communities in northern Towner County are all located at least sixty miles from a major trade center. At one time, however, each community in question was served by the railroad, and each remains served by a major state or U.S. highway. Due to highway systems and automobility, along with extra time and purchasing power, consumers in the county have coped with what may seem to be prohibitive remoteness. Cando, the seat of the county, is located in the county's southern third and today boasts the county's only school, grocery store, implement dealer, newspaper, and chain store. It is typical of many county seats throughout the state of North Dakota: a beacon of population and commerce in a sea of declining communities.

Like many counties in the state's central and eastern thirds, the economy of Towner County is served predominantly by agriculture. As previously mentioned, the region does differ marginally in the type of agriculture practiced, which makes studies of the area a unique contribution to existing agricultural history. By harnessing the unique power to grow durum wheat, farmers in Rocklake, Hansboro, and Egeland created a solid agricultural economy that required minimum labor inputs to produce. In essence, the agriculture that put these communities on the map would eventually threaten their populations.

The communities in northern Towner County also speak to the chronologically-

layered town building episodes in North Dakota's history. Rocklake, Hansboro, Egeland, and counterpart communities to their east and west in northern Cavalier and Rolette counties (i.e. Sarles and St. John) were settled relatively late in relation to cities to the south and east of the county. These towns were often not incorporated until the larger railroads, in this case the Great Northern, built spur lines further "inland" from their main lines. Promises of agricultural productivity had already drawn a population to the area, which had already created a strong business and economic foundation prior to the arrival of the railroad. This self-reliance would arguably put the communities in a better position when the railroads eventually discontinued service.

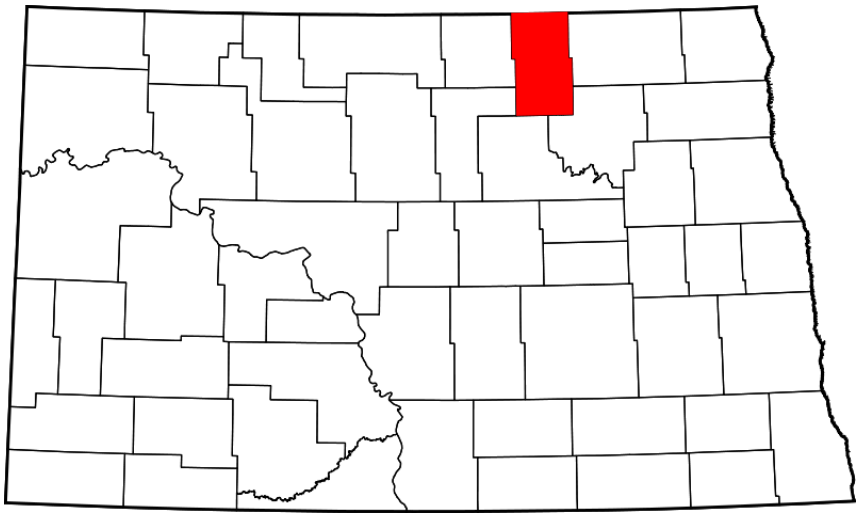

Figure 1: The state of North Dakota with Towner County highlighted. It is bordered by the Canadian province of Manitoba to the North, Cavalier County to the east, Ramsey to the southeast, Benson to the southwest, and Pierce and Rolette to the West. Map belongs to the Public Domain.

Rocklake, North Dakota, is the largest community examined in this study. The town is located in north-central Towner County, roughly thirteen miles from Rolette County on the west and fourteen miles from Cavalier County on its east. Rocklake is located eight miles south of the Canadian border at the junction of State Highway 5 and

United States Highway 281. Its peak population occurred in 1940 at 348 citizens. At its prime, Rocklake had thirty-seven listed businesses, including four service stations, three restaurants, two grocers, a hardware store, a movie theatre, two independent grain elevators, two hotels, and a blacksmith.[12] The community also had a post office, a kindergarten through grade twelve school and three churches (Catholic, Lutheran, and Methodist). At the time of the 2010 census, Rocklake had dwindled to 101 citizens with nine listed businesses. The school closed at the culmination of the 2011 school year, though all three churches and the post office remain open.

Egeland, North Dakota, is located thirteen miles southeast of Rocklake and is the second largest community in this study. The community lies along State Highway 20. Egeland's peak population was 333 citizens in 1930, which had fallen to twenty-eight at the time of the 2010 census. At that time Egeland had one bar, a grain elevator, a small service station, a small Methodist church, and part-time post office. These are what remained of the community's two grain elevators, two service stations, post office, grocery store, fish market, two churches (Lutheran and Methodist), and kindergarten through grade twelve school.[13]

Hansboro, North Dakota, is located a little more than thirteen miles northwest of Rocklake on State Highway 4. The community lies two miles south of the Canadian border and is home to a Port of Entry station. However, the 2010 population of Hansboro was twelve citizens compared to its peak of 218 in 1920. At that time, Hansboro had a hotel, bar, restaurant, implement dealer, Catholic church, a post office, and a kindergarten

[12] Rocklake History Committee, *Rocklake History From 1905 to 1980 and an All School Directory* (Langdon, ND: The Printer, 1980), 5-12.
[13] Egeland Community Club, *Egeland 50th Anniversary: A History of the Egeland Community, 1905-1955* (Cando, ND: Towner County Record Herald Press, 1955), 8.

through grade twelve school. Today all that remains is the bar. Major U.S. Highway 281 used to travel through Hansboro but was redirected in 1955 to run to nearby Rolla in Rolette County to reflect the population disparity.[14]

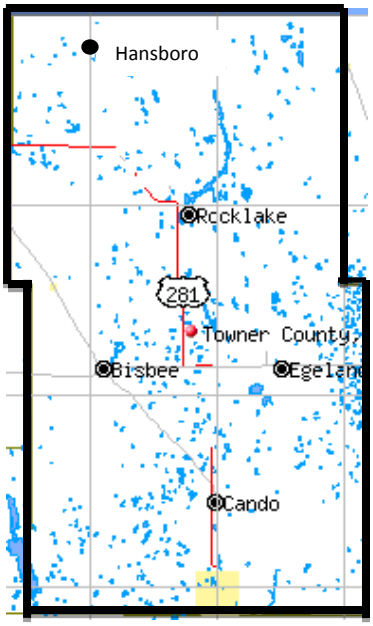

Figure 2: Towner County map showing Rocklake, Hansboro, and Egeland. Note the extent of water that may have inhibited early farm growth

That Rocklake and Egeland have managed to maintain operating churches in light of such drastic population loss may give a false impression of religion's success compared to business failure. Average attendance at Rocklake's All Nations Lutheran Church is twenty-five congregants. The town's United Methodist Church is often lucky to have four cars in its overgrown parking lot, a number also reflective of attendance in Egeland. It is not, then, that these churches are prospering, but that they have merely adapted to a life of rural decline. Rocklake's Lutheran congregation shares a pastor with two neighboring towns, while the Methodist pastor has preached at up to four area churches each Sunday.[15] The automobile and improved roads have allowed this to happen. While these same improvements at one point took masses of young people and displaced laborers away from northern Towner County, they are now allowing the communities to hang on to what little tradition may remain.

[14] Ronald J. Seghers, *A Community of the Heart: Hansboro Heritage, Hansboro, ND 1905-2005* (Cando, ND: Towner County Record Herald Press, 2005), 128.
[15] Information on church attendance gathered via author's personal correspondence. Nicole Jacobsen, e-mail message to author, October 6, 2013.

Much like the surviving churches, the survival of bars in each of these three communities is not necessarily indicative of a booming population or thriving business. Rather, the survival of bars is yet again indicative of the adaptations made by rural communities to live on. Perhaps most telling is the multi-purpose Hansboro Bar. The Hansboro Bar survives not simply as a watering hole, but also as a make-shift post office, a town hall, and even a church. In many other communities, one may be taken aback by the multipurpose use of this building. Visitors have voiced concern that the use of a hall over a bar for funerals and weddings seems sacrilegious or insensitive. Postal service officials would almost certainly be shocked by the use of bar steps as a makeshift post office. However, in near ghost towns such as Hansboro, these multiple uses are not questioned. As the rather accurate joke goes, every small town in North Dakota has a church, a post office, and a bar. When only one viable building remains in a town, the community still manages to make due.

Many factors of industrialization seem to have combined to spark the abandonment of rural communities such as Rocklake, Hansboro, and Egeland. The industrial changes that began in the early decades of the twentieth century would impact agriculture on many levels, and fully transform how farmers interacted with their communities. Mechanized equipment replaced the need for manual labor, forcing many rural workers to migrate to urban centers of employment. Mechanization made farming a less formidable task, increasing the amount of land one farmer could manage. Crop yields and farm profits greatly increased during the period of mechanization from 1910-1950 again due in large part to industrialization. Of course the drastic drop in crop prices immediately following World War I and the devastating drought years of the early 1930's

took away from ever-increasing success. Rather than debunk the hypothesis of agricultural success, however, these periods of hardship showcase the boom-bust cycle of North Dakota's agricultural economy. Communities became so founded on agribusiness that stark market declines reached far beyond the farmers' pockets to the rural community as a whole.

While the efficiency of mechanization allowed for larger farms and, by default, larger harvests and higher profits, the growth of crop science, known as agronomy, was also helping to increase farm profit and yields. These changes, to be discussed in detail in Chapter Three, include the genetic hybridization of plants to better adapt them to the Northern North Dakota climate and also the introduction of pesticides and herbicides to protect plant growth.

The last factor of industrial change that impacted the rural community was the increased leisure time and market reach afforded to rural community members through the adoption of efficient machinery and the resulting higher profits. Though most of the time saved by the use of machines was re-invested into more land, farmers did take advantage of some leisure time, especially with the use of the automobile. Some leisure time and extra profit were also invested into technologies such as the radio and, later, television. The radio was often used by farmers to listen to agricultural programs that discussed such things as markets, agronomy, and machine maintenance. This, in turn, helped to increase farm profit and productivity even further. Radio broadcasts could, however, give young men and women living in rural areas a glimpse of the "outside" world. Dissatisfied with their slow, predictable life on the farm, many young people left for larger urban areas in hopes of finding excitement, culture, and better-paying work.

The automobile, leisure time, and increased profit also allowed rural citizens to increase the radius in which they conducted business. A detailed look at how leisure time and automobility served to harm the rural community can be found in Chapter Four.

Between the prosperous years of 1940 and 1945, North Dakota as a whole lost 4,000 farms.[16] The population of rural areas did not rise during this time, showing that displaced farmers moved to urban centers rather than simply moving into the nearest community. With the loss of so many consumers, it would only be a matter of time before local businesses began to fold. This impact on the businesses and community services must be studied further. Business ledgers and statements have been obtained from various businesses in this three-community study. Records of the Hansboro Bar, the Rocklake community restaurant and Farmers' Union service station, and the Egeland service station all reveal the rise and fall of business and profit during the years of this study. School and church records also serve to showcase the population fluctuations experienced in these communities.

Local histories of communities in Towner County will be thoroughly examined to note the rise and fall of businesses, services, and population. This information will be combined with agricultural statistics and data regarding mechanization, production, and farm profit. Because most works of local history are compiled with nostalgia and here-say, this use of primary data will tell a new story of the "true" rise and fall of these communities. The United States Census on Agriculture and publications from the United States Department of Agriculture will be especially beneficial in measuring the rate of mechanization and farm growth in the areas of focus. Agricultural censuses collected

[16] United States Department of Commerce, Bureau of the Census, "1950 Census of Agriculture for Towner County, North Dakota," United States Department of Agriculture (Washington: DC, 1950).

information regarding yields, gross profit, and the number and make of machinery on individual farms. This county-specific data will be cross-examined with the United States General Census data in hopes of revealing the interplay between agriculture and community that was greatly affected by farm industrialization and mechanization in the early twentieth century. Also of use in this research will be county land plat maps. Land ownership is charted in these plat books, showing the owners of each parcel of land and also the location of every farm in current operation. These atlases were examined at five-year intervals to showcase the growth of land ownership under certain farms, the presence of absentee land owners, and the general decline of farm numbers in relation to land in production.

To fully understand the nature of decline in North Dakota, the idea of the rural community must first be contextualized, as it is not considered to be a definitive matter of city limits. Henry Pratt Fairchild's *Dictionary of Sociology* offers a useful definition of rural community, describing it as, "An area of face-to-face association larger than a neighborhood in which a majority of the people use a majority of the social, economic, education, religious, and other services required by their collective life and in which there is a general agreement on basic attitudes and behaviors, usually village or town centered."[17] By considering towns as "lost" when their institutions become abandoned, the traditional historical school of thought is missing out on the survival of the rural community.

When sociologist Elvin Hatch interviewed rural citizens about the boundaries of their community, the citizens usually presented the same farms, roads, or natural

[17] Henry Pratt Fairchild, Editor, *Dictionary of Sociology* (Westport, CT: Greenwood Press, 1970), 88.

landmarks in the area to delineate between communities.[18] Hatch discovered that farms as far as ten miles from a city's center were considered as feeding into a town, and were therefore acknowledged as part of the community. Though these men worked predominately in Iowa and Kansas, their definitions of rural communities perfectly fit Rocklake, Hansboro, Egeland, and their surrounding farms.

The non-town of Crocus, North Dakota, located between Rocklake and Egeland, provides an insight into what rural citizens consider to be community. Unlike many "ghost towns" that have risen in popularity, no trace remains of the community that was once home to streets, houses, and a grain elevator. This lack of remains would come as a shock to visitors, however, who can still navigate to the site of Crocus via sanctioned state highway signs and who will hear locals introduce themselves as "from Crocus." Stories such as this showcase historians' mishandling of what exactly constitutes community growth and decline. Rather, the sociological idea of unspoken community, to be discussed later, seems to better explain how so many "living ghost towns" survive in North Central North Dakota.

A rural town suffers abandonment not only when townspeople leave for urban opportunities, but also when farmers fail. Agriculture serves as the backbone to many of North Dakota's small communities. Because of this, decline in that sector instigates not only farm abandonment, but also the loss of town businesses, public works, and revenue, with affected citizens often following suit. Authors such as Sonya Salamon and Elvin Hatch theorize that abandonment of rural life occurs with each cycle of this shared

[18] Elvin Hatch, Biography of a Small Town (New York: Columbia University Press, 1979), 146.

economic upheaval.[19] The noted literature on this subject of community-town interaction in agricultural areas tends to strictly tie their rise and fall together. Salamon and Hatch focused almost predominately on the rural community as a whole losing population and infrastructure during these boom and bust cycles. This thesis seeks to examine, however, the "living ghost towns" of Towner County to showcase how agriculture's continuity has maintained a strong, albeit shrinking, rural community in light of actual towns fading quickly.

Lowry Nelson's *Rural Sociology: Its Origins and Growth in the United States* is an overview of the field itself, but also establishes a framework for understanding rural communities in a more abstract light.[20] Lowry argues that social interaction and interdependence of citizens both on the farm and in town were the true bastions of rural life. While the railroad established the town, the people carried it forward. This line of thinking is also voiced by T. Lynn Smith in his *Sociology of Rural Life* and in Walter Burr's *Rural Organization*.[21] Burr especially defines the rural community as a center of social activity supported by a surrounding agricultural population. The mode of thought voiced by these sociologists considers the community as a support for agriculture, and not as a railroad byproduct. Small towns within the broader rural community were tied to agriculture in many ways. The farming economy related closely to the economy of the

[19] Sonya Salamon, "Ethnic Determinants of Farm Community Character," in Farm *Work and Fieldwork: American Agriculture in Anthropological Perspective*, ed. Michael Chibnik (Ithaca: Cornell University Press, 1987), 167-188.;
Elvin Hatch, *Biography of a Small Town* (New York: Columbia University Press, 1979).
[20] Lowry Nelson, *Rural Sociology: Its Origins and Growth in the United States* (Minneapolis: University of Minnesota Press, 1969).
[21] T. Lynn Smith, *The Sociology of Rural Life* (New York: Harper and Brothers, 1947), et al.; Walter Burr, *Rural Organization* (Charleston: Nabu Press, 2010).

town.[22] While townspeople naturally supported the local industry in their daily lives, the rural population could often provide more constituents than those accounted for within city limits. The economic activities of the rural majority could determine the success or decline of town businesses. During recessions in the agricultural economy, farmers were forced to tighten their purse-strings, making fewer trips to town and purchasing only the bare essentials when there. Stores and service industries lost the income generated by rural consumers, and therefore had less money of their own to circulate.

This paper will study such social aspects of rural community life rather than the more popular profit-driven railroad approach of previous scholars. This approach is not one taken often in regards to northern North Dakota. In recent years of a booming oil industry, national attention has focused on the state's increasing population and calls for infrastructure growth. This boom only tells the economic tale for one-third of the state. This thesis seeks to bring oft-forgotten central North Dakota into the broader discussion of economic cycles and community growth and decline. Chapter Four will provide more information regarding the relationship between rural communities and the growth of agriculture. It also contains more examples of historiographic works on the rural community

T. Lynn Smith was one of the first rural sociologists to define and study what would become known as the "rural problem." While early rural sociologists focused on the positives of rural life, Smith foresaw the possible detriments that success may have on the small community, even before mechanization was wholly completed. Smith argued that rural towns' close proximity to one another could cause competition and conflict,

[22] Wendell Berry, "Agricultural Solutions for Agricultural Problems," in *The Gift of Good Land: Further Essays Cultural and Agricultural*, ed. Wendell Berry (San Francisco: North Point Press, 1981), 115.

both of which were fueled by mobility. Robinson's Too Much Mistake is exemplified by Smith's theory of accommodation: to keep up with the growing profitability and consumer demand of rural citizens, many communities saw an initial boom of businesses both mercantile and mechanical.[23] After the initial "run" of pent-up demand, however, many communities could not support these multiple businesses, nor could towns within ten miles of one another stand to support similar businesses.

Interestingly, John M. Gillette, a longtime professor at the University of North Dakota in the first half of the twentieth century, is often referred to as the father of rural sociology. Gillette published the field's first text, *Rural Sociology*, in 1913. Though not directly applicable to this research, Gillette's trailblazing application of sociology to rural living set the framework under which the above authors completed their studies. Gillette's philosophy of sociology involved examining the group phenomena that dictate social interactions within certain spheres.[24] Though this pioneer of rural sociology focused most of his efforts on organized labor and women's groups, his ideas of rural community thought will prevail throughout this thesis.

As with any study of history, shortcomings of this thesis must be acknowledged. As previously mentioned, Towner County, North Dakota, has been used as a case study for the author's thesis. This county rests in a unique cradle of agriculture in north-central North Dakota, but exemplifies the rural decline of many counties not in the state's oil-producing or metropolitan regions. Because of the limited area, some factors often essential to agricultural studies bear no strong relevance to this thesis. Northern Towner County has always been a crop-focused agricultural economy with very few examples of

[23] Smith, *The Sociology of Rural Life*, 118.
[24] John Morris Gillette, *Eighty Years a Plainsman: An Autobiography* (Grand Forks, ND: UND Alumni Association, 1989), 92.

livestock ranching. Mechanization and scientific advancements in the livestock field surely helped to transform the rural communities in the western reaches of North Dakota where cattle is more common, but need not be discussed in the "Durum Triangle." Also, though the author has striven to remain gender-neutral, hints of the masculine farmer inevitably show through. No evidence exists in plat books, photographs, or journals of Towner County to suggest independent women farmers. As mechanization made farming a more independent task and machinery became more automated, a rise in women both young and old aiding in the family farm work can be noted.

This thesis seeks to offer mechanization as an alternative explanation to the aforementioned railroad theory of community decline, but the author acknowledges a multitude of alternative factors that may be discussed in a lengthier study. These other factors include wars taxing supplies of young men and supplies, unpredictable weather patterns, market fluctuations, and declining birth rates amongst American women.

Though this is not a study on birthrates or the economics of child-rearing, the decline in birthrates throughout twentieth century America does play into the deflating of communities. The declining number of children on farms will be discussed in Chapter Two as a reaction to the lessening need for large amounts of manual labor for farm work. Urban birthrates declined throughout the early twentieth century in tandem with the rates in rural areas. Factors for this included improved birth control methods, older children living longer, the lessening need for child labor, and even loosing young men to war. A national birthrate of 3.7 in 1900 America declined to 2.5 in 1915, 2.3 in 1920, 1.9 in 1930, and 1.7 in 1935.[25] The birthrate would, of course, rise substantially in the post-

[25] United States Department of Commerce, Bureau of the Census, "Birth, Stillbirth, and Infant Mortality Statistics for the Continental United States, the Territory of Hawaii, and the Virgin Islands 1935," United

World War II "Baby Boom," but again subsided.

The industrial movement in America in the early twentieth century set into motion many of the changes researched in this paper. It made possible the mechanization and farm growth that this research aims to prove as the true cause of decline in rural North Dakota. The industrial age is synonymous with prosperity, profit, and optimism throughout the nation.[26] Profit and productivity were the buzzwords of society. Industrialization in many sectors of the American economy had an unexpected impact on rural communities. Technologic innovations such as railroad transportation, steel, mail-order catalogues, mechanized farm equipment, and even pneumatic tires all shaped rural America in the early decades of the twentieth century.[27] Advancement in farm equipment made fieldwork more efficient and more profitable. Steel implements, gasoline-driven tractors, and efficient rubber tires were the driving force behind the growth of the agricultural industry.

With a booming farm economy, rural citizens were able to take advantage of other industrial age innovations. For instance, the time saved in the field joined with the increasingly popular automobile to allow rural consumers to travel to larger market centers. Catalogue magnate Montgomery Ward took advantage of radio advertising and rural free mail delivery to boost his mail-order business. Farmers of the time were profitable, allowing them to expand their own operations while also enjoying more of the world. This expanded market reach served the agricultural economy well, providing

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States Center for Disease Control, (Washington, DC, 1935), 4.

[26] For the purposes of this thesis, the industrial age will be considered as the years 1876 through 1900 which brought both physical and mental changes to the American economy. This thesis focuses on the first half of the twentieth century, the fifty years most impacted by the innovations and advances set into motion around the turn of the century. This study spans the years 1900-1950 so that it may cover many changes of the agricultural "boom-bust cycle over time.

[27] These innovations will be examined and discussed more fully in the coming chapters of this thesis.

farmers with the new knowledge and products necessary to become increasingly profitable and productive. In a business sense, reaching to larger markets was the only way one could remain economically competitive with farmers elsewhere. However, small town businesses would suffer a great blow when agriculture was no longer a strictly local affair.

What many failed to foresee was the detrimental affect such success would have on rural America as a whole. In essence, the industrialization of agriculture eventually "busted" the rural areas that it had initially bolstered. Rural communities initially boomed with the agricultural economy, but soon outran themselves: Robinson's Too Much Mistake. This changing rural landscape can be summarized in three distinct ways. First, mechanization and scientific advancement caused a shift from manpower to tractor-power on farms, eliminating the need for a large rural labor workforce. Secondly, the increased profit earned from the growing production capabilities of farms allowed rural citizens to extend their market reach, siphoning income away from small local businesses. Lastly, when the overproduction bubble caused by industrialization burst, there were no sturdy supports left in the rural community to support a population, leading to the final demise of the small town.

CHAPTER II

FROM MAN TO MACHINE

Mechanization as a Factor of Decline

The mechanization of farm equipment took place long before the railroad eliminated service to the small community spurs of Rocklake, Hansboro, and Egeland. Whether it was the 1950 end of Hansboro's line or the closure of the Rocklake and Egeland lines in the 1980, all communities show signs of advanced mechanization and population decline decades earlier. The abandonment of these communities began with the growth of farm size and the declining necessity of a large labor force that accompanied mechanization. The tractor and combine were welcome agricultural innovations and led to the prosperity of many farmers. Within a matter of years, however, the innovations that had so boosted the rural economy would displace laborers and farm families to urban areas, setting into motion the abandonment of rural North Dakota. Contrary to the widely-held historical explanation of railroad-related growth and decline, this chapter will showcase how mechanization was a far more condemning factor.

New, mechanized farm equipment was touted as a labor-saving breakthrough. While this made farming a more efficient process, it replaced the need for human labor. Farm workers faced unemployment, and many had no choice but to move to seek employment in larger urban areas. Farmers that did mechanize sought increased land for

crop production, often buying out the land of their neighbors that failed to mechanize and grow, or of those who lacked heirs interested in taking over the farm. Again, these displaced agriculture citizens fled to urban centers of employment. As will also be discussed, this movement was also caused by young men leaving to fight in both World Wars. Many young men from rural areas who were lucky enough to return to the United States after the war did not return to their farms, instead opting to put their military education and "world sense" to use in more urban areas. The passage of the G.I. Bill for funding veterans' education also encouraged these young men to seek education in urban areas as opposed to returning to the farm.

Being displaced by machinery or growing farm sizes was not the only force influencing the rural to urban population movement, however. For many rural citizens, more often than not young people, this movement was becoming much more voluntary in the interwar years of the 1920's-1930's. As information began to flow easily between city and farm, a topic discussed in Chapter Four, rural youth realized that their urban contemporaries were receiving higher wages for work that was often less-arduous than that of the farm. In fact, many machinery ads of this era are focused on keeping young people on the farm, suggesting that the older generation of farmers would have to adopt labor-saving mechanization in order to persuade younger generations to remain in the rural community. World Wars I and II also increased the voluntary movement of young people away from rural areas in a quest for adventure and education. This, however, will be more fully examined in Chapter Four.

Much literature has been produced in regards to the mechanization of American agriculture. Authors such as Kirby Brumfield, Brian Bell, Robert C. Williams, and R.

Douglas Hurt have compiled voluminous works in regards to the mechanization of farming throughout the twentieth century. Brumfield's *Wheat Album* focuses on the development of harvest machinery starting with hand reaping and running all the way through the self-propelled combine.[1] Brian Bell's *Fifty Years of Farm Machinery: From Starting Handle to Microchip* begins in the 1910s and chronicles mechanization through the early 1960s.[2] Bell focuses on how mechanization brought comfort and convenience to the operator while speeding up farm work as a whole. Robert C. Williams has compiled what is arguably the most well-rounded, complete history of the tractor on American farms.[3]

Though Williams' *Fordson, Farmall, and Poppin' Johnny* sings the praises of the tractor and mechanization, as the work progresses the author begins to touch on the issues presented in this research. He introduces the concept of the tractor causing rural decline both by displacing large amounts of labor and by encouraging a few large farmers to overtake many smaller operations. R. Douglas Hurt has compiled perhaps the most voluminous works regarding agricultural history as a whole and mechanization.[4] Some of Hurt's work, such as *American Farm Tools*, focuses solely on the mechanization itself. The author is perhaps better known for his examinations of what the growth of agricultural industry and productivity meant for the rural community. Hurt's feelings

[1] Kirby Brumfield, *The Wheat Album* (Seattle: Superior Publishing Company, 1974).
[2] Brian Bell, *Fifty Years of Farm Machinery: From Starting Handle to Microchip* (Ipswich, UK: Farming Press, 1993).
[3] Robert C. Williams, *Fordson, Farmall, and Poppin' Johnny: A History of the Farm Tractor and Its Impact on America* (Urbana: University of Illinois Press, 1987).
[4] R. Douglas Hurt, *American Farm Tools: From Hand-Power to Steam-Power* (Manhattan, KS: Sunflower University Press, 1982); Hurt, *American Farms: Exploring Their History*. (Malabar, FL: Krieger Publishing Company, 1996); Hurt, *Problems of Plenty: The American Farmer in the Twentieth Century*. (Chicago: Ivan R. Dee Publishing, 2002). Hurt, *The Big Empty: The Great Plains in the Twentieth Century* (Tucson: University of Arizona Press, 2011).

about mechanization and the rural community are evident simply by reading a selection of his titles, for instance *The Problems of Plenty* and *The Big Empty: The Great Plains in the Twentieth Century*. In these works the author outlines how the increased efficiency and profit of Great Plains agriculture could actually cause a bubble in terms of population and economy. While some works have started to more closely follow Hurt's view of mechanization, this work seeks to extend the parallel to North Dakota, and specifically to Robinson's Too Much Mistake.

Wendell Berry is a sociologist focusing on rural areas and the small communities therein. The author is unique in his application of sociology to the examination of the impact of mechanization on the rural community. This thesis seeks to apply this unique stance to the unique area of North Central North Dakota. Berry specializes in the study of the rural community and the unique relationships between town and country that define it both socially and economically. Unlike agricultural historians Williams and Bell, Berry is critical of the industrialization of agriculture.[5] For instance, in his *The Gift of Goodland*, Berry cites that the real cause of rural decline was the loss of community mentality that mechanization produced. In essence, once farmers started seeing their laborers as extensions of machines instead of neighbors, the rural community system began to crumble. A movement from cooperation and help toward independence and the push to mechanize and grow also pitted citizens of the rural community against one another, whether or not they realized it. Though approaching thirty years of age, Berry's works remain as the most complete examination of the sociology of the mechanization movement in agriculture.

[5] Wendell Berry, *The Gift of Good Land: Further Essays Cultural and Agricultural* (San Francisco: North Point Press, 1981); Berry, *The Unsettling of America: Culture and Agriculture* (San Francisco: Sierra Club Books, 1977).

Steam engines had grown in popularity throughout the late nineteenth century into the early twentieth century. However, these machines would never impact Rocklake, Hansboro, or Egeland. They were too expensive for the beginning farmers—the town was incorporated in 1905—and there was no adequate transportation to haul the large equipment to the region. For the towns' first decades, farming remained a labor intensive, family-oriented occupation due to the lack of mechanization. This drew a large amount of farm laborers to the area, creating a labor bubble to burst once the gasoline-driven implements of industrialization emerged.[6] Many of the community's early businesses were founded to support the manual labor and draft animals necessary for early agriculture. By 1907, Rocklake alone had two hotels, three restaurants, three livery stables, and two blacksmith shops.[7] Each of these businesses owed prosperity to the pre-industrialized needs of agriculture: laborers, horses, and simple farm implements. Almost from its incorporation, Rocklake was creating a business and population bubble based on a form of agriculture that mechanization would soon bring to a close.

At the turn of the twentieth century, most tractors were being manufactured by steam engine companies. These early tractors resembled steam engines, as many companies merely replaced the boiler with a fuel tank. Many manufacturers only produced an average of fifteen tractors per year, given the work required to build and assemble each machine on an individual basis, but also the limited market for the cumbersome machinery. The Hart-Parr Company was one of the first companies to manufacture a commercially successful tractor. The innovators' sales peaked in 1903

[6] Rocklake History Committee, *Rocklake History From 1905 to 1980 and an All School Directory* (Langdon, ND: The Printer, 1980), 8.
[7] Marrion Jahnke, *Rocklake Golden Anniversary* (Langdon, ND: The Printer, 1955), 4.

with the sale of fifteen tractors.[8] The International Harvester company was the largest tractor and farm implement manufacturer of the early 1900s. Between the years 1906 and 1910, the popular company sold 1,000 tractors.[9] Both Hart-Parr's and International Harvester's tractors were still too expensive and large to be a justifiable purchase for many farmers. In fact, many manufacturers believed that the tractor market had been saturated as early as 1912.[10]

These large steam-powered engines never appeared to gain much popularity in the soft and sandy soil composition around Egeland and Hansboro and the incessantly wet land of Rocklake, The engines would sink into the soil, requiring draft animals and large crews to free them from the mire. The upkeep and possible issues inherent with the steam engines (the danger of getting stuck, needing water and timber, an ever-present danger of exploding) kept initial labor numbers high and possible agricultural efficiency low. Photographic records of the northern Towner County area in the 1910s suggest that many farmers in the area made a direct jump from draft power to small gasoline-powered tractors and equipment.[11]

The gasoline-powered tractor was one of the most important advancements made in Industrial Era agriculture. Steam engines had grown in popularity throughout the late nineteenth century into the early twentieth century. However, these machines were not always feasible for field work, taking acres to turn and weighing upwards of thirty-five

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[8] Paul K.A. Conkin, *A Revolution Down on the Farm: The Transformation of American Agriculture Since 1929* (Lexington: The University Press of Kentucky, 2008), 15.
[9] Conkin, *A Revolution Down on the Farm*, 15.
[10] Robert C. Williams, *Fordson, Farmall, and Poppin' Johnny,* 22.
[11] Many photographs can be found online as part of the NDSU Institute for Regional Studies "Digital Horizons" photograph archive.
http://digitalhorizonsonline.org/cdm4/results.php?CISOOP1=all&CISOBOX1=Towner+County&CISOFIELD1=CISOSEARCHALL&CISOROOT=all.

thousand pounds.[12] The average field in the northern Great Plains was large enough for the steam engines' turning radius, but the soft soil could not support the weight of the machine. Farmers began seeking smaller, more agile, and more universal tractors within the first decade of the 1900s. The timing of this desire fit perfectly with the incorporation of towns in northern Towner County in 1905.

In 1910, the city of Winnipeg, Manitoba, hosted the Winnipeg Tractor Trials, an event showcasing both steam and gasoline-powered tractors.[13] The gasoline tractors were clear winners, and steam engines were almost immediately retired. The profit and efficiency of tractor ownership was becoming clear to many farmers, as was the machinery's ability to replace large amounts of manual labor. Gasoline-powered tractors saved many hours of manual labor in relation to their predecessor, the steam engine. While it took three or four men to simply keep the steam engine stocked with water and wood, plus one more to operate it, the tractor could be fueled and operated by one man.[14] The *Rock Lake Ripples*, Rocklake's community newspaper, carried coverage of the Winnipeg event.[15] Winnipeg lies roughly150 miles northeast of Rocklake, close enough for the event and its result to be widely known throughout the agricultural area. Mention was made that a traveling gasoline-tractor trial would be passing through the community, but the paper was discontinued before that event occurred.[16]

Gasoline-powered tractors replaced a large amount of the manual labor required

[12] John E. Janssen, "Hart-Parr Tractor's Contribution to the Advancement of Agriculture," *The American Society of Mechanical Engineers* (May 1996): 6.
[13] A.C. True, United States Department of Agriculture Office of Experiment Stations *Experiment Station Record Vol. 30* (Washington: Government Printing Office, 1914): 190.
[14] R. Douglas Hurt, *Agricultural Technology in the Twentieth Century* (Manhattan, KS: Sunflower University Press, 1991), 24.
[15] S.E. Treadwell, "Gas Tractor Winner in Winnipeg," *Rock Lake Ripples* (Rocklake, ND), August 1910.
[16] Interestingly, the paper was not discontinued by any economic or decline factors that this thesis may otherwise suggest. Instead, the *Ripples* came to an end when editor S.E. Treadwell shot a man over a stolen bottle of whiskey and was asked to leave the area.

by pre-industrialized agriculture. The tractor could pull six times the equipment of a horse, and could travel 75% faster.[17] The tractor saved the manual labor needed to guide and tend to the draft animals, and drastically cut the amount of time needed for fieldwork. At the onset of the twentieth century, one farmer working with one horse and plow could till one acre in one hour, forty-eight minutes.[18] By 1938, tractors had become advanced enough to till one acre of land in thirty minutes. Not only could the tractor, on average, travel faster than a horse, it could also pull more numerous, heavier farm implements. While a horse could pull one one-bottom plow, small tractors could pull six fourteen-inch plow-shares at once.[19] Likewise, while horses could pull a maximum of a two-row seeder, tractors could pull four, twelve, or even twenty-four row seeders.[20]

The pulling power of the tractor was especially welcome by farmers on the Great Plains, where the soil was very hard and compacted. Horses and simple plows struggled to tear up the firm prairie sod, but it would prove no match for the influx of tractors during the Industrial Era. As will be discussed shortly, the tractor also proved itself over the horse simply by being to operate at virtually all hours of the day and during any seasons. Horses, on other hand, were limited to six hours of work per day for health reasons while also being vulnerable to health risks in times of extreme cold or heat. The show of raw power and endurance, however, was often not enough to convince farmers of the feasibility of tractor ownership.

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[17] Hurt, *Agricultural Technology in the Twentieth Century*, 10.
[18] Hurt, *Agricultural Technology in the Twentieth Century*, 24.
[19] Ford Motor Company, *Fordson Tractors*. Film. Produced by Ford Motor Company (1917; Waterloo, Ontario. National Film Preservation Foundation, 2010.), Digital. http://www.filmpreservation.org/preserved-films/screening-room/fordson-tractors-1918 (accessed November 7, 2012).
[20] Don Paarlberg and Philip Paarlberg, *The Agricultural Revolution of the 20th Century* (Ames: Iowa State Press, 2000), 25.

In the early twentieth century, many factors would have to come together to promote the popularity of the tractor and boost ownership. Tractors presented a substantial investment, on average costing $750.00 for a standard model.[21] Many farmers estimated that they would have to have one hundred thirty acres in tillable land in order to make the purchase of a tractor justifiable. Smaller farms could not benefit from the tractor for two reasons. First, the smaller acreage proved manageable with a manual labor force. It was imagined being more of a difficult maneuver to transport the tractor to a small field than just doing the work with man power. The second reason for the acreage required to justify a tractor was that of cost and profit. Farmers needed the profit from at least one hundred thirty acres of crop or livestock in order to afford keeping a tractor. [22] As long as these small farms held on, there would be employment opportunities for rural agricultural workers. After several years of mechanization, however, the small farmer would be threatened by the success of his tractor owning and operating neighbors.

Just as the purchasing of tractors began to decline in 1912 from a temporarily fulfilled demand, the manufacturing of agricultural goods was met with a wave of Industrial Era innovations. This is perhaps most apparent in automobile magnate Henry Ford's foray into tractor manufacturing. Ford had heard the cries of farmers asking for smaller, more agile tractors. As he went to the drawing board, he began to realize that many principles of the automobile could be applied to the production of tractors. When the first Fordson tractor rolled off the line in 1917, it set the tone for a new wave of tractors.[23] Tractors were to be light, agile, and inexpensive, yet powerful. New tractors

[21] Williams, *Fordson, Farmall, and Poppin' Johnny*, 24.
[22] Hurt, *Problems of Plenty*, 49.
[23] Jeff Creighton, *Ford Tractor Data Book: Fordson to the Hundred Series* (Osceola, WI: MBI Publishing Company, 1996), 6.

were also designed to do all of the fieldwork a horse could do, whereas their predecessors had simply been too heavy for work other than the initial plowing of soil. Ford also applied his famous assembly line model of production to tractor manufacturing, with other companies soon following suit. This streamlined approach helped to produce more tractors while lowering the cost. Coupled with the new versatility of the machines, the market for mechanized agricultural equipment boomed again.

During the prime years of agricultural innovation, the 1910s-1930s, actual mechanical developments would also help to promote a widening acceptance of the tractor. The mass production of pneumatic tires began after developments in the production of synthetic rubber in the 1920s. By the middle-to-late 1930s, many tractors had joined the automobile in utilization of rubber tires over steel wheels. The move to pneumatic tires on tractors had a surprisingly high impact on farm labor. The smoother ride offered by rubber tires saved on machinery wear, increasing the lifespan of the tractor.[24] Though rubber-tired tractors averaged about $200 more than their steel-wheeled counterparts, the increased longevity made the cost worth it for many forward-thinking farmers. As the tractor began to last longer, ownership became increasingly feasible for farmers willing to make a long-term investment. Tractors with steel wheels did not move well between fields, leaving most hauling jobs to draft animals. Pneumatic tires allowed tractors to move smoothly and quickly between fields, eliminating the need not only for draft animals, but the men to tend them.

Because many country roads were under ill-repair throughout the early twentieth century, many counties had strict regulation about the sort of equipment that could be

[24] J.W. Shields, "Pneumatic Tired Tractors for Agriculture," *Agricultural Engineering* 14 (February 1933): 39.

operated on public roads. Many public roads were reserved for automobiles and draft animals; to be caught with an iron-wheeled tractor or heavy steam engine on the roads carried a steep fine.[25] Not only was moving this equipment great distances time consuming, it was often illegal, which also served to slow the growth of farm acreage until rubber tires had been adopted.

Pneumatic tires were an especial aid to the growth of average farming acres in the Rocklake area. As the name suggests, the community is found on the shores of Rock Lake, a fresh water lake that is only one mile across but the lake itself coupled with its tributary coulees and sloughs stretches to nearly twenty miles long.[26] One major waterway, the Armourdale Coulee extends out of the northwest corner of the lake and flows to the Canadian border, creating a sort of horseshoe shape with the larger lake itself extending to the northeast. The area is also marked by several prairie sloughs and wetlands not directly connected to the larger lake. Because of this, what would be considered the rural radius of the community was virtually split into three three-mile sections of land. Farmers in each of the sections could not expand to the east or west because of the water obstacles in their path. With draft animals or iron-wheeled equipment, the path around the lakes and coulees to more land would have been prohibitively long. Pneumatic tires decreased the time taken for moving between fields and made the longer drives more comfortable on the operator and less harmful on the tractor. Rubber tires allowed Rocklake farmers to expand their operations across increasing stretches of land.

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[25] Marvin McKinley, *Wheels of Farm Progress* (St. Joseph, MN: American Society of Agricultural Engineers Press, 1980), 36.

[26] Due to United States Postal Service regulations at the time of its founding, the community of Rocklake had to be spelled as one word. The lake and township bearing the same name, however, remained two words.

Pneumatic tires on tractors not only increased the speed of the equipment moving between fields, they also offered surprisingly more traction in the field, speeding up fieldwork itself. In a test conducted with two Allis Chalmers tractors, one iron-wheeled and the other pneumatic-tired, the rubber-tired tractor finished its plowing task in half of the time as its iron-wheeled counterpart. To add to the spectacle, Allis Chalmers representatives then placed weights onto the drawbar of the plow to demonstrate that tractors with rubber tires could also pull up to 25% more weight than could an iron-wheeled tractor of the same horsepower.[27] Initially heralded as a boon to farmers everywhere, over time the simple innovation of a rubber tire would replace the need for large crews of laborers to work with draft animals, since the tractor could pull what seemed to be an ever-increasing amount of equipment with one operator. The mobility afforded by rubber tires also led to growth in farm size, another "success" that may have actually harmed the rural population.

For those farmers that adopted rubber-tired tractors, the increased mobility allowed them to expand their farming acreage. By the time of this innovation, however, there was little dormant land onto which these farmers could move. Instead, these larger operators often overtook their smaller neighbors that were unable or unwilling to adopt mechanization, including that of the pneumatic tire. In Towner County alone, the number of farms dropped drastically between the 1939 preliminary agricultural census (which would have been the first to include rubber-tired tractors) and the 1950 agricultural census. The census counted 1,267 farms in the county as of 1939 as opposed to 914 in

[27] McKinley, *Wheels of Farm Progress*, 87.

1949.[28] While the adoption of pneumatic tires on farm machinery may not be directly traced to this farm decline, plat books, books that map land ownership and farm locations every year, show a definite growth in east-to-west expansion of farms across previous barriers.

An examination of a plat book of Towner County in 1928, one decade before the advent of pneumatic tires, shows many farmers owning, at most, one section of land. If the land split, it was generally into half sections stacked north to south. [29] By 1950, roughly one decade after the adoption of rubber-tired tractors, the number of farms in the two townships surrounding Rocklake had dropped, with many families holding sections that stretched in all directions from their "home place."[30] The "boom" in large farm holdings that caused the decline of farm numbers and population was caused by this feat of mechanization, not the railroad.

The decline in farm numbers is especially substantial when one considers that agriculture at the time was experiencing a boom cycle in response to the Second World War. As farms grew, farmers began to purchase more tractors in response to a cycle of both ability and necessity. The pent-up demand of not having tractors available for domestic purchase during the war effort also created a sharp increase in mechanization immediately following the war. Farmers had greater profit off of their increasing acreage, which freed up funding for more equipment. As farms grew to this point, however,

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[28] United States Department of Commerce, Bureau of the Census, "1939 Farm Census Preliminary Report for Towner County, North Dakota," United States Department of Agriculture (Washington: DC, 1939); United States Department of Commerce, Bureau of the Census, "1950 Census of Agriculture for Towner County, North Dakota," United States Department of Agriculture (Washington: DC, 1950).

[29] *Standard Atlas of Towner County, North Dakota Including Plat Book of Villages, Cities, and Townships of the County* (Chicago: Brock and Company, 1928).

[30] Towner County FSA, *Plat Book of Towner County* (Cando, ND: Towner County Record Herald Press, 1950).

purchasing more equipment became a necessity to help manage the land.

The power take-off drive (PTO) was another industrial development of the tractor industry that greatly enhanced that implement's efficiency and popularity. The PTO shaft was powered directly by the tractor itself, unlike its predecessor, the bullwheel, which had to be pulled by draft animals. The PTO shaft would spin when horsepower was applied to it, transferring that power of the tractor's driveshaft to the implement to which it was attached. First introduced as an aftermarket option on International Harvester tractors in 1916, the PTO was so favorable that it soon became a standardized part of every tractor.[31] McCormick-Deering tractors were the first to offer the standard option in 1922.[32] The increased power to drive implements was an obvious replacement for manual labor or draft animals, and also allowed farmers to increase their operations. Much like the pneumatic tire, the PTO accelerated the adoption of the tractor and its replacement of manual labor.

Figure 3: The Early PTO Drive on a McCormick Farmall Tractor, c. 1923.

The application of hydraulic technology on tractors was yet another labor-saving addition to an already efficient piece of machinery. Hydraulic oil was pushed through cylinders with the use of levers to either raise or lower equipment attached to the tractor. This equipment was either a drawbar implement like a plow or seeder or a loader on the front of the tractor used for hauling such things as hay and manure. The hydraulic three-

[31] The early PTO of a McCormick Farmall tractor is shown in the photograph. Andrew Morland and Nick Baldwin, *Classic American Farm Tractors* (London: Michelin House, 1985), 68.

[32] E.J. Baker, "Five Transcendent Developments." *Farm Implement News* (March 10, 1957): 76. ; W.L. Calvert. "Sources of Power on Minnesota Farms," *Minnesota Agricultural Experiment Station Bulletin* No. 262 (February 1930): 50.

point lift was a mechanism on the rear of the tractor that attached to various implements. The arms of the tractor lift would attach via pins and bolts to matching arms on the implement itself. The tractor operator could then use hydraulic levers located within reach of his or her seat to raise and lower the implement, most often a plow, in and out of the soil. Prior to this innovation, the lifting of the implement had to be done by hand. Because plows, seeders, and other implements need to be lifted out of the ground in order for the tractor to turn, this manual lifting and dropping was often incredibly inefficient.[33] This process slowed down fieldwork while also influencing the amount of acres tilled. Many fields would be rounded off to avoid certain obstacles rather than spend excess time lifting the equipment. Often times, though one person could do the work of driving the tractor and getting off to lift or otherwise adjust the implement, a second laborer stayed in the field to assist. When the hydraulic power lift was utilized, however, one person could efficiently move around obstacles without leaving the tractor seat. Again, a simple innovation replaced labor, saved time, and sparked increasing farm size.

Like the three-point hitch, the front-end loader was another time-saving innovation afforded by hydraulics. As late as 1940, hauling hay and manure were both labor intensive tasks done with the pitchfork. A loader bucket that could be moved up and down with the movement of a lever was a welcome innovation for many farm laborers.[34] Though the loader actually replaced the work of a large crew of often young men that would be hired to haul in a farmer's hay, it was actually designed as a way of keeping young men on the farm. In fact, many of the above innovations, including the tractor itself, would soon be utilized in marketing campaigns to keep young people, even young

[33] Robert Ankli, "Horse vs. Tractors in the Corn Belt," *Agricultural History 54, no. 1* (January 1980), 137.
[34] A.N. Johnson, "The Impact of Farm Machinery on the Farm Economy," *Agricultural History* 24, no. 1 (January 1950): 58.

women, on the farm.

Figure 4: Allis-Chalmers "Power of the Family Farm" advertisement.

The innovations discussed above coupled with the loss of young men to the World Wars to boost women's roles in farm work.[35] Hydraulic power lifting, PTO implements, and tractors all made farm work much easier and less labor-intensive than it had been with draft animals and hand tools. Because of this, more and more farm wives began to help in the fields in the late 1910's. When World War I drafted many men into service and away from farms, young women were often able to keep the farms in production. This was arguably even more true during the Second World War, when

[35] As was noted in the introduction to this thesis, little evidence exists of independent women farmers in northern Towner County. It is important to note, however, that these mechanical innovations likely added to an increased amount of women assisting on farms.

tractors had developed even further. If and when men returned to their farms after the war, they were able to farm with only family labor, eliminating the need for outside hired labor.[36] As machinery grew in efficiency, even familial labor became less needed, and a drop in family size is noted.[37]

Historically speaking, farm families had been large to accommodate the immense needs of agricultural labor in the pre-industrial era. It was not uncommon for families in communities such as Rocklake to include ten or more children.[38] Though there is no county-by-county breakdown offered, the Sixteenth Census of the United States showcases the fluctuations in both the number of children as a whole and the number of children working throughout the state of North Dakota, divided between urban and rural categories.

Figure 5: Allis-Chalmers "Family Harvest" advertisement

Census numbers must always be examined with a certain margin of error in mind in regards to unpaid and familial labor. However, the census of 1940 does claim to include both paid and unpaid farm workers regardless of age and familial relation. Between the years 1930 and 1940, the state's population of rural children decreased from 62,103 to 52,982, or a decline of

[36] Carrie A. Meyer, *Days on the Family Farm: From the Golden Age Through the Great Depression* (Minneapolis: University of Minnesota Press, 2007), 250.
[37] As mentioned in Chapter One, this thesis does not have the space or resources to conduct a thorough view of birthrates or female farm work. For further reading on the subject, refer to Katherine Jellison, *Entitled to Power: Farm Women and Technology, 1913-1963* (Chapel Hill: University of North Carolina Press, 1993) or Mary Neth, *Preserving the Family Farm: Women, Community, and the Foundations of Agribusiness in the Midwest, 1900-1940* (Baltimore: Johns Hopkins University Press, 1995).
[38] See Rocklake Family Directory in Marion Jahnke, *Rocklake History from 1905 to 1980 and an All School Directory* (Langdon, ND: The Printer, 1980).

nearly 15%.[39] The number of male children in the labor force during this period dropped from 7,832 to 6,837 while the amount of female child workers actually increased from 1,629 to 1,730.[40] Because of these shifts, a larger percentage of children, especially females, were engaged in the rural labor force but out of a much smaller population. The rise in female employment helps to showcase the move farms were making toward the individualized operations heralded by ads such as those published by Allis Chalmers.[41]

Figure 6: Allis-Chalmers "All-Season" Tractor Advertisement

The tractor and its attachments clearly helped accelerate farm work by bringing labor-saving efficiency to the field. However, adopting a tractor over draft animals was efficient in other ways as well. Horses tired easily, with even the best and strongest of teams requiring breaks after four to six hours. Draft animals were also sensitive to the heat and cold, and often could not be worked in extreme temperatures.[42] Many tractor advertisements and farmers' logbooks alike herald the ability of tractor as an "all hour, all season" worker.[43] Not only could the tractor work as many hours as the owner preferred, it only *required* labor and money during those hours. Horses and other draft animals required tending long after the day's fieldwork was done. Hay and water had to be provided plus medical issues tended to. On average, each

[39] United States Census Bureau, "Sixteenth Census of the United States: North Dakota," Department of Commerce (Washington, DC: 1940).
[40] Ibid.
[41] All pictured advertisements can be found in Tim Putt, *The Power of the Family Farm: A-C Tractor Ads 1922-1956*. (USA: The Herald, Inc, 2013).
[42] Arthur Dahl, "Shall it be Horse or Tractor?" *Tractor and Gas Engine Review* (June 1921).
[43] Putt, *The Power of the Family Farm*.

draft animal kept by a farmer required five acres of land for pasture and feed.[44] Not only was this land then kept out of cash crop production, it also required the extra labor of cutting and curing the hay.

The period of agricultural mechanization discussed in this research is occurring within a broader context of the nation engaging in two world wars. Both World Wars I and II took large numbers of young men away from the rural community. At war's end, these young men had seen the world and tasted independence, often influencing them to not return to the farm but instead to remain in larger urban areas.[45] The G.I. Bill also helped these young veterans to gain a college education that had previously been unattainable for many farm children. To make matters worse, the young men and women of rural communities who had not been drafted were increasingly exposed to urban employment opportunities, which often touted high wages and labor-saving technology. Innovations such as the radio and Rural Free Delivery for mail, to be discussed in Chapter Four, increased this longing for adventure. The children of farmers unable or unwilling to mechanize were simply seeking an "easier" life away from the small town. Manual labor that had been fun or "special" in someone's youth was no longer appealing in the face of mechanization. This was especially true with the growth of leisure time; young people whose parents had adopted the tractor had an extra hour of free time at night while some young people remained in the barn tending to draft animals.

In the late 1940s, Rocklake had an Oliver tractor dealership, and later an Allis-Chalmers dealer, while the Hansboro hardware store sold Fordsons. Though the local

[44] McKinley, *Wheels of Farm Progress*, 71.
[45] Wayne Rasmussen and Douglas Bowers, "Rural America in the Twentieth Century," in Mark Drabenstott and Lynn Gibson, *Rural American in Transition* (Kansas City: Federal Reserve Bank Research Division, 1988), 5.

papers in both communities had been discontinued a decade before, one can imagine them printing advertisements such as Allis Chalmers' "Keep That Boy on the Farm" campaign in which a twelve horsepower Allis tractor is advertised for $250.00. The 1946 ad inquires, "To keep that boy on the farm, how can you afford not to own one?"[46]

By the year 1925, there were an estimated 200,000 tractors on 3.6% of American farms.[47] North Dakota accounted for 17,483 tractors, with Towner County providing 306 (1.8%) of that number.[48] Though the tractor was rising in popularity due to such innovations at the PTO, many farmers would not adopt the tractor or other labor-saving machinery until after the post-World War I agricultural depression had faded later in the decade. World War I had caused an impressive wheat market, driving agricultural production upward in hopes of the United States supporting Europe's food needs for the next decade. Shortly after the war's end, however, Europe began producing bumper crops of its own and the bottom fell out of U.S. wheat market. Agriculture would rebound by the late 1920s, however, encouraging further mechanization. By 1930, North Dakota counted 37,605 tractors (a 115% increase over 1925), with Towner County accounting for 648 tractors (a 112% county increase but still only 1.7% of the state total).[49]

In examining the impact that mechanization had on American agriculture, the rise of the tractor appears as the most prominent. However, changes in other pieces of farm machinery also added to the decline of the necessary rural labor force. In fact,

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[46] Putt, *The Power of the Family Farm*, 1.
[47] Michael R. Haines, and Inter-University Consortium for Political and Social Research, *Historical Demographic, Economic, and Social Data: The United States, 1790-1970* (Ann Arbor, MI: Inter-University Consortium for Political and Social Research, 2010), 198. ; Williams, *Fordson, Farmall, and Poppin' Johnny*, 67.
[48] O.M. Fuller, *Farm Machinery in North Dakota : Value of Implements and Machinery, 1925 and 1930, Tractors on Farms in 1925 and 1930, Motor Trucks, 1930, Automobiles, 1930, Stationary Gas Engines, 1930 (Census Data).* (Fargo: North Dakota State Agricultural College, 1931).
[49] Fuller, *Farm Machinery in North Dakota*.

innovations in tillage and harvesting equipment often replaced the most labor intensive jobs in agriculture, such as weeding or binding. Like the tractor, steel plows and efficient combines were products of the industrialization of agriculture and would help streamline farming operations.

At the onset of America's Industrial Era, the plow appeared to be the simplest of farming implements. It would, however, experience drastic changes during industrialization. Early plows could easily be split into three separate pieces: a moldboard, a plowshare, and the frame to which these parts and handles were attached. In the eastern United States, wood was a sufficient medium for each of the parts. The plowshare, or the cutting edge of the larger moldboard blade, did not need to be of strong material to cut through the soft soil of the east.[50] As farming moved toward the northern Great Plains, however, the compacted sod and rocky soil required an increasingly sharp and sturdy plowshare. This was especially true of farms in northern Towner County, North Dakota. Rocklake is no misnomer, as an overabundance of rocks and compacted soil are found in the locale. Egeland is surrounded by sticky clay soil. Hansboro farmers would have had the land most suited for wooden plows as their soil is mostly sand, but wood was the sparsest at this location. Wooden plows also had a propensity to clog with the dense plains soil, making it difficult for the plow to move easily across the land. There was also simply a lack of timber for making and repairing these wooden implements. These issues presented by the transition to Great Plains farming may have proved prohibitive if not for the wave of mechanization in America.

In the late nineteenth century, James Oliver and John Deere experimented with chilled iron and cast iron, respectively. The iron was sturdier than wood, but still met

[50]Hurt , *American Farm Tools*, 8.

difficulties in the rocky soil of the Great Plains. Much like wood, iron plowshares would shatter if they struck a rock. To solve this problem, Deere covered his wrought iron moldboard with a steel plow share, making the plow seemingly invincible.[51] Oliver's chilled iron plows went through a rapid heating and cooling process, resulting in a plow much stronger, not to mention cheaper, than its early steel counterparts.[52] By the early twentieth century, however, America's expansive steel industry would make further implement innovations possible.

With the application of the Bessemer process and the big business mentality of men like Andrew Carnegie, steel in Industrial Age America was widely available and cheaper than ever before. When used in the manufacturing of agricultural equipment, it was found that not only were the implements stronger, but they were lighter and could be made larger. These large plows were only made efficient by the rise of the tractor in the 1910s. It took the power of a tractor to pull a six-bottomed plow, especially in the rugged terrain of Towner County. The increased efficiency of a tractor-pulled plow was enough to justify the purchase for many farmers. Prior to the advent of these large plows, it took two men and one horse to accomplish one-sixth of the work done by one man and a tractor.[53] Because larger farms often had more than one horse-drawn plow in operation, the tractor and larger plow may have replaced between four and six agricultural laborers per farm.

When the early iron plows of Oliver and Deere were cast, they were done so in

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[51] John Deere Company, "Early Consolidation Helped Deere Serve Customers," *The Plowshare* 22. (accessed November 7, 2012): http://www.deere.com/en_US/docs/Corporate/fans_visitors/publications/plowshare_issue22.pdf.
[52] United States Patent Office, Letters Patent No. 17694, "Improvement in Chilling Plowshares," June 30, 1857, to James Oliver and Harvey Little.
[53] Ford Motor Company, *Fordson Tractors*.

one piece, with the option of a replaceable plowshare. As innovative methods for casting steel developed, manufacturers began producing plows in a number of pieces. When one piece broke, the farmer simply had to replace the part, as opposed to the whole. This availability of parts also showcased the standardization of products, another Industrial Era influence.[54] A farm equipment dealer was able to stock several standard parts, allowing farmers to make repairs quickly and efficiently. Prior to standardization, farmers would lose precious working hours waiting for a handmade, customized part to fit their individual implement. Replaceable parts encouraged agricultural profit and productivity by making machinery repairs inexpensive and quick.

The standardization of parts was heralded as a time-saver for farmers and as an economic boost to some equipment dealers. Over the long run, however, this standardization would hurt the economy of small rural communities. With the availability of replacement parts for plows, farmers no longer needed to rely on the local blacksmith or repairman to repair their equipment. Both Rocklake and Egeland had lost their blacksmiths by the 1930s, with owners citing the decline in consumer demand for their skills. Small towns often did not have the ability to stock every necessary part, nor did they represent every implement company available. While some farmers were able to give business to their local equipment dealers, others had to travel to neighboring, larger communities to find the correct part. Trips into any community for a farm family often involved tending to business at more than one establishment. While visiting the implement dealer for parts or repairs, the family may have dined at the local restaurant, purchased groceries, or browsed at the local general stores. When farmers had to travel to larger cities for parts and service, they often took their money and business with them,

[54] Hurt, *American Farm Tools*, 9.

turning the trip into a worthwhile shopping event. Again, this shift in consumership is tied to mechanization far more than it can be linked to the comings and goings of the railroad. More on this broadening consumer reach will be discussed in Chapter Four.

The development of the tractor and the increasing size and efficiency of tillage equipment replaced many man hours of agricultural labor. However, the mechanization of the reaper and threshing machine replaced an even larger amount of labor. Prior to industrialization, harvest was the most labor-intensive, busy time on the farm. Because of the delicate balance between letting the crop ripen and not losing yield to frost, farmers often had to hire a threshing crew to help complete the harvest in a timely manner.[55] Combines, referred to as a marvel of mechanization, changed agricultural labor requirements even more than did the tractor. While manual harvest took an average of 4.6 man hours per acre, threshing required 3.8 man hours, and the combine required only .75 man hours to harvest each acre.[56] The manual cutting and threshing of a crop was often accomplished by crews of twenty or more men. A combine, however, required only one operator.

Harvesting wheat in the mid-Nineteenth Century was a succession of several manual-labor tasks. When the wheat ripened, it first had to be cut, generally using a man-powered sickle or scythe. The cut grain would then need to be gathered into manageable bundles, or shocks, then manually bound with twine or wire for transport.[57] Before the

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[55] *Torger Dahle and Ole Jacobsen Threshing Machine*. Photograph. (Fargo: Donna Verwest, 191-), North Dakota State University Institute for Regional Studies. Fred Hulstrand History in Pictures Collection. (accessed November 8, 2012), http://memory.loc.gov/cgi-bin/query/D?ngp:1:./temp/~ammem_YLAJ::).; N.G. Bjorneby. *The Good Old Days*. Photograph. (Fargo: Donna Verwest, 1909), North Dakota State University Institute for Regional Studies. Fred Hulstrand History in Pictures Collection. (November 8, 2012), http://memory.loc.gov/cgi-bin/query/r?ammem/ngp:@field(SUBJ+@band(Threshing+crews--North+Dakota--Hoople--1900-1909+)).

[56] Hurt, *American Farm Tools*, 52.

[57] Ibid., 67.

mechanized threshing machine, threshing of the harvested grain often extended throughout winter as a farmer and his help would physically remove the kernels of grain from the wheat head, and then remove the straw and chaff. Threshing machines replaced this manual labor, but still required the physical cutting and binding of the wheat. It would take until the advent of a commercially successful combine to see a drastic change in the harvest process.

The combine was so-named for its combining of a reaper and thresher into one machine. This piece of equipment replaced the need for two crews of laborers to cut and later thresh the crop. Though initially patented as early as 1836, the use of the combine did not become justifiable either economically or in practical field use until about 1912.[58] In this year, the same internal combustion engines becoming popular on tractors were placed onto combines. Whether the combine was self-propelled or pulled by a tractor, it replaced the need for draft animals and the men needed to tend to them. The combine's sickle bar was power-driven, eliminating the need for the manual labor of the scythe. Because the machine immediately threshed the wheat, not only did it eliminate the need for a large threshing crew, but it also replaced the work of manual binders. As the harvest operation moved from all manual labor, to threshing crews, to the combine, a sharp decline in the necessary farm labor is noted.[59]

Because of the large labor requirements, harvest has historically been and remains

[58] Hurt, *American Farm Tools*, 82.

[59] F.A. Pazandak. *Three Binders Pulled by Twin City 25 Tractor*. Photograph. (Fargo: F.A. Pazandak, 1918) North Dakota State University Institute for Regional Studies. F.A. Pazandak Photograph Collection. http://digitalhorizonsonline.org/cdm4/item_viewer.php?CISOROOT=/uw&CISOPTR=3352&CISOBOX=1&REC=1 (accessed November 8, 2012). ; David Anderson. *Planting Seed with a John Deere Tractor*. Photograph. (Fargo: David Anderson, 194-) North Dakota State University Institute for Regional Studies. David Anderson Photograph Collection. http://digitalhorizonsonline.org/cdm4/item_viewer.php?CISOROOT=/uw&CISOPTR=4835&CISOBOX=1&REC=14 (accessed November 8, 2012).

to be the time of the growing season when farmers most seek custom-hired help. These custom crews were necessitated originally by the labor-intensive harvesting and threshing process previously discussed. Today, the hiring of custom crews, especially in areas such as northern Towner County, remains common, but simply as a matter of scale and timeliness. As Wendell Berry's rural sociology may suggest, these men were not seen as neighbors, or even men, and were certainly not permanent community members. As combine ownership spread—1,709 combines on 2,000 surveyed North Dakota farms in 1955—farmers began hiring transient men to operate their machines, not the usual permanent crews consisting of twenty or more neighbors, friends, or community members[60] In fact, 62% of custom-hired harvest labor for the years 1955-1960 consisted of one man while only 14% consisted of three or more.[61]

Figure 7: Allis-Chalmers "Independent Harvest" advertisement.

Harvest was not the only part of the growing season with a noted decline in hired labor. From 1939 to 1940, North Dakota would see a very marked decreased in the number of paid farm laborers. This was surprising in light of that time's rebounding agricultural economy, but perhaps not surprising with the mechanization noted above. In a 1939 survey of agriculture, 10,773 men were reported as agricultural wage earners. By the 1940 Census of Agriculture, only 9,020 returned to

[60] United States Bureau of Agricultural Economics, "Farm Machinery Use, Depreciation, and Replacement," USDA (Washington, DC: 1956).
[61] Agricultural Research Service, "Farm Machinery: A Survey of Ownership and Custom Work," USDA Statistical Bulletin No. 279 (Washington, DC, 1961)

their paying positions.[62] It is unclear what may have caused this decline in returning wage workers, though their replacement by machines or the call of urban wages were likely large factors.

Though agriculture was industrializing and mechanization was allowing large farms to resemble the factories so famous of the Industrial Era, farms in North Dakota began to seek independence in both work and ownership. Allis Chalmers was one of the first machinery manufacturers to focus on the family or individual being solely responsible for their farm's planting and harvesting. "Five Star Family Farming: You and Family can find your dream of happiness in Allis Chalmers" boasted one ad, while another more simply stated, "The Threshing Ring becomes your family circle."[63] Allis Chalmers was also known for advertising their low cost all-crop harvesters as an item to be owned by an individual for use at his discretion. One family could own and operate all of their machinery. As was discussed earlier in this chapter, family-operated farms greatly reduced the need for hired labor. The independence of individually-owned and operated machinery would also help to boost productivity, profit, and the expansion of acreage.

Prior to small, affordable tractors and combines, many farmers shared large, expensive equipment such as steam engines with their neighbors. Threshing was also a shared activity, with groups of neighboring farms pooling labor and machine resources. This allowed a large amount of work to be accomplished, but not on a timeframe that was necessarily ideal. Farming, especially in the unpredictable weather of northern North

[62] US Dept. of Commerce, Bureau of the Census, "16th Census of the United States, 1940, Population, Third Series: The Labor Force Occupation, Industry, Employment, and Income." Prepared under Dr. Leon E Truesdell. (Washington, DC: US Government Printing Office, 1941).

[63] Putt, *The Power of the Family Farm: A-C Tractor Ads 1922-1956*, 25.

Dakota, must be done in a timely manner. Crops such as durum only remain in a prime harvesting phase for ten days before the kernels begin to lose color, hardness, and protein. If each farmer had planted at roughly the same time, all crops in the area would be in their harvest "prime" at once. Only a handful of farms, however, would receive the harvest help they needed during this ideal period.

As Chapter Three will show, the mechanization and independence discussed in this chapter were only the beginning of agricultural success for Towner County, North Dakota. Technology would couple with advances in science to further boost crop yields and farm profit. While tractors planted increased acreages, agronomy would make those acres flourish. Booms in farm size, yields, and profits would, however, create a bubble in Towner County related to Robinson's Too Much Mistake, leaving "too little" in the small town.

CHAPTER III

PLATS, PROFIT, AND PESTICIDES

The widespread mechanization of agriculture in the first half of the twentieth century has consistently been the focus of agricultural historians tracing the era's farm economy success. As Chapter Two sought to showcase, while mechanization helped to bolster the agricultural economy and general success of farmers, it also laid the groundwork for population decline in the rural community. In Chapter Three, the focus of research shifts toward the specifics of profitability and yield growth encouraged by mechanization and how the economic "boom" helped to bring about a rural community "bust." As will be shown in the latter half of this chapter, however, labor saving equipment was not the only progress being made to increase farm yields. The interwar years saw biological and other scientific advancements applied to agriculture. This rise in crop and farm science, known as agronomy, applied principles such as weed control, crop hybridization and chemical fertilizers helped to increase yields and, thereby, profits.

The historiography of this idea of farm profits and yield growth is one that must be feathered out of the existing works of agricultural history. Works of agricultural history, as shown in the previous chapters, often focus on the more "popular" themes of mechanization and community. Little work has focused on the science at the heart of Chapter Three. Authors such as R. Douglas Hurt, Don Paarlberg, Alan Olmstead, and

Paul Rhode most specifically discuss the growth of profits and yields gained from these larger areas of focus.[1] Olmstead's and Rhode's *Creating Abundance*, published in 2008, was one of the first works of twenty-first century agricultural literature to examine the leaps by which twentieth century agronomy led to the growth of the farm economy. Olmstead and Rhode used farm ledger information coupled with the yearly agricultural censuses of the United States Department of Agriculture to compile information about the use of pesticides, herbicides, fertilizer, and hybridized crops. Willard Cochrane's *The Development of American Agriculture* provides a similar discussion of the monetary, quantitative, and qualitative growth of agriculture during the twentieth century.[2] While these works offer an informative snapshot of American agriculture in the scientific period, no work provides specific qualitative information on North Dakota. By using quantitative data found in personal correspondence, agricultural periodicals, newspapers, plat books, and county-specific sections of the agricultural census, however, a picture of growing farm size, yields, and profit will be constructed for the communities of northern Towner County.

Until the early twentieth century, farming had not necessarily been purely subsistence-based, but was not yet the monoculture profit-building farms of industry known today. Farms operated under a familial guise, promoting family farms and a lack individualism.[3] Helping one's neighbor was nearly as important as tending one's own

[1] R. Douglas Hurt, *American Farms: Exploring Their History*. (Malabar, FL: Krieger Publishing Company, 1996); Hurt, *Problems of Plenty: The American Farmer in the Twentieth Century*. (Chicago: Ivan R. Dee Publishing, 2002).; Don Paarlberg and Philip Paarlberg, *The Agricultural Revolution of the 20th Century* (Ames: Iowa State Press, 2000); Alan L. Olmstead and Paul W. Rhode, *Creating Abundance: Biological Innovation and American Agricultural Development* (New York: Cambridge University Press, 2008).
[2] Willard Cochrane, *The Development of American Agriculture: A Historical Analysis, Second Edition* (Minneapolis: University of Minnesota Press, 1993).
[3] Elvin Hatch, *Biography of a Small Town* (New York: Columbia University Press, 1979), 136.

crop; agriculture was for community support more-so than profit. When the American business model began to take the form influenced by the Industrial Era, farmers needed to follow suit or risk being left behind. To survive in modern America a big business mentality was essential. Farmers could no longer rely on the subsistence way of life; the cost of living would eventually prove too much. Farmers, just like their business-minded counterparts, needed to focus not on neighborly sentiment, but on profit and productivity.

The tractor and other industrialized farm implements to be discussed later helped to increase farm size in a variety of ways. The first of these factors was the time saved by using the tractor over men and horses. While some of this time was set aside for increasingly popular recreational activities, most farmers saw the extra time as an opportunity to farm more land. Chapter Four will offer a more complete look at the use of this increased leisure time, including a turn to agriculturally-based social clubs such as 4-H and the Farmers' Union. The sheer power of tractors was a second factor in helping to increase farm size. Horses and wooden or steel plows had a difficult time plowing up much of the prairie sod. While it could be done, the time necessary was extensive, and led to a limited amount of acreage being plowed. With industrialization came powerful tractors and steel plows, allowing for efficient cultivation of the once-stubborn sod. A final mechanization helped to increase farm size was simply by replacing draft animals. An estimated five acres of land was required per horse for raising feed or pasture. For each horse rendered unnecessary by a tractor, a farmer gained back five tillable acres of his own land.[4]

[4] Hurt, *Problems of Plenty*, 48.

The mechanization of farming equipment helped to increase average farm size across the northern Great Plains throughout the Industrial Era. As one example, the average North Dakota farm's acreage rose from 382 acres in 1910 to 466 acres in 1920, and up to 496 by 1930.[5] By 1938, the northern half of Towner County, which includes the communities of Rocklake, Hansboro, and Egeland, was home to approximately one hundred farms of 881 acres or more and approximately fifty farms counting between 721 and 880 acres.[6] In Towner County as a whole, average farm size increased by over one hundred acres in a little less than one decade following the adoption of the pneumatic tire discussed in the previous chapter. The average Towner County farm in 1939 counted 576.9 acres, which rose to 692.5 acres by 1949.[7] Though this growth is not fully attributable to the mechanization discussed in Chapter Two, plat books of the county reveal farmers expanding their operations by large acquisitions in a minimal amount of purchases, suggesting larger farmers bought out entire smaller farms. Managing these larger farms would have proved difficult without either increased mechanization or large labor forces. Such a labor force would have been hard to acquire at this, with many young men having been drafted into service for World War II. The biological innovations to be discussed in this chapter would couple with mechanization to increase profit and make farming larger swaths of land manageable and profitable.

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[5] United States Bureau of the Census, *Historical Statistics of the United States—Colonial Times-1970, Part 1*, National Agricultural Statistics Service in Joseph Knue, *Of Time. . .And the Prairie, 100 Years of People and Wildlife in North Dakota: Observations in Change* (Bismarck: North Dakota Game and Fish Department, 1988), 97.

[6] North Dakota Extension Service, Works Progress Administration, "Size of Operating Units Mapped in Place," The Division of Farm Management and Cost, U.S. Department of Agricultural Economics, March 1940.

[7] United States Department of Commerce, Bureau of the Census, "1939 Farm Census Preliminary Report for Towner County, North Dakota," United States Department of Agriculture (Washington: DC, 1939); United States Department of Commerce, Bureau of the Census, "1950 Census of Agriculture for Towner County, North Dakota," United States Department of Agriculture (Washington: DC, 1950).

With the assistance of mechanization, land in crop production in Towner County, North Dakota, increased by 26,398 acres between the years 1930-1935 and another 66,226 acres by 1945 to total 668,160 acres of farmland in the county.[8] However, the number of farms in Towner County fell by 353—from 1,267 to 914—in that same decade. The ability to till the rising amount of acreage was assisted by mechanization, but soon the region had run out of open land for the spread of these operations. Instead, large, successful farmers began buying out the land of their neighbors. These smaller farmers often did not have the capital or the machinery necessary to expand in the new big business culture of farming.

It had become apparent that the new norm for Industrial Era agriculture was to mechanize or fail. When small farmers, unable to increase their profit or productivity, were bought out by larger operations, they rarely stayed on the farm. This movement was not always due to an inability to adapt, but an unwillingness to do so. Some farmers simply felt pulled to simpler times, while other rural citizens failed to adapt because opportunities in urban centers were becoming widely available. Many young men may have taken over the family farm as their only option, and now saw an opportunity for profit, adventure, or simply change. In the search for new career opportunities, these displaced farmers joined the unemployed farm laborers discussed in the previous chapter in seeking urban-based occupations.

The average farm size in the Rocklake area reached five hundred acres for the first time in 1930. In that same year, the community's population peaked at 385 citizens, and began to fall every year in conjunction with increasing farm acreage.[9] Plat books of the

[8] Bureau of the Census, "1950 Census of Agriculture for Towner County, North Dakota."
[9] United States Bureau of the Census in Knue, 97.

area show the land becoming concentrated under a few large farms, while local history books couple with the United State Census to show no growth, or even loss, in community population and businesses. Farmers and laborers were moving off of the farm, but not to their small rural center. Rather, they were going to larger urban cities. For citizens in Rocklake, Egeland, and Hansboro, this would most often be Devils Lake, a town sixty miles to the southwest, though many young men and women also left to serve in World War II or for even larger cities further east. Between 1930 and 1950, two decades of sharp decline in northern Towner County, Devils Lake grew 18%.[10]

The agriculture of the industrial era saw outstanding increases in the yields of crops harvested and, often, the profit gained from such yields. In light of the increased farm sizes allowed by mechanization as discussed above, it is important to contextualize these gains in crop yield and farm profit. Naturally, with increased farm acreage an increased amount of crop production is expected. Crop production en masse markedly increased each year of focus of this study, but not solely from an increase in farm land. Yields are measured on an average bushels-per-acre outcome, making the total mass of farmland in production in North Dakota irrelevant.[11] Simply put, both increased land in farm use and the increased application of scientific advancement to farming would be enough to increase crop production numbers. During the industrial era, agriculture in North Dakota experienced both of these increases, however, creating a boom in harvest

[10] United States Department of Commerce, Bureau of the Census, "17th Census of the United States Preliminary Report, North Dakota," United States Department of Agriculture (Washington: DC, 1950). Full census records are unavailable for the 1950 census until 2022. These numbers and any future citation of the 17th Census are only gained from the Bureau's initial report. Note that's the general population (decennial) census varies in this from the annually, fully-released agricultural censuses.

[11] The bushel is a unit of dry-goods measurement in the American Standard System. If measured in liquid, one bushel would be equal to nine gallons. The weight of a bushel varies depending on the crop and its quality. For purposes of this paper, wheat will be used as a standard measure, averaging roughly sixty pounds per bushel.

production numbers. This bubble would initially increase profit, only to burst later, yet another showcase of Robinson's Too Much Mistake. The communities of Rocklake, Egeland, and Hansboro give evidence of decline related to both this profit boom and the resulting bust. The focus of Chapter Three is how increased crop yields and farm profit bolstered the agricultural economy while encouraging further decline in rural population.

Information on crop yields is only available on the county level at the most specific. However, agricultural censuses still offer valuable insight into how farm yields would have been progressing for farmers in the communities of Rocklake, Egeland, and Hansboro. The yields for Towner County fell above the national average for most years outside of the Dust Bowl. While the 1940 national average for wheat was seventeen bushels per acre harvested, the Towner County average was eighteen. Likewise, Towner County averaged twenty-two and twenty-eight bushels per acre wheat yields in 1955 and 1960 respectively, while the national average fell at nineteen and twenty-six for those same years. [12] What may seem like a small difference is multiplied when one considers the large acreage being counted and the profit gained per bushel.

Yields were boosted throughout the early twentieth century via a number of factors. In 1900, very few high schools or institutions of higher learning in the United States taught agriculturally-related courses unless those institutions were specifically established as agricultural agencies, such as the land grant colleges established by the Morrill Act in 1862. In North Dakota, this would be the North Dakota Agricultural College (later North Dakota State University). By 1910, agricultural science was found in 875 high school and

[12] United States Department of Commerce, Bureau of the Census, "Census of Agriculture," (Washington: Government Printing Office, 1910, 1920, 1930, 1940).

214 colleges, increasing to 2,000 and 600 (respectively) by 1913.[13]

The agricultural college was 225 miles away from Towner County, however, and farmers there received little farm-related education until after 1914's Smith-Lever Act. The Smith-Lever Act set aside federal funding for each state to set up its own agricultural research cooperative.[14] The United States Department of Agriculture (USDA) worked through these extension services to bring workshops and seminars right to farmers. Historian Roy V. Scott was right to name his work on the rise of the extension agency *The Reluctant Farmer*, as many farmers initially resented being told how to farm by "Someone in a suit."[15] Scott's work, however, focuses on the period prior to the widespread establishment of county extension offices in North Dakota. By 1918, most counties in North Dakota, including Towner, were home to a USDA extension office. Once the agronomists came to be seen as locals, they were able to break the trust barrier to teach farmers of all ages the new farming techniques of the era. Courses sought to spread knowledge regarding both methods of fieldwork itself and the growing amount of science as applied to crop production.

The rising technology of the radio helped to disseminate farm programming as well. By 1940, over one-third of the radio stations in the nation featured agriculturally-related programming.[16] By using the technology of the radio, farmers in remote areas, including northern Towner County, were able to increase their knowledge on par with farmers closer to urban areas. The *Towner County Herald* features many advertisements

[13] Hiram M. Drache, *Legacy of the Land: Agriculture's Story to the Present* (Danville, IL: Interstate Publishers, Inc., 1996), 149.
[14] USDA Office of Experiment Stations, *Annual Report 1915*. (Washington, DC: Government Printing Office, 1915).
[15] Roy V. Scott, *The Reluctant Farmer: The Rise of Agricultural Extension to 1914* (Urbana: University of Illinois Press, 1971).
[16] Drache, *Legacy of the Land*, 240.

throughout the interwar years for seminars and workshops sponsored by the USDA. With information available through the radio or through USDA mailings via rural free delivery (discussed in detail in the next chapter), farmers no longer had to travel into their community for knowledge. As will be discussed fully in Chapter Four, with each trip into town that farmers eliminated from their routine, community businesses lost profit and often closed their doors.

The mechanization discussed in Chapter Two also helped to increase farm yields in a variety of ways. Fieldwork carried out with the use of draft animals was relatively inconsistent. The speed and force at which the draft animals pulled the plow determined how deep the plow went. At the beginning of each working day, the animals started strong, causing the plow to go deep into the soil. Deeper plowing broke up the land better in terms of aeration and moisture for the young crop, allowing it to grow more efficiently. Deep plowing also did a more extensive job of decimating weeds at their root, preventing the need for future weed cultivation.

While tractors and combines never tired, draft animals did, which proved more consequential to planting and profit than one may assume. As the work day progressed, draft animals would tire and pull the implements at a declining rate. Less land would be made fully arable to promote plant growth, as well as weed control being subpar. When seeds are planted too shallowly, they become prematurely exposed to the elements and may blow away, freeze, or dry out before they reach full maturity, or grow at all. With fields not being planted at uniform depth, farmers could not depend on uniform yields throughout the field, and could usually count on losing whatever seeds were planted when the animal had tired and begun to pull less steadily.[17] With the advent of tractor

[17] Olmstead and Rhode, *Creating Abundance,* 11.

power, however, the speed and force at which implements were pulled remained constant throughout the day. Furrows cultivated and seeds planted at the end of a long working day were as clean and deep as those acres completed in the morning, allowing for a uniform yield across the land. Uniform, steady yields made each acre of planted land profitable for the farmer.[18]

Use International Harvester Tillage Implements

FOR many days and weeks you will watch your fields in anticipation of good crops, anxious in drought or in storm, glad when the weather is right. Yet, after the planting, you can do almost nothing to influence your yields.

Your chance to help ends with the tilling and planting.

Be sure that you have good seed beds—and you will have top yields at the harvest. To make them good, use an *International Harvester* disk harrow and other **I H C** tillage tools.

International Harvester disks can be adjusted to any angle necessary for good tillage, and at any angle the gangs will work level in all kinds of soil. A constant, direct, right-angle pull on the bearings prevents all unnecessary friction, and makes the harrow that much easier for the horses to pull.

The full line of *International Harvester* tillage implements includes every style of disk and smoothing harrow and the best line of drills, seeders and cultivators built. See the **I H C** local dealer for full information, or send to us for catalogues and "The Disk Harrow," a complete guide to seed bed preparation.

International Harvester Company of America
(INCORPORATED)
Chicago **U S A**

Figure 8: International Harvester Advertisement for tillage equipment. Found in Kirby Brumfield, The Wheat Album (Seattle: Superior Publishing Company, 1974) pp. 31.

Mechanization also helped to increase crop yields and farm profit by bringing increased timeliness to even the smallest of farms. As agricultural historian R. Douglas Hurt points out in many of his works, farmers gain their profit not from what they plant,

[18] Of course, increased yields on increased acreage did not always equate to higher profit for farmers. Mechanization, scientific advances, and even WWI encouraged the overproduction of many Great Plains crops, driving prices down. International market factors also play a role in the overall supply and demand economics of agricultural production. The reverse of supply and demand is also true: high crop prices per bushel do not always spell high profits. In drought years, for instance, short supply may drive up prices, but profit is dependent on what, if any, produced crop the farmer has to sell.

but from what they harvest. In the communities of Rocklake, Hansboro, and Egeland, frosts as early as the first week of August have been reported, devastating the fragile cereal crops waiting to be harvested.[19]

The tractor and heavy-duty plows introduced to agriculture during the Industrial Era made the physical creation of larger farms possible. It was the combine, however, that truly upheld the viability of such large farms. Without mechanization, farmers on the expansive farms typical to the Great Plains would not have had the time necessary to harvest the crop before the short growing season drew to a close.

Prior to the widespread adoption of the combine, farmers in Towner County had to hire labor crews to help in the harvest. Because all farms must harvest within the same timeframe, some farmers were forced to have their crops harvested too early and others far too late simply to accommodate the schedule of the hired crews. In some drastic cases, a snow or break-down would halt harvest before a farmer was able to cut any of his crops. When a crop is harvested before reaching full maturity, yield is lost due to the plant being underdeveloped. When a crop is harvested too late, in the case of wheat or durum, it can become unviable for milling. Also, the longer a crop stands, the more vulnerable it becomes to climatic hazards such as heat, wind, hail, or even frost and snow. As mechanization spread and profit increased, a growing amount of farms in Towner County—1,428 by 1950—had individually owned combines.[20] As heralded in several machinery advertisements of the time, an "independent" harvest on one's own time was seen as the future of farming and as a way to protect yields while boosting profit.

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[19] L.O. Gilmore, "Early Cold Nips Area," *The Hansboro News* (Hansboro, ND), August 1920.
[20] United States Department of Commerce, Bureau of the Census, *Agricultural Census 1950, 1955*. (Washington, DC, 1950, 1955).

The increased production allowed by mechanization was not always a good thing, however. The faster modern equipment helped to harvest the grain before the unpredictable Great Plains growing season ruined the yields. Hailed as an industrial triumph of the time, this increased production would soon offer a harsh lesson in economics. This surplus of crop was initially absorbed by the World War I economy of the late 1910s, but would prove too much for the post-war economy. When the supply of grain greatly outweighed its demand, the bottom began to fall out of the wheat market. Between the years 1920 and 1931, the market price for one bushel of wheat fell from a high of $3.23 per bushel to a low of $0.38 per bushel.[21] Such a decline in crop value is always devastating to farm markets, but was especially so in an era when so many farmers had gone into debt to purchase machinery.

The same bubble scenario also occurred with land prices and the loans taken to expand acreage. Farmers had accrued debt to purchase cropland for an increasing price under the belief that the growing profit off of the crops produced would cover the loan payments within a few seasons. When the bottom fell out of the agricultural market, the price of land per acre dropped by up to $20.00, meaning farmers could not sell the land back for profit or to make payments. Farmers had to repay loans taken when wheat had been worth nearly nine times as much as its value at the time of repayment. Many farmers could not keep afloat under the pressure of the loans and were forced into foreclosure. The booming of agriculture had created a precarious economic bubble. When successful, large farms led to rural decline by replacing smaller farms and large labor crews. When these farms became too successful, however, they caused their own bubble

[21] United States Federal Trade Commission, "Report of the Federal Trade Commission on Wheat Prices for the 1920 Crop," (Washington: Government Printing Office, 1921), 34.; "Cycles in Wheat Prices," *Wheat Studies of the Food Research Institute* Vol. 8 (Stanford: Stanford University Press, 1931), 8.

to burst. Much like the neighbors they had bought-out a decade before, these displaced farmers were often forced to relocate out of their rural communities.

As previously mentioned, it was not simply the "brawn" of mechanization that was responsible for the increasing profitability of agriculture, but also the "brain" of agronomy. Rust, the predominant crop disease of the Dust Bowl Era, was still a persistent issue on Towner County farms as late as the onset of World War II.[22] Prior to the growth of crop and plant science, most farmers had remained focused on expelling diseases such as rust completely. As the twentieth century progressed, however, especially in the agriculturally progressive Plains, focus began to turn toward developing crop varieties that could withstand the onslaught of pests.

Durum, a strong, resilient strain of wheat used in pasta production, is found prominently in North Central North Dakota in the counties of Cavalier, Towner, and Ramsey, or what is known as the state's Durum Triangle. Because of durum's resemblance to hard red spring wheat, it was not counted individually by the agricultural census until 1964. However, personal correspondence between families near Rocklake to their relatives in Minnesota written as early as the 1920s discusses the area's successful durum crops.[23] Durum requires little moisture during its growing season, which protected yields during the infamously dry 1930s. Durum is also resistant to most pests and diseases like rust because of its hard endosperm. This hard endosperm, or the outer coating of the kernel that houses the nutrients of the plant, also protects the crop from inclement weather conditions. With the growth of durum cultivation in the 1910s through the 1950s, farmers in the Durum Triangle of North Dakota bolstered profit and yield

[22] USDA, "Land Use Planning: Towner County, North Dakota, Preliminary Report." (June 1940) 30.
[23] Doris Leas, Personal Correspondence to Paul Baumgart, September 1925, Leas Family Collection, Cando, ND.

simply by changing what they planted.

Because northern Towner County was settled relatively late (1905), many agricultural innovations in terms of seed hybridization and soil science had already occurred. Farmers were able to begin there with an arguable "leg-up," already having some scientifically improved seed to plant. Justus von Liebig had discovered the importance of soil minerals to plant growth in the early 1800's, giving farmers the knowledge that supplementing phosphate could improve their yields. Scientist Gregor Mendel of genetics fame started the idea of plant hybridization as early as 1865.[24] Many of Mendel's practices were applied to corn and hay grasses at the turn of the century.

These hybridizations did not directly impact the farmers of Rocklake, Hansboro, and Egeland because of the area's lack of cattle and its prohibitively short corn growing season. In fact, corn would not become manageable in the area until the 2010's. What farmers in the area would most benefit from was the continuing work of Norman Borlaug in the 1940's. Borlaug's focus was on small-grain hybridization. Hearty and productive strains of wheat were entering the seed market in time to mesh with the efficiency of mechanization and farm size. Agricultural productivity and profit do not owe their growth to either mechanization *or* science, but rather the fact that these two great waves of innovation coincided and built from one another.

Fertilizer and insecticides were yet another wave of innovation hitting agriculture in the immediate post-war years. Where ammonia and phosphoric acid had been the only fertilizers in use at the turn of the twentieth century, by the interwar years the number of

[24] Paarlberg, *The Agricultural Revolution of the 20th Century*, 43.

fertilizers and chemicals alike had become countless.[25] This is due in large part to scientific research conducted to aid in the war efforts. For instance, dichlorodiphenyltrichloroethane (DDT) was developed to fumigate soldiers' barracks during World War II.[26] Immediately following the war effort, excess airplanes and DDT were used to aerial-spray the insecticide onto crops.[27] This was the first time that chemicals had been widely successful in protecting young plants from insects that would eat them, stunting or fully preventing crop growth.

Figure 9: A crop-dusting plane spraying pesticides in western North Dakota.

Following the development of DDT in 1939, scientists began to apply the processes used to create that pesticide to produce other chemicals. In 1942, E.J. Kraus developed a herbicide, or a chemical used to kill off unwanted plants and weeds that

[25] Alan Marcus, *Agricultural Science and the Quest for Legitimacy* (Ames: Iowa State University Press, 1985), 76.
[26] Drache, *Legacy of the Land*, 337.
[27] Bill Shemorry, *Aerial Spraying, Williston, N.D*. Photograph. (Fargo: Bill Shemorry, 1953) North Dakota State University Institute for Regional Studies. Bill Shemorry Photograph Collection, (accessed November 2, 2013) http://digitalhorizonsonline.org/cdm4/item_viewer.php?CISOROOT=/shemorry&CISOPTR=5329&CISOBOX=1&REC=2.

could steal soil nutrients from crops.[28] Kraus' herbicide, known as 2,4-D, is still in use today.[29] While 2,4-D targets all broadleaf plants, it paved the way for more specifically-targeted herbicides to control particular plant pests but leaving crops unharmed. Not only does killing weeds boost yield by saving soil nutrients for crops, it also helps the efficiency of harvesting and selling the grain. This is due to the fact that weeds keep moisture in the grain sample longer than simply grain kernels would, and large amount of weeds also require cleaning the grain to remove the unwanted plant material.

Due to the soil make-up of Towner County, nitrogen-enriching fertilizers remained the most popular after WWII and even today. Between 1940 and 1945 alone, nitrogen use on the Great Plains grew by 536,000 tons from 701,000 tons to 1,237,000. During this same period, phosphate use was up 644,000 tons and potash rose 372,000 tons.[30] These fertilizers add nutrients that may be lacking in the soil or whose addition would boost the growth of crops and, thereby, the yields. What must be considered, however, is that these chemicals and fertilizers each represent a great input cost to farmers. While yields were high and prices good this was of little consequence, but it produced another shaky economic bubble to burst on indebted farmers in times of downturn.

With increased farm size and crop yields came a tremendous boost of profit for farmers in Towner County. In 1939, the gross farm income for the county was $2,691,490, or $2,200 on average per operator. By 1949, with 353 farms counted, gross

[28] Paarlberg, *The Agricultural Revolution of the 20th Century*, 39.
[29] As a point of reference, when 2,4-D is mixed with another chemical, 2,4,5-T, it produces Agent Orange, the toxin used to defoliate forests during the Vietnam War.
[30] United States Department of Agriculture, *Agricultural Statistics 1987*, (Washington, DC: Government Printing Office, 1988), 416.

farm income was $5,869,727, or $6,422 per operator.[31] It is of course important to note that the listed income per farm is an average, with some farms receiving upwards of $10,000 and others barely breaking over $1,000. Unfortunately, the first year that the agricultural census appears to have broken farms down by economic class or income level was 1950. At that time, the majority of Towner County farms surveyed, 354, fell into the Class III category, or farms earning between $5,000 and $9,999.[32] Class II farms, or those with $10,000 to $24,999 in income, numbered 201. Only eighteen farms were counted as Class IV, or having less than $1,000 of income. This rise in highly profitable farms shows how larger farms were taking advantage of increased acreage and yields to overtake their small counterparts. The rising level of success for some farmers spelled decline for others. As these small farms folded, their residents moved to larger urban areas. For residents of Towner County, this was often Devils Lake, which saw a 16% increase in population during the 1940's.[33]

Much like the increased yields of the era, increased farm profit was the result of several independent factors. Farmers profited from simply having more land in crop production, but also from the heightened yields on those acres. Profit was also the reckoning grounds for the interwar years' focus on biologic and scientific innovation. Crops were being engineered to be better resistant to both the short growing season and the disease issues of northern Towner County. Much how like mechanization of the farm required a cyclical expansion into more farm equipment, increased profits often begot

[31]United States Department of Commerce, Bureau of the Census, "1939 Farm Census Preliminary Report for Towner County, North Dakota," United States Department of Agriculture (Washington: DC, 1939); United States Department of Commerce, Bureau of the Census, "1950 Census of Agriculture for Towner County, North Dakota," United States Department of Agriculture (Washington: DC, 1950).
[32] Bureau of the Census, "1950 Census of Agriculture for Towner County, North Dakota."
[33] Bureau of the Census, "Seventeenth Census of the United States, North Dakota, 1950."

increased farm value and, in return, profit. Most farmers used their increased profit to make larger investments in farm land, machinery, and crop production assistance such as fertilizers and pesticides. Some profit was used to increased leisure time and consumer market reach, which will be the focus of Chapter Four. Mechanization and the industrialization of agriculture also increased farm profit simply by saving labor costs.

In 1920, the average North Dakota farmer put 50% of his total agricultural investments toward hired labor. This number fell to 41% by 1940 and 27% by 1960. Today, paying for labor constitutes roughly 15% or less of a farmer's total input. The cost of labor that would have been required to attempt the large harvests allowed by mechanization would have proven prohibitive. At the turn of the twentieth century, the cost for manual harvest labor was estimated at $3.12 per acre per man. The combine's cost of operation per acre was $0.82, with only one operator to pay.[34] In 1930, the average North Dakota farmer spent $326 annually paying for hired labor, which was often concentrated in the late spring to early fall months, or planting through harvest.[35] This was for permanent labor and did not include extra pay given to custom-hired crews. By 1940, this average pay was down to $293, and had dwindled to $217 by 1950. This decline in wage costs is surprising when considered against the fact that wage rates were actually rising in rural areas as the population declined. As rural areas lost young men to the World Wars and urban centers, the pay for available farm labor doubled in certain locales. The total sum of agricultural wages decreasing in light of higher pay rates showcases the declining rural labor population. Less men and women were hired to work

[34] L.A. Reynoldson, "The Combined Thresher-Harvester in the Great Plains," United States Department of Agriculture, *Technical Bulletin 70* (1928): 3.
[35] USDA Economics, Statistics, and Cooperatives Service, "Changes in Farm Production and Efficiency," Statistical Bulletin No. 612. November 1978, 56.

in the fields, and often sought even better-paying careers in more urban areas.

When farmers did wish to hire labor, it often proved prohibitively expensive due to the rarity of workers remaining the rural area. By adopting mechanization, farmers had replaced the need for a large labor force; a force that would not be available when and if large farmers needed hired help. Yet again, by buying into success and progress, farmers set up a precarious rural economic bubble to later burst.

The increased productivity that was inherent with the use of mechanized equipment had an interesting cyclical effect on North Dakota agriculture. The tractor made farm work far more efficient, allowing for larger farms. The larger a farm got, however, the more mechanization became a requirement, not a luxury. The increased profitability of agriculture during the industrial era often allowed farmers to justify the purchase of a tractor and other machinery. The tractor, in turn, increased productivity, and farms garnered even more profit, offering farmers the freedom to purchase more land. Regardless of income, however, most farmers went into debt to purchase their tractors and the land necessary to support them. The $750, low-horsepower Fordson, considered to be an inexpensive tractor of the time, still required the farmer to take out large loans.

Loans for the purchasing of land were added to those for machinery. Throughout the 1910s, the average price of land per acre tripled in response to the growing agricultural industry.[36] The debt of Great Plains farmers doubled in the years between 1910 and 1920 as they were forced to take out steeper loans to keep up with

[36] Michael Haines, *Historical Demographic, Economic, and Social Data: 1790-2002* (Ann Arbor, MI: Inter-University Consortium for Political and Social Research, 2010), 282.

mechanization and production.[37] This habit of accruing debt would slow in the post-World War I bust discussed earlier in this chapter. However, as mechanization, farm acreage, yields, and profits increased nearly constantly from the 1930's onward, the trap of an economic bubble would harm farmers and the rural community repeatedly in busts of the early 1960's and 1980's.

Most farmers did not simply save their increased profit, but often reinvested the funds into some aspect of their agricultural operation. This included investments in such things as land, fertilizer, out-buildings and, yes, mechanized equipment. These were all substantial investments requiring a large amount of debt to accrue on the farmer. It has already been discussed that the average farm in Towner County grew between 110 to 150 acres during the period of 1910-1940. A study of sale bills for land in northern Towner County shows that the average price per acre of land in 1940 was $50.[38] This would mean that the average farmer was spending between $5,500 and $7,500 on cropland acquisitions. By 1945, the average value of a Towner County farm including land and buildings was $13,692, which ballooned to $19,807 by 1950.[39]

During the same period of focus as increasing land investment, investments in farm machinery and chemical or, broadly, biological inputs also increased substantially. Farmers were making more income than they had in previous generations, but the wave of growth and innovation all but forced them to put that money back into farm-related investments. This often included taking out loans for the purchase of land and machinery, an act that has bankrupted many farmers in cyclical farm economy "busts" throughout the

[37] Hurt, *Problems of Plenty*, 12.
[38] Farmers Lake Region Development Association, "Price List of Towner County Farms," 1945.
[39] United States Department of Commerce, Bureau of the Census, *Agricultural Census 1950.* (Washington, DC, 1950).

twentieth century. Spending, whether it be on machinery, agronomic advances, or buildings, was yet another "Too Much Mistake" made by farmers. Interestingly, between 1910 and 1930, money spent on fertilizing crops rose 93%, while yield output rose only 20%.[40] Of course, one must consider the fact that fertilizer use was rising from next to nothing while production was already increasing, but such a disparity suggests that some farmers may have been overextending their spending simply to keep up to innovations.

When most industries in the United States "boom," the result is often prosperity and wealth for the impacted area. Today, the oil boom in western North Dakota is being heralded as bringing an influx of population and profit to an area of the state that had previously been sparsely populated and financially underachieving in relation to the state's eastern portion. Businesses have seen an explosion in consumers, with many new businesses being built to take advantage of the opportunity.

When agriculture boomed in the mechanization era of the early-to-mid twentieth century, however, it had nearly the opposite effect on rural areas. Individual farms got larger, forcing out many families. Some rural sociologists have estimated that, in North Dakota, one community business closed for each seven families that vacated the area.[41] Though the communities of Rocklake, Hansboro, and Egeland did not have large enough populations or businesses to work into this averaged model, it is easy to imagine how even a few families moving away could cause dozens of businesses to close their doors by 1960. Coupled with mechanization, the scientific advances discussed in this chapter created a "Too Much Mistake" of their own: an economic supply and demand-type bubble that would take many farmers and town businesses with it when it burst. This

[40] Olmstead and Rhode, *Creating Abundance*, 9-11.
[41] Melvin Kazeck, *North Dakota: A Human and Economic Geography* (Minneapolis: Lund Press, Inc., 1956), 238.

economic bubble was both created and destroyed by factors independent of the railroad, showcasing that entity's smaller than believed role in rural decline.

As will be discussed in Chapter Four, the farm profits and saved time inherent with mechanization and growth were not also re-invested into agricultural expenditures. Increased income and leisure time were also used to expand the world for farmers and rural citizens. Many rural citizens began to purchase automobiles and devote weekend days to traveling to larger urban areas. While in these cities, business was conducted, taking consumers away from smaller local businesses. With the rise of sociology as a means to "improve" rural life came the program of rural free mail delivery, which in turn promoted mail-order shopping. As farmers had money to expand their market reach, supporting local merchants, often friends or neighbors, changed from being convenient and "right" to being unnecessarily expensive, too limited, and even boring.

CHAPTER IV

CARS AND CATALOGUES

Changing Rural Mentality

Rural towns often do not consider definitive boundaries, and therefore place themselves into a wider discussion of community. These blurred lines help to explain how the rise and fall of the agricultural economy equalled success and failure for rural areas as a whole. The idea of the rural community stretches far beyond the city limits to include farms in a roughly ten mile radius. Henry Pratt Fairchild's *Dictionary of Sociology* offers a useful definition of rural community, defining it as, "An area of face-to-face association larger than a neighborhood in which a majority of the people use a majority of the social, economic, education, religious, and other services required by their collective life and in which there is a general agreement on basic attitudes and behaviors, usually village or town centered."[1] As the factors of industrialization discussed in Chapters Two and Three began to impact rural Towner County, however, the mentality of rural consumerism began to change.

For an extensive look at how economics and changing rural consumerism changed the small community, Wendell Berry offers many in-depth studies. *The Gift of Good Land: Further Essays Cultural and Agricultural* showcases the tipsy framework

[1] Henry Pratt Fairchild, Editor, *Dictionary of Sociology* (Westport, CT: Greenwood Press, 1970), 88.

developed in communities that serve an agricultural purpose.[2] While the railroad may have helped to establish these towns, Berry argues that it all narrows down to farm economics. When the farms failed during the various "bust" cycles such as post-World War I and the drought years of the 1930s, the community often lost business and capital before it lost the railroad. This chapter will expose Berry's correlation between farm economy and community decline throughout Towner County in North Dakota. Many communities in this area were served by the Farmer's Line railroad long after the last business had been shuttered, showcasing how the communities' declines were set into motion but factors other than rail transportation.

The rural sociologists and historians discussed throughout this paper are all in understandable agreement on the fact that small communities are declining. The variance comes, however, when asked to examine the specific reasons for decline. Sociologists like Wendell Berry argue that a hurting agricultural economy during the "bust" cycles led to the decline of towns. Hal Barron, on the other hand, points to rising farm income and success as a detriment to the rural community due to its negative impact on rural mentality.[3] This viewpoint will be explored throughout this chapter in an attempt to merge the popular historian view of reasons for decline with the adopted sociological description of rural community. During good years, rural families had the resources available to purchase luxury items. These items were often not found in the small community stores stocked for essentials. The same held true for changing farm supplies. Many local repair shops did not have the parts or the know-how to repair the larger,

[2] Wendell Berry, *The Gift of Good Land: Further Essays Cultural and Agricultural* (San Francisco: North Point Press, 1981).
[3] Hal Barron, *Mixed Harvest: The Second Great Transformation in the Rural North, 1870-1930* (Chapel Hill: University of North Carolina Press, 1997).

mechanical farm equipment of the industrial era. Scholars of this school believe that when profit margin became the driving force of agriculture, a sociologic ripple effect shook the community's foundation. Independence and consumer culture replaced the interdependence that many believe served as the true framework of rural communities.

Barron's *Mixed Harvest* not only argues the above changes in consumer attitudes, but also rising mobility as a factor. Mechanization severely cut the labor hours necessary for farming. Not only did rural citizens suddenly have the money for larger markets, they also had the funds to purchase automobiles and the leisure time necessary to drive to such markets. This shook the foundation of many small communities. Business was lost and income fell, but the reaching out to larger markets undercut something more fundamental. Farmers and other rural citizens had begun to make profit, and were therefore able to transition from interdependence to independence. Instead of supporting the local shopkeeper as a neighborly gesture, managing one's own profit margin became more important. This study will reflect Barron's viewpoint regarding agricultural success as equated to rural decline. Chapter Four will discuss how this changed mentality occurred, and precisely what it meant to small communities and businesses in rural North Dakota.

To better understand why so few citizens in the rural community foresaw the issue of decline in North Dakota in the first half of the twentieth century, it is important to consider the business climate in the United States as a whole. Industrialization on America's eastern coast had promoted the rise of the now-infamous "big business mentality" in which profit and growth was the end goal of all. Along with big business came profit-bolstering ideas such as monopolies or trusts. Men such as John Rockefeller and Andrew Carnegie became masters of industry (and wealth) by following, or perhaps

even forging, the era's innovative business trends. The new Industrial Age business model would eventually influence all regions in the American economy, including the farms and small businesses of rural communities. Increased productivity, incredible profit, and depersonalization replaced the previous model of small, local businesses offering individualized, and, some would argue, higher quality, goods and services.[4] Such businesses were the staple of rural communities, and were threatened by industrialization. The era was especially uneasy for small communities whose businesses were changing and whose farming population was about to be drastically changed by technologic developments.

In the furor of a growing capitalist America, it was difficult to imagine increased wealth and efficiency having a detrimental impact. However, the changing of agricultural mentality from community-based to business-orientated changed the consumer mentality of many small communities. Why this change of course was harmful to both town and country may be explained by the interwoven economic and social interactions between farms and town businesses that define a rural community as discussed in the first pages of this chapter. Sociologists like Berry and Hatch spent much of their careers focusing on the "wholesome" mentality of small town farm life, a mentality that is often thought to be largely mythic. When President Theodore Roosevelt created the Country Life Commission to study possible factors of rural decline—both physical and mental—it was thought to be aimed at saving the ideal view of the traditional American farm life. What may be argued from the commission's findings and subsequent happenings in rural North Dakota, however, is that the familial or neighborly guise ruling business relations may

[4] Wendell Berry, *The Unsettling of America: Culture and Agriculture* (San Francisco: Sierra Club Books, 1977), 22.

have been out of availability and efficiency more so than mentality. Ironically, some of the innovations encouraged by the Country Life Commission to improve rural life (roads, mail delivery, technology, education) would actually work to lure farmers away from local business into a larger market realm.

During the pre-industrial era, farmers did their best to support community businesses even during recession cycles. What money there was to spend was spent in local industry, regardless of what larger urban centers offered. This was all due in part to the rural community mentality.[5] Helping the neighboring store keeper or shop owner remain in business would help to keep the community afloat. Another factor in keeping business local was simply that of time. Prior to mechanization, most farmers were kept busy in the field and did not have time to make trips to larger urban markets. The loss of a day's labor for travel combined with the costs of fuel also made trips to larger communities too expensive to justify more than one or two times annually.

While many small towns rose in strength during the initial stages of industrialization in the 1910's, the movement's impact, both favorable and unfavorable, on many farmers would eventually bring demise to communities across the northern Great Plains, most notably by the mid-1920's. Once the business, profit-seeking mentality took hold of farm operations, individual success surpassed community success in importance. With the increased agricultural productivity discussed in further detail later in this paper, farmers' income rose dramatically. With this new money and changing world view, rural occupants began looking to larger, outside markets for purchases.

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[5] See also James Henretta, "Families and Farms: Mentalite in Pre-Industrial America," *The William and Mary Quarterly 3rd Series* 35, no. 1 (January 1978): 3-32. Accessed November 23, 2013. http://links.jstor.org/sici?sici=0043-5597%28197801%293%3A35%3A1%3C3%3AFAFMIP%3E2.0CO%3B@-P

Luxury goods or other unique items could be purchased from distant urban centers. A more common change, however, was that of "shopping around," or locating the best price on a good that in the previous decade would have automatically been purchased locally.[6] Labor-saving innovations on the farm, growing transportation networks, and greater profit all encouraged this shift from local consumerism to urban consumerism. Changes such as those mentioned all helped to expand the reach of rural citizens, setting into motion the decline of businesses and community. Simply put, it was not a loss of transportation from the railroads that doomed small towns, but rather an increase in several other modes of transporting both physical and mental products.

In rural communities, though the larger business foundation was shaken, survival could be maintained as long as farms were profitable. When the boom of Industrial Era agriculture began having detrimental side effects, the community structure was not strong enough to handle the struggle. As the bubble of agricultural profit and productivity began to deflate, something became increasingly apparent. Businesses were suffering due to a lack of income and consumers, but not merely because of the increased market area. Factors such as leisure time, automobiles, the growing allure of luxury items, roads, mail delivery, and even mail-order catalogues played against this faltering rural community base.

With the growth in farm profits discussed in Chapter Three came increased profit for the citizens of the rural community due to the interwoven tendencies discussed above. Small rural communities such as Rocklake, Hansboro, and Egeland were grounded on small businesses that supported the agricultural economy. In the 1920s, Hansboro had a

[6] Brian J.L. Berry, *Geography of Market Centers and Retail Distribution* (Englewood Cliffs, NJ: Prentice Hall, Inc., 1967), 10.

blacksmith machine shop, two service stations, a stable, two grain elevators, and an implement dealer.[7] Rocklake, the larger community, featured a blacksmith shop, a stable, one implement dealer, four service stations, two grain elevators, plus two-each of hotels, bars, and restaurants. By the mid-1940's, of the businesses previously mentioned as being necessary to agriculture, Rocklake had lost its blacksmith, stable, implement dealer (though this would be replaced by another two decades later), one hotel and restaurant, and two service stations. The stable cited the declining number of draft animals, while the blacksmith admitted he did not have the skill necessary to mend the new equipment.[8] The hotel folded when temporary or seasonal farm laborers no longer frequented the area. At this same time, the community of Hansboro was in sharp decline, having lost all of the above businesses except for one grain elevator and one service station, but had added a new bar to its Main Street.

Rocklake and Hansboro both at one time also boasted general mercantile stores. These businesses were supported almost solely by rural citizens engaged in agriculture in some way. These stores were less tied to the agricultural economy itself as they were to what profitability allowed consumers to purchase. As rural citizens began to see increased income, they were able to purchase luxury items, previously seen as unnecessary, if even considered at all. Because of their isolation and small purchasing ability, local stores usually did not carry a broad scope of "specialty" items. Taking advantage of the increased leisure time inherent with the mechanization of fieldwork discussed in Chapter Two and rising automobility (discussed later in this chapter), rural

[7] Ronald Seghers, *A Community of the Heart: Hansboro Heritage, Hansboro, ND 1905-2005*, (Cando, ND: Towner County Record Herald Press, 2005), 100.
[8] Rocklake History Committee, *Rocklake History From 1905 to 1980 and an All School Directory* (Langdon, ND: The Printer, 1980), 16.

citizens began to travel to large urban centers in search of their sought-after specialty purchases. As Brian Berry discovered in his research of geographic market areas, the more "everyday" an item is, the less time and distance citizens are willing to take to obtain it.[9] This holds true for everyday purchases such as groceries, but did not appear to be the case when there arose a larger reason to visit an urban market center.

When citizens turned toward larger market areas for luxury items, it was a natural progression to conduct all of one's shopping in that location. Leisure time and mobility had indeed risen, but citizens still sought to make their trips to larger cities worthwhile. Even for items that could likely be purchased in the local community, citizens took advantage of the wider selection and often cheaper price of those same goods in the larger urban areas. In order to survive, local businesses often had to cut prices to remain competitive against not only with larger cities but also with the rising mail-order industry. This industry will be discussed later in this chapter. Once businesses began to cut prices and decrease their profit margin, they relied an increasing amount on their number of consumers. This would result in the shaky business foundation that authors such as Barron and Brian Berry warned about. Profitability was down due to more citizens shopping elsewhere, but by the time local businesses became competitive, there was not enough population to support them.

Because the developments of this chapter (leisure time, the automobile, and Rural Free Delivery) all happened within the same relative time frame of the 1910s-1940s, communities such as Rocklake, Hansboro, and Egeland lost wide swaths of businesses in a very short amount of time. This set into motion a slippery slope of broadening consumer reach. Once communities lost businesses, their citizens had to travel elsewhere

[9] Brian Berry, *Geography of Market Centers and Retail Distribution*, 10.

for the lost items. Suddenly traveling to larger urban areas for business was not a matter of broader or less expensive choices, but was simply out of necessity.[10] Again, many rural citizens elected to conduct all business in these larger centers out of convenience or thriftiness.

The search for luxury items and wider consumer choices or pure necessity for goods was not the only factor encouraging rural citizens to increase their market reach. The machinery and equipment that allowed for these luxury-seeking trips also caused a movement toward more urbanized consumerism on behalf of farmers. Many small town service shops could not keep up to the immense innovations of the time. The move from draft-drawn, small farm implements to large, gasoline-powered machinery simply required too much expertise. While small wood and steel plows could often be fixed by the farmer himself or, in serious cases, a blacksmith, professional mechanics were needed to fix a tractor or mechanical combine.[11] Mechanical knowledge was necessary, as was a seemingly endless list of spare parts. This lack of know-how and spare parts in small towns resulted in the farmer having to travel to a larger city for machinery repairs or purchases. Again, rural mentality required him to do other family shopping while there so as not to "waste" a trip.

As noted in Chapters Two and Three, mechanization helped to bring about the decline of the rural community by replacing the need for large amount of laborers and also by encouraging a few larger farms to overtake many smaller individuals. As has now been shown, though, mechanization impacted the rural economy in even the most indirect of ways: by giving farmers a valid reason to shop in larger urban centers. In a 1939 study

[10] W.C. Holman, "Keeping Retail Trade at Home," *System: The Magazine of Business* 23 (1931): 13-20.
[11] R. Douglas Hurt, *Agricultural Technology in the Twentieth Century* (Manhattan, KS: Sunflower University Press, 1991), 6.

of North Dakota trade centers, the state planning board identified ten city-centered regions of trade averaging 6,888 square miles each.[12] Hansboro is firmly situated in the Devils Lake trade center, while Rocklake and Egeland lie on the border between the Devils Lake and Grand Forks centers. Grand Forks boasted 20,228 residents to Devils Lake's 6,204 at the time of the study, but Devils Lake was roughly ninety miles closer to both Rocklake and Egeland, making that city the focus for much of Towner County's urban-centered business.

Though no such study can be found, geographic market areas can also be imagined on a per-county basis. Often because of trade and transportation lines, the focus of a county's industry is on the county seat, often but not always the largest community in the county.[13] For Towner County, this city was and remains to be Cando. Cando is situated in the county's southern third, roughly twenty-two miles south of Rocklake, or eleven miles southwest of Egeland. As of 1940, the Towner County courthouse, hospital, road maintenance center, and electrical services were all located in Cando, along with the only remaining county newspaper and major bank. Resources, funding, and population were all centered within the Cando community radius. When citizens of the northern reaches of the county needed to conduct business with any of these sites, a day trip was often required. As was shown above, citizens often conducted other business while in Cando, promoting the success of that community while harming their own locale.

[12] State Planning Board, "Trade Centers in North Dakota," (Bismarck, January 1939).
[13] R. Douglas Hurt, *The Big Empty: The Great Plains in the Twentieth Century*, (Tucson: University of Arizona Press, 2011), 164.

Nancy Burns, a sociologist, conducted many studies of the rural community mentality during the late 1950s, or about the time that many communities were beginning to suffer greatly from decline. Burns concluded that many "old time" rural values were bred out of isolation.[14] This isolation had been threatened as early as the 1910s or 1920s, however, with the rising adoption of the automobile by North Dakotans. Earlier in this chapter readers were introduced to the concept of geography market centers. Of the six urban centers in the state's eastern two-thirds, the Devils Lake center was the third largest but the second-least populated per square mile.[15] Citizens from many small rural communities were traveling large distances to the urban center of Devils Lake. It was also not uncommon for a business trip to one's own county seat to require a day's time. This was made increasingly more feasible with the widespread adoption and popularity of the automobile coupled with the push for improving roads as farm-to-market hauling became more important for farmers adopting motor trucks.[16]

Figure 10: Motor truck advertisement heralding various advancements of the time

By 1945, Towner County alone

[14] Nancy Burns, *The Collapse of Small Towns on the Great Plains: A Bibliography*, Emporia State Research Studies Vol. 31, No. 1. (Emporia, KS: Emporia State University, 1962), 12.
[15] State Planning Board, "Trade Centers in North Dakota," (Bismarck, January 1939).
[16] Pictured is an advertisement for a motor truck company, heralding it as the next "big" innovation to aid rural life. Ad in Marvin McKinley, *Wheels of Farm Progress*, (St. Joseph, MI: American Society of Agricultural Engineers Press, 1980), 106.

boasted 1,050 cars and 637 trucks (both industrial and for domestic driving).[17] This equated to just over one such machine on each farm that had chosen to participate in the agricultural census for that year. In 1950, county farmers reports 1,129 cars coupled with 990 motor trucks. Truck ownership had risen 55.4% in five years, and the number of total automobiles on Towner County farms rose to 2.7 vehicles per farm. In this same period, the number of farms in the county dropped by 69. Though population was dropping, the number of automobiles continued to rise at a fast rate. Hansboro's population dipped from 196 to 134 (-31%) in this period, with Egeland's falling 275 down to 248 (-9.8%). The automobile helped to accelerate this decline by providing mobility for consumers, laborers, and even information.

Many rural citizens referred to the automobile as the "annihilator of distance."[18] The borders of a community often changed with transportation. Borders were defined by easily-traveled distance, which naturally changed as transportation evolved from horse and wagon to automobile. This change, already prevalent with early automobiles in the 1910's and 1920's, redefined how agriculture and farms would interact with certain towns, often extending the rural citizen's reach to larger urban areas. This adoption of the automobile was widespread decades before the railroad stopped serving the communities of northern Towner County, meaning train transportation was not nearly as vital as traditional history narratives suggest. As was discussed earlier in this chapter, increased mechanization and profit encouraged farmers and other rural citizens to visit larger urban centers for business such as repairs or shopping for luxury or unique items.

While money and machine sparked this need, the automobile allowed it to

[17] United States Department of Commerce, Bureau of the Census, "1950 Census of Agriculture for Towner County, North Dakota," United States Department of Agriculture (Washington: DC, 1950).
[18] McKinley, *Wheels of Farm Progress*, 134.

happen. Even the earliest of automobiles on the poorest of roads could travel distances in about one-fourth of the time required by horse and wagon. While the citizens discussed in the beginning of this chapter may have shopped at local businesses out of a neighborly mentality or simply because the time taken to travel to larger markets proved prohibitive, it is difficult to know. What can be noted, however, is that between money, mechanization, and mobility, local consumerism was replaced by trips to larger urban centers. As of the early 1960s, citizens of Hansboro and Egeland were forced to travel at least eighteen miles for basic needs like groceries. It would not be long before citizens in Hansboro could not even fuel their cars or visit the post office locally. Religion, mentioned in Chapter One, has hung on in these communities not for numbers per se, but through adaptation.

Though the focus of this research was to showcase many alternate explanations for community decline other than the departure of the railroad, none are perhaps more straight forward than the rise of automobility. In 1955, major United States Highway 281 was rerouted away from Hansboro to instead go through neighboring Rolla in Rolette County, a city of roughly 1,100 with many shopping and service amenities.[19] This was also the last year of the Hansboro school. The railroad would go through Hansboro until the late 1970's, roughly twenty years after the highway was rerouted. The greatest decline in businesses for Hansboro occurred in this period after the rerouting of Highway 281 but before the railroad's decision to leave.

The communities of Rocklake and Egeland perhaps benefited more from the rise of the automobile and the building of highways than did Hansboro. Rocklake is situated at the junction of major North Dakota State Highway 5 and United States Highway 281.

[19] Seghers, *A Community of the Heart*, 128.

Egeland is located five miles from the junction of state highways 5 and 66 and U.S. Highway 281. These highways were paved in the 1930's in answer to the rise of the automobile. The Burlington Northern Railroad remained in service to Rocklake and Egeland until the late 1980s, at which time service to Rocklake was eliminated completely and Egeland became served by a new branch of the Burlington Northern Railroad. This branch runs through Egeland to this day, even though only a grain elevator, bar, and post office remain. Rocklake had lost most of its businesses by the time of the railroad's departure. Due to its proximity to two major highways, however, it continues to boast numerous businesses and remains the largest community in this study. Much like how the railroad had once overtaken water transportation as the mainstay of industrial transportation, highways and automobiles had begun to overtake the railroad in importance for serving rural North Dakota.

The automobile initially spread slowly across northern North Dakota due to the poor condition of what roads existed but also the lack of roads in any form. Of the 914 farms in Towner County as of 1950, 521 were on gravel roads, 370 were on dirt or unimproved roads, and only 22 were on paved roads.[20] As the amount of motor trucks, especially, rose, there became an increasing push for improved farm-to-market roads to connect farms to their community hubs. By the 1960 Agricultural Census, of the 762 farms in the county, only 20 remained on unimproved roads.[21] The drive for improved roads in northern Towner County was pushed forward by the widening mail delivery

[20] The listed number of farms in the 1950 Agricultural Census was 914, though the number of farms listed per-road type only adds to 913. United States Department of Commerce, Bureau of the Census, "1950 Census of Agriculture for Towner County, North Dakota," United States Department of Agriculture (Washington: DC, 1950).

[21] United States Department of Commerce, Bureau of the Census, "1960 Census of Agriculture for Towner County, North Dakota," United States Department of Agriculture (Washington: DC, 1960).

service to rural areas, to be discussed later in this chapter, and also the adoption of motor trucks for hauling farm goods to market.

Prior to the adoption of the truck for hauling harvested grain into grain elevators, which could be up to ten miles from one's farm, the hauling had to be done by horse and wagon. These wagons were small so as not to overwork the horse. As has been discussed repeatedly in previous chapters, horses were also slow and undependable. A farmer would often have to store his grain until the winter of following spring until he had the time necessary to make the half-day-long trips into town. This cut down on the time available for other avenues such as increased farm size, or even leisure. In some cases, it appears that farmers may have hired independent laborers to haul their grain.[22] When the motor truck took over, this was yet another instance of machine overtaking necessary manpower. This move to truck hauling was not without cost, however, as farmers then had to consider the price of gasoline and repairs on trucks. In bad production years, this cost could couple with the loan likely needed to purchase the truck to set a substantial amount of debt onto struggling farmers.

The time required to get crops to market also necessitated farmers to bring their business to the nearest local grain elevator or miller. Once the use of motor trucks and improved highways rose, however, farmers could bring their grain to whichever elevator offered the best price or storage options. This placed small communities into competition with one another where there had previously been no competition. As R. Douglas Hurt discusses, agricultural-related businesses are often the last to suffer in rural areas because

[22] Harold Leas correspondence to Lynn Leas, September 1941. Leas Family Collection. Cando, ND.

of a guarantee of financial income from the farming economy.[23] Businesses such as grain elevators were seemingly "untouchable" prior to the motor-truck era because farmers were numerous, but their choices were not. When farmers gained mobility, the monopoly of local businesses was broken, and even agricultural businesses became threatened by the changing market area.

Prior to this increased mobility, it was not unusual for every town to have a grain elevator, with even some independently-owned elevators resting in between communities. As competition rose, elevators in smaller communities such as Hansboro or the now completely defunct Arndt and Crocus (both lying between Rocklake and Egeland) folded at a rate not typical of such a large farming region. While the car allowed for a wider market reach in which to spend the profits of farming, the motor truck gave farmers new avenues in which to create said profit.[24] Once farmers became independent of inflationary railroad rates, their profit and autonomy rose. Towns as a whole began to feel the impact of railroad rates. If a certain community was not favored by the railroad, it may be either bypassed by the lines completely or charged higher rates. Once highways and motor trucks allowed farmers the


FARM HAULING
by MOTOR TRUCK

FARMERS in every section are turning their hauling over to good motor trucks. There are plenty of practical reasons for the change.

The motor truck owner saves hundreds of hours per year and that means saving expensive labor for productive work at home. The automobile has shown him how to cut time and distance. Concrete and other hard roads are ready for his fast hauling. Distant markets are in easy reach. He is able to sell where prices favor him, and to buy likewise. In marketing his crops he cuts two days of old-style plodding down to a half day. Whatever he hauls—milk and cream, garden truck, live stock, fruit, grain and hay, sand, gravel, etc.—he does it *easier* and *cheaper* by motor truck.

In the full line of International Motor Trucks is a size and style to fit every farmer's needs. All sturdily built for hard, all-around farm use. Plenty of surplus power for heavy going.

The Speed Truck shown above carries a ton load easily and quickly. It is equipped with electric lights and starter, power tire pump, truck cord tires; special farm bodies available for your particular needs. The Speed Truck makes an excellent all-purpose truck for the average farmer. Where larger loads must be hauled, heavy-duty Internationals may be had for loads up to 10,000 pounds (max. cap.). Let us tell you how conveniently you can secure an International Motor Truck. A letter will bring complete information.

INTERNATIONAL HARVESTER COMPANY OF AMERICA (Incorporated)
606 So. Michigan Ave. Chicago, Ill.
101 direct Company Branches serve International Motor Truck owners

INTERNATIONAL HARVESTER COMPANY
TRUCKS

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Figure 11: "Farm Hauling by Motor Truck," International Trucks advertisement

[23] R. Douglas Hurt, *Problems of Plenty: The American Farmer in the Twentieth Century*. (Chicago: Ivan R. Dee Publishing, 2002), 129.
[24] Advertisement for the growth of hauling via motor trucks found in McKinley, *Wheels of Farm Progress*, 109.

mobility to transport their grain larger distances, elevators in communities preferred by the railroad benefitted, thereby benefitting the town as a whole. Bisbee, North Dakota, a town located twelve miles west of Egeland, was favored by the Burlington Northern. Farmers from Rocklake often hauled their grain to Bisbee because of that elevator's lower freight rates. This harmed the Rocklake elevator over the years to the point that it actually was forced to enter into a cooperative with the Bisbee elevator in the 1990's.

The rising popularity of the automobile also led to a growth in transient labor crews.[25] These crews could travel from the southern Great Plains to the north with the use of the automobile—few railroads ran that same direction. Though less and less hired labor was required during harvest, these almost-professional travelling crews took what temporary jobs and resources there were away from a farmer's community members. The crews could travel easily back to their homes once the season was completed. Most previous transient laborers had settled in the community for at least some time due to the simple fact of travelling home being too difficult.

Physical trips to urban markets were not the only new branch of consumerism opened to successful farmers. Cars and motor trucks allowed rural citizens the mobility to expand their consumer worlds, but would also bring an expanded world of consumerism to their front doors in the form of Rural Free Delivery (RFD), or free mail delivery service to rural homes.

RFD for mail was introduced on a trial basis in 1891, and became a nationwide service in 1902.[26] During this decade, farm organizations such as the Farmers' Alliance

[25] Thomas Isern, *Bull Threshers and Bindlestiffs: Harvesting and Threshing on the North American Plains*, (Larence: University of Kansas Press, 1990), 160.
[26] United States Postal Service Historian, "Annual Report of the Postmaster General" (United States Postal Service, Washington, DC, 1891; 1902), et al.

brought a powerful voice to farmers. Both organizations campaigned for RFD, arguing that it was a right for rural citizens to have the same mail delivery service as their urban counterparts.[27] Prior to rural delivery service, farmers had to make a trip into town to collect their mail. While in town to collect mail, rural dwellers would inevitably make purchases in the local stores. When farmers no longer had to visit town to collect their mail, they brought less business to the community. Having mail and mail-order catalogues at one's doorstep also encouraged shopping through mail-order catalogues, creating a second blow to rural communities provided by RFD, an organization meant to aid rural populations.

The first documented instance of the automobile used to carry out RFD in North Dakota occurred in 1912.[28] At this time, much like the motor truck, adoption of the practice was slowed simply by the lack of roads running to rural areas. Because RFD was a federally-based program, it likely had more power to produce infrastructure in rural areas than did the appeal of a few mechanizing farmers. As early as 1916, the United States Congress passed the Rural Post Roads Act under the urging of President Woodrow Wilson.[29] President Wilson believed that rural mail delivery was essential for the broader American market because it would bring scientific information to help farmers produce more efficiently but also because it would encourage farmers to buy-in to the growing business of mail-order catalogues, to be discussed shortly.

Mail delivery was seized by the United States Department of Agriculture (USDA)

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[27] United States Postal Service Historian, "Rural Free Delivery" (United States Postal Service, Washington, DC, May 2007), 2. http://about.usps.com/who-we-are/postal-history/rural-free-delivery.pdf. (date accessed November 3, 2012).
[28] Hiram Drache, *Legacy of the Land: Agriculture's Story to the Present*, (Danville, IL: Interstate Publishers, Inc., 1996), 150.
[29] Hurt, *Problems of Plenty*, 27.

and other agricultural organizations as a way to spread the era's burgeoning agronomy knowledge to all farmers. The USDA sent out monthly bulletins regarding the most up-to-date farming practices: machine use and repair, chemicals, fertilizers, and new grain varieties. These mailings only served to perpetuate the cycle of farm growth, and also made farmers less dependent on their local businesses or neighbors. Organizations such as the Commission on Rural Life (started by President Theodore Roosevelt) also took advantage of RFD in attempts to bring a "social revolution" to the rural areas that they believed to be lagging in terms of culture and modernity.[30]

Mail delivery to the farm coupled with the growth of electricity and radio to disseminate the growing knowledge of agronomy. The methods for use and repair of the machinery discussed in Chapter Two and the application of the scientific advances of Chapter Three were brought to the farmer's front stoop with ease and speed. The weather bureau also took advantage of this information spread to help farmers better plan for their climates. Not only was information and knowledge spread, but advertisements for the luxury items and household conveniences discussed earlier in this chapter. Though these mailings were meant to enrich rural life, the snippets of life in urban areas often enticed young people away from the rural community.

The RFD began just as a service for letter delivery, but would soon grow into a parcel post service for delivering packages.[31] As the service grew, however, and automobiles came into general use, changes had to be made to the rural mail routes. This often involved having farmers move their mailboxes to more heavily-traveled roads. At

[30]William L. Bowers, *The Country Life Movement in America, 1900-1920* (Post Washington, NY: Kennikat Press, 1974), 62.
[31] *Postmaster's General Report 1931*, (Washington, DC: Government Printing Office, 1931), 114.

times, this move placed the farmer's address in a different community.[32] Suddenly, farmers were receiving different news and mailings than were their counterparts that they had long considered to be community members. As federal bureaucrats reshaped the delivery lines to better suit efficiency, they were unwittingly redefining the rural sense of community. It was not just these redefined addresses that harmed the rural community, however, but also the broadening scope of products that could be delivered.

With the rise of parcel service to rural areas, RFD helped the mail-order businesses of the East Coast move successfully to the Great Plains. The expanding market reach of rural citizens in response to profit and leisure time has already been discussed in this chapter in the form of physical trips. Local business owners were already feeling the negative impact on their businesses by the time parcel post came to rural North Dakota, and resisted the change. Many local store owners fought to remind rural citizens of the community mentality when they realized their small stores were no match for the vast warehouses of such companies as Montgomery Ward and Sears-Roebuck.[33] The catalogues offered everything from farm machinery to household labor-saving devices, clothing, and more. Small rural businesses could not offer such wide selections, and certainly could not enter into a price war with the business giants of mail order.

Traditionally, farmers had conducted business locally not only out of convenience but also as a matter of trust. At the onset of the twentieth century, there was still much mistrust regarding outsiders from the city and their wares. These walls were broken down by catalogue magnates such as Montgomery Ward, who gained rural trust by winning

[32] *RFD News* 11 (1912), 9.
[33] E.E. Miller, "Factors in the Remaking of Country Life," *The Forum*, 48 (September 1912), 362.

endorsements from the numerous farm organizations of the industrial era. Ward, not a farmer himself but a member of the agrarian-minded Grange organization, began a mail-order company in the early 1870s.[34] Recipients of Ward's catalogue of goods could send in for a variety of items, from clothing to farm equipment, and even household labor-saving gadgets. The catalogue's list of goods increased along with industrialization, which caused a growing appeal of mail order service to the rural masses.

By 1900, Ward was doing $8.7 million of business annually with a new competitor, Sears-Roebuck, garnering $10 million.[35] Business was booming for these catalogue magnates, but in rural communities, it was clear where the catalogues' business was coming from. Mail order services not only provided a massive amount of goods not available through local retailers, but offered cheap prices on those goods that could have been purchased locally. Many small businesses folded quietly, unable to compete with the prices and variety of their urban counterparts, much less the mail-order giants. Other rural merchants, such as one Kansas business owner, would not go down without a fight. Purportedly the Kansas merchant offered to give a fifty dollar prize to the patron who turned in the most mail order catalogues. Once all the catalogues had been compiled, a group of community merchants burned the pile, giving out no prize.[36] Such business owners clearly realized that it was economically impossible to compete with the catalogues to win back customers, but still strove to gain a competitive edge.

Mechanization and crop science worked together in the first half of the twentieth century to greatly increase farm profits while also saving the farmer leisure time. What

[34] Barron, *Mixed Harvest*, 199.
[35] Frank Latham, *1872-1972: A Century of Serving Customers: Montgomery Ward* (Chicago: Montgomery Ward and Co., 1972), 6.
[36] Barron, *Mixed Harvest*, 185.

would appear to be great boons to the rural economy and spirit would actually prove to be of much detriment. With their new profits, many farmers purchased automobiles and in turn used their increased leisure time to visit larger urban centers. The wonders of these consumer centers made local business seem expensive and mundane in comparison, a realization that was only exemplified by the growth of mail-order services through RFD. Rural consumers began to essentially turn their backs on their small town businesses of friends and neighbors to instead buy into the national economy. At this time, businesses in the small communities of northern Towner County folded by the dozen, while urban markets such as Devils Lake grew exponentially.

Growing yields, profitability, and government intervention in the name of the RFD program also led to a movement of improved infrastructure for the rural community. Again, a change that could be imagined as only beneficial to the rural communities arguably aided their decline. Farmers took advantage of the motor truck and improved farm-to-market roads to do just that: *market* their harvests. Small town institutions like mills and elevators that had once had a lock on all agricultural business in their community sphere now found themselves in competition with those same institutions in neighboring communities. Even Rocklake, the largest community in this study, lost one of its grain elevators when farmers realized they had gained freedom from the railroad.

Profit and leisure time opened a world of independence and choice to the rural citizen that had previously been unknown. This isolation, however, had been the key to the community mentality that kept so many rural businesses afloat. As the automobile broke down distance, it also broke down the rural community support system. Success for the farmer ended as a detriment to the small town—a decline caused not by the railroad,

but the technologies replacing it. The rise in profit, productivity, and automobility set into motion factors of decline entirely independent of whether or not a rail line remained.

CHAPTER V

CONCLUSION

Declining Communities Live On

The American Industrial Revolution was an era synonymous with increased productivity and profit. Advancements in manufacturing and business practices not only increased the production of goods and services, but also made existing industries more efficient. Industrialization and mechanization did not stop in the urban centers of the East Coast, but spread west onto the Great Plains. The mechanization of agriculture led to increased farm size and crop yields, promoting a farm-based boom in rural areas. However, the adoption of many Industrial Era innovations happened in a way that historians such as Elwyn Robinson would deem "too much, too soon." As this thesis has striven to reveal, the real result of rapid industrialization and farm growth actually led to the demise of many rural communities.

The technological advancements of Industrial Era agriculture were many. Railroads helped to bring settlement to rural areas of the Great Plains by providing larger market areas for farmers' crops. Trains also transported the goods and services necessary to establish rural communities and businesses. Tractors, combines, and large tillage equipment replaced small, simple horse-drawn implements. Tractors moved faster, worked longer, and were more powerful than horses or other draft animals. Because of

this, farms on the Great Plains were able to expand an average of 219 acres between the years 1890 and 1930.[1] The increasing farm sizes combined with better scientific farming practices led to a boom in crop production.

The mechanization of farm machinery had a further impact on the rural agricultural economy. Tractors and combines replaced numerous hours of human labor required by farm work. It is estimated that the powered equipment of the Industrial Era replaced a total of 785 billion man hours between the years 1909-1938.[2] One man with one tractor and steel plow could till one acre in one quarter of the time required by two men, one horse, and one iron plow. Combines reduced the number of laborers necessary for harvest from twenty to one. While these changes boded well for farm owners who saved on labor costs, the replacement of men by machines led to rural decline by forcing many agricultural laborers to move to urban centers of employment.

At the turn of the twentieth century, as mechanization was beginning to impact agriculture, 20% of Great Plains counties reported more out-migration than natural increase. By the middle of the century, when many argue industrialization had fully implemented every sector of Great Plains agriculture, 52% of the region's counties lost more citizens than they gained.[3] In fact, a demographic study of county populations throughout the United States shows that approximately 90% of the counties in North

[1] Joseph Knue, *Of Time. . .And the Prairie, 100 Years of People and Wildlife in North Dakota: Observations in Change* (Bismarck: North Dakota Game and Fish Department, 1988), 97.
[2] Robert C. Williams, *Fordson, Farmall, and Poppin' Johnny*: *A History of the Farm Tractor and its Impact on America* (Urbana: University of Illinois Press, 1987), 153.
[3] Katherine Curtis White, "Population Change and Farm Dependence: Temporal and Spatial Variation in the U.S. Great Plains, 1900-2000," *Demography* 45, no. 2 (May 2008): 363-386. (accessed November 11, 2012), http://www.jstor.org/stable/25475978.

Dakota reached their peak rural populations in 1930 or earlier.[4] The same is true for nearly all of South Dakota and roughly two-thirds of the counties in Nebraska, as well as the north-central third of Montana. Rural decline since 1930 is not just unique to north-central North Dakota, but rather the northern Great Plains as a whole.

Many communities had been able to hang on as long as the farming industry was strong enough to support them. As mechanization progressed, however, the increased farm yields led to the overproduction of many crops. Yield success and, later, overproduction were also caused by agronomic advancements set into motion by the World Wars. As shown in Chapter Three, fertilizer use grew substantially, helping to bolster crop yields. The average bushel-per-acre yield for wheat in Towner County grew by as much as eleven following the implementation of pesticides like DDT, stronger hybrid crop seeds, and fertilizers like anhydrous. These innovations were especially advantageous when it is remembered that they were being applied on increases crop acreages. In the decade of 1939-1949—mostly post-World War II, however—farm size in Towner County grew by at least one hundred acres to make the average farm size in the Rocklake, Hansboro, and Egeland triangle about 880 acres.[5] During that same decade, Towner County lost 350 farms.

The farm settlements and communities encouraged by the railroads coupled with the increased production supported by mechanization to create a booming rural industry. However, as industrialization took hold, Robinson's "Too Much Mistake" began to crack

[4] Wilbur Zelinsky, "Changes in the Geographic Patterns of Rural Population in the United States 1790-1960," *Geographical Review* 52, no. 4 (1962): 501, accessed September 22, 2013, http://www.jstor.org/stable/212611.

[5] United States Department of Commerce, Bureau of the Census, "1939 Farm Census Preliminary Report for Towner County, North Dakota," United States Department of Agriculture (Washington: DC, 1939); United States Department of Commerce, Bureau of the Census, "1950 Census of Agriculture for Towner County, North Dakota," United States Department of Agriculture (Washington: DC, 1950).

the foundations of the rural economy. The advancements in agriculture produced increased farm profit, allowing rural citizens to expand their consumer market reach. The labor saving innovations in agriculture allowed citizens the freedom to travel to larger urban centers to purchase not only luxury goods, but also everyday items. Mail-order catalogues also grew in popularity and served as an outlet for increased rural profit. As consumers shifted to such dispersed markets with the help of the automobile and improved roads, small community businesses lost customers and, therefore, income. Unable to remain competitive with larger markets, these community businesses were often forced to close.

Holding true to Robinson's Too Much Mistake, this yield success, production growth, and growth in farm size would spark a rocky boom-bust cycle for the agricultural economy in the years to come. After World War I, the bottom began to fall out of the crop market, sending many farmers into ruin. No longer able to expand to larger markets, farmers turned to their local communities. However, the businesses were so harmed from the earlier loss of consumers that they could not support the faltered economy. For Rocklake, Hansboro, and Egeland this "bust" would happen repeatedly in the late 1960's, late 1970's, and mid-1990's. Each of these downturns would catch farmers with debts to machine and land loans, loans that had been necessitated by growth in both farm size and production. With each downturn, more businesses were lost, creating the desolate business scene found in the communities of rural North Dakota today. What many rural sociologists and government officials alike now focus on is why these communities so devoid of business and industry unrelated to agriculture still dot the prairie landscape.

The traditional view of rural decline in relation to the railroad as set forth by previously-discussed authors like Schwieterman and Hudson holds that when the railroad stopped service to a town, businesses and population crumbled soon afterward. As Chapters Two, Three, and Four strove to showcase, however, the boom-bust cycles of agriculture in northern Towner County set decline into motion long before railroads eliminated service. While this thesis has striven to showcase various factors of rural decline in North Dakota apart from the widely-held "Railroad Theory," the fact that many of these communities still hold on must be recognized. Traditional rural sociologists, writing in the 1950's and consisting of scholars like Hoiberg, Hatch, Nelson, and Kazeck, would point to the continuation of these communities in light of the railroad's stoppage as a response to the social need for groups and community activity.[6] Early sociologists also often held the belief that a farm population could support all community enterprise, and therefore communities would only totally fall when the agricultural economy collapsed. The fact that each community of this study still has at least one business, annual events, and citizens who identify with the locale gives credence to this idea that declining communities will live on in response to agriculture and social needs.

A growing number of rural sociologists are beginning to treat rural decline not as a farm problem, but as a community-level crisis. Authors like Osha Gray Davidson and Mike Jacobsen have examined community decline in the Great Plains states of Iowa and

[6] For a fuller discussion of these authors' theories, please refer to either Chapter One of this thesis or the individual works. Melvin Kazeck, *North Dakota: A Human and Economic Geography* (Minneapolis: Lund Press, Inc., 1956); Otto Hoiberg, *Exploring the Small Community* (Lincoln: University of Nebraska Press, 1955); Elvin Hatch, Biography of a Small Town (New York: Columbia University Press, 1979); Lowry Nelson, *Rural Sociology: Its Origins and Growth in the United States* (Minneapolis: University of Minnesota Press, 1969).

Kansas.[7] These authors take the stance that although agriculture may continue to have successful cycles, communities are not as elastic. In essence, once rural communities reach a certain point of decline, they lack the resources and population to rebuild. Enough farmers may remain in areas to support agricultural-related enterprises, but not other "basics" like grocery stores, restaurants, or schools.

Of the three communities discussed in this thesis, none have either a school or a grocery store, with Rocklake boasting the only restaurant. Though none of these places can offer necessary resources for citizens, they remain as incorporated communities on the map of North Dakota. Consider again the case of Crocus discussed in Chapter One. Not a trace remains of the physical town, but the perception of its community is still alive. What rural sociology must begin to consider is the decline in activity that has occurred in small communities since this initial wave of thought. With no schools, theatres, dance halls, and few churches, social activity in these aging rural communities is rare, but does exist. Churches and bars remain in operation, while each community also boasts at least one annual event that draws in large crowds from surrounding locales. In addition, because of the mobility discussed in Chapter Four, having successful farms within the community sphere does not equate to support of local businesses in the way imagined by the early sociologists.

Today there has become a disconnect between three types of living in North Dakota. Where there once were spheres of rural and urban, these are shifting and becoming more fluid as urban areas expand. Arguably, even the most rural of locales may

[7] Osha Gray Davidson, *Broken Heartland: The Rise of America's Rural Ghetto* (Iowa City: University of Iowa Press, 1996); Michael Jacobsen and Bonnie Alberston, "Social and Economic Change in Rural Iowa: The Development of Rural Ghettos," (presentation, Eleventh National Institute on Social Work in Rural Areas, Harrisonburg, VA, July 1990).

now be split into (at least) two spheres: the "agriculturally rural" and the "petroleum-based rural." As was discussed in the introduction, today the oil industry is booming in North Dakota, introducing an influx of population and profit to a previously declining, relatively rural area. This boom, as long as it lasts, has brought people, profit, and industry to the western half of the state.

For rural communities in the state's eastern half, however, agriculture still controls the economy. Large farmers are still profiting as a result of the innovations discussed in this thesis. Rural communities of the area are, however, still "busting" from the results of agricultural profit and productivity. In the case of these agriculturally rural areas, including Rocklake, Hansboro, and Egeland, Robinson's Too Much Mistake came true. What must be remembered, however, is that this was "too much" of good things—profit, productivity, prosperity. In response to the remaining population's needs both agriculturally and socially, remnants of communities still live on. While these communities "busted" to a point, they remain active through adaptation and local identity. It was not the stoppage of railroad service that busted northern North Dakotan communities, nor can oil save them. Instead, the abundance and success created through mechanization, agronomy, automobility, and technology replaced the need for large populations, large families, and local businesses.

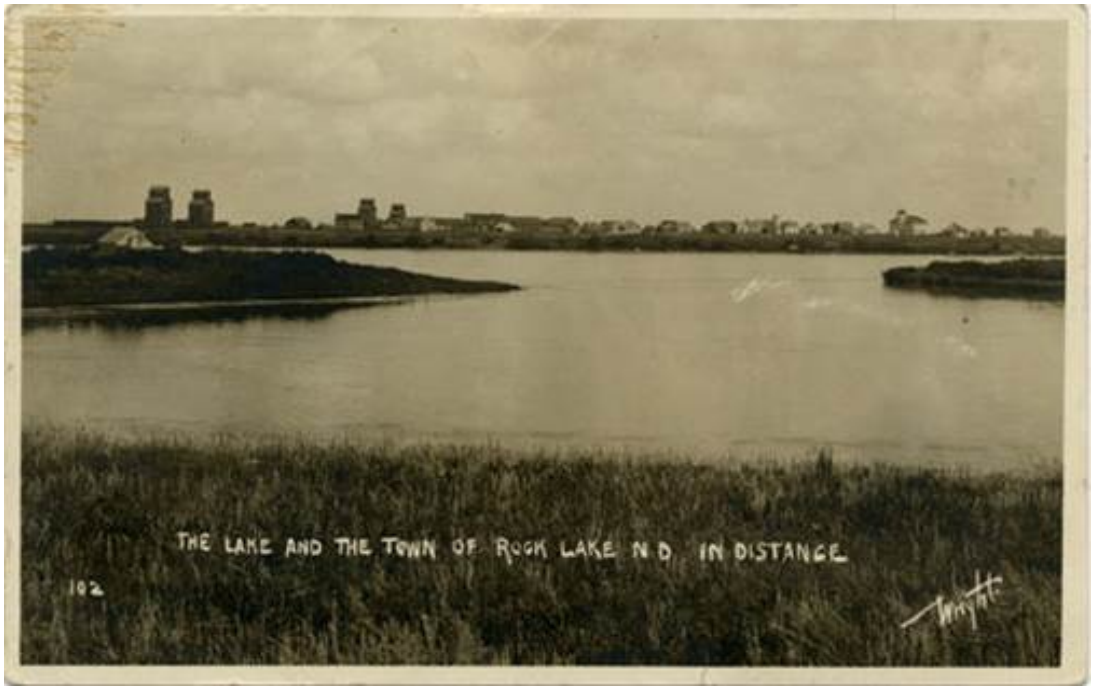

Figure 12: Rocklake, ND c. 1915. Note the four grain elevators to the left, the large school house on the right, and the number of buildings in between. Photograph located in the Leas Family Private Collection of Cando, ND.

Figure 13: Rocklake, ND c. 2009. Only two elevators remain, and the large school house has since burned down. Photograph from Google Earth.

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