

AGRICULTURAL MANPOWER SHORTAGE IN WORLD WAR II:
ANALYSIS OF A HISTORICAL OPERATIONAL ENVIRONMENT

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

AGRICULTURAL MANPOWER SHORTAGE IN WORLD WAR II: ANALYSIS OF A HISTORICAL OPERATIONAL ENVIRONMENT, by Major Tevina Flood, 280 pages.

What caused the agricultural manpower shortage in World War II? Historians have proffered a variety of explanations that attribute linear causality to a handful of independent variables. No scholar, however, has attempted to study the manpower shortage in its full causal complexity. This paper, following the muse of analytic eclecticism, assembles a variety of cutting-edge political-science scholarship to develop a modified version of the Institutional Analysis Framework. I apply this framework to the study of the agricultural manpower shortage during World War II. I argue that the agricultural manpower shortage is the result of emergent causality, which has significant implications for scholarly practice and strategic planning and intervention. Strategists and military planners must become adept at understanding both linear causality, wherein independent variables and dependent variables shed causal light on the world, and emergent causality, which--however intractable it is to strategic levers--is an ineliminable component of sociopolitical affairs and war.

DEDICATION

To my grandfather, Dennis Verne Sprang, 1922-2006, my grandmother, Shirley Elaine Sprang, and all of the other men and women whose honorable service on the farmfront during World War II won the war and wrote the peace.

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ACRONYMS

AAA	Agricultural Adjustment Agency
CCC	Commodity Credit Corporation
USDA	United States Department of Agriculture
WLA	Women's Land Army
WMC	War Manpower Commission
WPB	War Production Board
WWI	World War I
WWII	World War II

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CHAPTER 1

INTRODUCTION

Born March 22, 1922, Dennis Verne Sprang, my grandfather, was the second of five children in a farming family in Spirit Lake, South Dakota. As a young, married man, he owned a 600-acre farm near De Smet, South Dakota where he primarily grew grain. Despite being 19 in 1941, he did not fight in World War II (WWII). Nor, for that matter, did a great many other young American farmers.

This was not a reflection of any lack of patriotism on the part of farmers in America. It was, rather, a reflection of the nation's recognition of the critical role of farmers in supplying the war effort at home and abroad. The criticality of food in wartime seems self-evident, but that did not prevent America from developing a shortage of the agricultural labor required to keep food flowing for the war effort. In fact, less well-known than the iconic Rosie the Riveter poster, were WWII posters appealing to women to become not "riveters" but "tractorettes." This apparent contradiction between the essentiality of agricultural products and the shortage of agricultural manpower almost begs us to ask how America found itself in this position. What was the origin of this wartime agricultural manpower shortage?

In many ways, this question is the same sort of question that military planners are asked by their superiors regularly. Why does the Taliban receive support in Afghanistan? Why did the Sunni Awakening occur? Why is suicide bombing becoming more common in Afghanistan? What caused the Arab Spring? These questions may be more familiar to a military practitioner, but, like the earlier question, what they all seek is an understanding of what factors in a given environment caused or are causing a given

phenomenon. The answers to each of these questions must begin with an understanding of the context, the operational environment in which the phenomenon occurs.

These questions also share two other important characteristics. One is the complexity of the environments that they seek to understand. These are environments in times of rapid change and stress with complicated histories. They are, moreover, connected to other complex systems, which influence each other in seemingly unpredictable ways. The other shared characteristic is how unfamiliar they are to the average military planner, or at least were prior to 9/11. Unless she happened to have studied extensively, the average military planner before 9/11 probably knew roughly as much about the Taliban in Afghanistan as she knows today about farm labor shortages in WWII.

Military doctrine provides a range of tools designed to facilitate understanding of a complex and unfamiliar environment. While these tools certainly have merit, they are not the only ones available and, especially for complex environments, they may not be the best. That said, however, I am not going to attempt to compare and contrast tools nor do I aspire to prove that one is superior to another. I am simply going, in chapter 3, to present an alternate set of tools drawn from political science. This tool box is rooted in the curriculum of the Local Dynamics of War Scholars Seminar conducted at the Command and General Staff College. While arguably originally intended for use in analyses of politically oriented phenomenon, these tools are equally applicable to military environments and interactions.

The two most important tools that I plan to offer the reader during chapter 3 are the linked concepts of abductive reasoning and analytical eclecticism. Both of these

concepts call for the practitioner to consider data and theories available from all sources and evaluate their applicability based on the real world problem under study. The practitioner intervening in the real world cannot allow his understanding to be bounded by traditional academic divisions. It is dangerously inadequate to argue that any problem can be explained fully through economics or history or political science. Instead, the practitioner must understand that the problem may be partially economic, partially historic, and partially political and that he needs to lean on all of those disciplines to inform his understanding.

The tools that I present in chapter 3 implicitly inform the historical narrative in chapter 4. The employment of those tools will not, however, be explicitly drawn out during the narrative. Overt reference to the theories would serve only to make the narrative disjointed and would not materially improve the reader's understanding of the operational environment. Rather, the reader is enjoined to consider chapter 4's narrative as might a commander attempting to understand a new and complex environment in which he has been directed to intervene. While not indifferent to the methods his staff used to prepare their assessment of the operational environment, he trusts that his trained staff has used the "right" tools. His primary concern is simply to understand the environment so that he can determine the nature of the problem most likely to prevent him from accomplishing the goals of his intervention.

At first glance, agricultural manpower may not seem like a problem that military planners should be concerned with. Experience in WWII and more recent experience in Iraq and Afghanistan, however, demonstrate that a military planner's scope is often far broader than might seem reasonable given his title. Considerations that military

practitioners would like to be able to neatly label “civilian” and therefore “not my problem” have an unpleasant way of intruding on military operations. It is, therefore, not inconsistent for me to present tools for the military practitioner by applying them to a problem that is simultaneously military and civilian in nature. Arguably, in wars on the scale of WWII, very few problems are ever either purely military or purely civilian; they are always linked in some way to a problem of the other persuasion.

That linkage of the civilian and the military is a constant theme throughout the narrative in chapter 4. The narrative describes the major factors that caused the agricultural manpower shortage during WWII and shows how they interacted with each other. It discusses land distribution practices, the effects of the natural environment, and the impact of international and intranational population movements. Given the length of history with which military planners must be familiar to understand the religious divides in the Middle East, it should not be surprising that chapter 4 discusses events as far back as the 1700s. The narrative presents changes in farming from the late 1800s to WWII including farmers’ attempts to organize and technological improvements, government involvement in agriculture from 1900 to WWII, and an overview of the Great Depression. While none of these subjects are directly military, they are just as important to an understanding of the manpower shortage as a discussion of poppy farming and government suppression of the drug trade is to an understanding of Afghanistan.

Additionally, since agricultural manpower requirements were directly related to demand for food, the narrative addresses both the international food requirements that America attempted to fulfill and what Americans expected to have on their own tables. The narrative explains what the government did to plan in the interwar period for a future

war with special emphasis on the contestation between organized labor, which opposed control of civilian labor, and pro-military organizations, which supported national service, and attempts to explain why the government never instituted national service. It provides some theories about how labor functions and discusses where all of the agricultural manpower went and how agriculture finally got additional manpower to compensate for its losses.

The narrative in chapter 4 concludes with several possible ways that the manpower problem might have been avoided, but it is important to understand that, in a complex system, there is rarely, if ever, a simple answer. It is impossible to point to any single factor and conclude that it alone was the culprit. Instead, the military practitioner must search for multiple intervention points and, understanding how intervention at any one of those points affects the rest of the system, formulate a plan involving many of them simultaneously.

Under normal circumstances, chapter 5 would contain only the overall conclusions of this study. I have chosen, however, to use chapter 5 to draw out of the narrative interactions that illustrate the use of the tools presented in chapter 3. While I feel confident that, understanding the tools, the reader will have already noticed some, if not all, of these interactions and their significance in relation to the tools, I nonetheless, feel it is incumbent upon me to make the relationships explicit.

CHAPTER 2

LITERATURE REVIEW

The compartmentalization of academia makes answering complex, real-world questions more difficult. The boundaries of the answers to those questions almost never fit neatly within the boundaries of any single academic department. To determine what is occurring in an operational environment, the responsible analyst must, therefore, draw upon expert knowledge from any place that seems useful and credible. The analyst is likely to find that many experts have studied their own fields extensively. Having not been prompted by the exact question the analyst faces, however, the experts have not attempted to fit their pieces together with other experts' pieces to get the bigger picture the analyst seeks. The analyst is, therefore, likely to find that he must follow a trail of breadcrumbs from one expert to the next as one piece of data leads on to another. Some connections in this trail may be apparent to the analyst prior to beginning research but many will only become apparent after extensive research and thought.

Since the environment and problem I analyzed existed roughly seventy years ago, my use of historians to research them is logical. As a complex problem, however, even within history, there is no single discipline that can adequately answer all of the issues. I saw benefit, therefore, in drawing on a wide variety of historians including ethnic historians, women's historians, agricultural historians, military historians, food historians, and economic historians. In addition to history, I drew on contributions from other academic departments including political science, social studies, economics, agriculture, geography, and law. I found that all of these experts were necessary to adequately frame the environment and produce its narrative.

As a military logistician, I know that two of the most important questions to ask are “how much do we need?” and “how much do we have?” Invariably, the difference between those two amounts is where military forces get into difficulties. In attempting to answer the first question, I looked at several works dealing with domestic food consumption, foreign needs and some theory behind food production and rationing. Megan J. Elias provides a look at what people ate, how they cooked it, and their eating habits between 1890 and 1945. She discusses several historical food crises including the Great Depression and both World Wars and explains historical concepts of diet and nutrition. She illustrates how rural to urban migration, foreign immigration, and technology affected American food practices (Elias 2009). Andrew F. Smith uses specific innovations and case studies to illustrate the changes in American food practices over the past two hundred years with special emphasis on changes in ideas and technology (Smith 2009).

Discussing foreign, rather than domestic, impacts on American agricultural output levels, Roger Munting presents the contribution of Lend-Lease to the Soviet war effort in WWII. He argues that, while, overall, the contributions may have been minor, in specific areas, most especially food, they were critical. He cites shortages in shipping and port facilities as the most important factors limiting Lend-Lease’s effectiveness for the Soviets but does admit that American supplies were not sufficient to meet Soviet requirements. He also describes Lend-Lease as an attempt to conciliate with the Soviets in lieu of opening the western front in Europe that the Soviets wanted (Munting 1984). Concentrating on British Commonwealth requirements, Eric Roll looks at the Combined Food Board, an institution established by Britain, Canada and America to coordinate

those countries' supply efforts. He discusses early British food procurement methods during WWII and the Combined Food Board's formation, maintenance and eventual dissolution (Roll 1956). Ralph E. Birchard's discussion of the famine that followed WWII highlights the results of failing to consider international requirements. He argues that the post-war famine was caused by pre-existing lack of European food self-sufficiency, economic deficiencies inhibiting importation of food, American unwillingness to extend continuing credit, and population migrations. He also cites alteration of pre-war food production patterns, the "Iron Curtain," battle damage, expanding population, bad weather, and decreased economic return for farmers (Birchard 1948).

On a more theoretic level, Herbert W. Mumford and Roy H. Wilcox discuss the relationship during times of shortage between primary foods like grain and derivative foods like milk and meat. They argue that countries must maintain a balance between livestock and grain production during wartime and that, although derivative foods are somewhat wasteful from a caloric efficiency stand point, they are valuable enough that their production should not be eliminated (Mumford and Wilcox 1919). Discussing the relationship between food prices and inflation, Dale E. Hathaway argues that inflation in the prices of nonfood goods and services increases the price of farmers' off-farm inputs, which decreases the supply of food and drives up the price of food. He includes transportation and marketing of farm products as off-farm inputs. He also provides a clear explanation of the relationship between elements of demand for food including population growth, increased individual income, and low price elasticity of demand and elements of supply including asset fixity, competitive structure, and calorie conversion.

Additionally, his discussion of the influence of wealth on consumption patterns is quite useful (Hathaway 1974). Also discussing inflation, Grenville Holden argues that governments ought to impose rationing and exchange control during wartime in order to prevent inflation. He says that inflation is bad for the war effort and will cause de facto involuntary rationing. Intentional rationing and exchange control, on the other hand, will ensure that consumers have excess money available to loan to the government for the war effort and will have money to spend after the war to encourage a return to economic normalcy (Holden 1940).

The term economic normalcy might lead one to suspect that America was essentially a stable environment, but a look at immigration and intranational migration reveals significant turmoil in the population. Beginning with a theoretic work, Robert Walker, Mark Ellis, and Richard Barff discuss the link between intranational migration and international immigration. They argue that immigration affects local labor markets and sparks intranational migration. They cite worker occupation and capital accumulation as two of their variables. Immigration policies can be quite variable depending on year and location (Walker, Ellis, and Barff 1992). Providing a review of increasingly restrictive immigration policies from around the world, Harold Fields places American immigration policies in their global context during the period leading up to and immediately following the 1929 stock market crash. He argues that all of the advanced European nations had policies similar to America and that countries with less restrictive policies were not, in general, places émigrés wanted to go (Fields 1932).

Looking at large-scale intranational migrations in American history, Jack T. Kirby offers an overview of out-migrations from the American South during which nine million

people moved to other regions of the country. Looking at several out-migrations, he suggests that the causal mechanisms have not been sufficiently researched by historians (Kirby 1983). Jon C. Teaforde discusses two books also concerned with large-scale American migrations. The first covers the movement of Okies to California during the 1930s and 1940s and the second covers the Deep South to Chicago movement of African-Americans in the years surrounding World War I (WWI). Teaforde likens the out-migrations from the South to the westward movement during the 1800s (Teaforde 1990).

While discussing history from fifty or more years before WWII might seem excessive, it is critical for an analyst to understand the context in which contemporary actions occur. For instance, Lowry Nelson discusses the heritage of American agriculture and claims that, while American agriculture derived almost all of its natural material components from other countries, its technology was largely home-grown. In terms of the nonmaterial influences on American agriculture, he argues that the three most important were land distribution practices, the frontier experience, and the Jeffersonian agrarian ideal (Nelson 1949). Elaborating from a political science perspective on Thomas Jefferson's agrarian ideal, A. Whitney Griswold highlights the agrarian background of both Jefferson and many other prominent politicians of his time. He also discusses John Locke's influence on Jefferson's thinking in terms of things like property ownership. Griswold claims that, for Jefferson, agriculture was less important for its economic value than for the moral and social values, which were supportive of democracy. He says that Jefferson's ideal was a community of independent, small, family-owned farms and argues that a resurgence of this ideal gripped the government in the years preceding WWII (Griswold 1946).

Several authors provide historical overviews of American agriculture. Looking at farming from 1607 to 1972, John T. Schlebecker divides his work into five periods. He treats the start of WWI in 1914 through the end of WWII in 1945 as a single period. In each period, he discusses the effects on agriculture of land distribution practices, markets, transportation, technological changes, and governmental involvement (Schlebecker 1975). Also beginning his study with 1607, Willard W. Cochrane provides a historical study of American agricultural economic development, which he prefaces with a general history of American agriculture. He places agriculture in its context as a functional sector in the economy and examines the structural, economic, and political factors that have influenced its development, with special emphasis on the impact of international markets (Cochrane 1979).

C. F. Emerick discusses what he considers the odd late-nineteenth century discontent among farmers in America and abroad. He examines whether the discontent is caused by economic grievances, by an increased capacity for and availability of nonfarm goods, or by the nature of farming. He assesses the disparate growth rates of rural and urban populations and wealth and the interaction of agriculture and transportation (Emerick 1896). Economist David A. Lake provides an analytical framework to explain governmental policies in times of agricultural surplus and discontent. He presents three tactics for managing surplus each of which he says America has used at some point in its history: increasing exports, reducing the number of farmers, or subsidizing and restricting production. He argues that the drivers behind the selection of a tactic are foreign demand and off-farm employment opportunities and that each of them presents different incentives to farmers and politicians (Lake 1989).

Also looking at government intervention in farming, Douglas Hurt traces scientific and technological advances beginning in the late 1800s, which allowed farmers to become more productive but not necessarily any more prosperous. He shows how farmers became increasingly dependent on governmental intervention and regulation in the form of farm policy in order to survive economically. He argues that farmer dependence on the government was inevitable as was their resulting loss of freedom of action (Hurt 2002). Focused on a specific case study in farming in which government intervention did more harm than good, Gary D. Libecap and Zeynep K. Hansen claim that lack of information prevented prospective settlers in the Great Plains from making good decisions about crops, techniques, and farm sizes. Poor decisions like adoption of dryfarming and belief that humans caused climate change led to excessive settlement and subsequent bankruptcy. Libecap and Hansen discuss Bayesian learning models to explain why alteration of proven poor practices was incremental and slow (Libecap and Hansen 2002).

A theme carried by many of the above authors is the role of mechanization in agriculture. This theme is discussed more explicitly by Alan L. Olmstead and Paul W. Rhode who analyze the effects of the tractor on farming and the factors that affected its diffusion. They argue that there was a relationship between the size of the farm and the rate of adoption and discuss the co-existence of draft animals and tractors. They propose that technological improvements combined with institutional and economic factors to facilitate diffusion (Olmstead and Rhode 2001). Arguing that diffusion of tractors was irrationally limited by up to 50 percent during the Agricultural Depression, Sally Clarke holds that it was New Deal policies during the Great Depression that allowed tractor

diffusion to progress rationally. She cites New Deal policies that protected farmers from economic failure and offered them readily accessible capital as the causal mechanisms that lowered farmers' perceived financial barriers to adoption (Clarke 1991).

Capital items (e.g. tractors), land, and labor are the three factors that Donald L. Kemmerer includes in a theoretic framework he uses to reframe American economic development. His principle is that the value a factor of production is inversely related to its level of use; cheap factors are used freely, expensive factors are used sparingly. He argues that, over the course of the 1800s and 1900s, America has shifted from having cheap land to cheap labor to cheap capital (Kemmerer 1956). Discussing cheap agricultural labor in the American South, Warren C. Whatley argues that the unintended consequence of the Agricultural Adjustment Agency's (AAA) policies was the widespread eviction of sharecroppers, tenant farmers, and their draft animals. Despite Depression economic conditions, evictions generated revenue for landowners and financed an expanding spiral of mechanization and additional evictions (Whatley 1983).

Additional discussions of labor issues include two studies comparing WWII and Cold War manpower situations. Analyzing the whether wartime labor problems can be predicted and prepared for in peacetime, economist Lloyd Reynolds defines preparation as writing plans and building peacetime institutions flexible enough for wartime. He discusses other problems such as authority to direct civilian labor, handle labor disputes, and draft military manpower. He argues that mandating particular civilian employment in wartime must be done with the consent of the people and cannot, therefore, be too onerous (Reynolds 1950). Economist William Haber argues that if a government is not in a total war situation, it can avoid interfering with the labor market provided it enacts the

right policies and uses indirect methods of manpower allocation. He defines the right policies as concerning the size of the military, rules for deferments, coordination of production and manpower planning, wage control, and centralization of agencies administering manpower. He states that, in total war, these policies would not likely be enough to avoid government interference in the labor market (Haber 1952).

Focusing solely on WWII and the role that farmers played during it, Walter Wilcox presents a snapshot of agriculture and the institutions that served farmers at the start of the war. He discusses the difficulties of redirecting agriculture to wartime goals and how production and marketing occurred during the war. He dedicates a chapter to the effects of the war on agricultural labor and another to its effects on the physical characteristics of the farm. He then discusses the nation's efforts to formulate wartime price policy with special emphasis on price policies for specific commodities (Wilcox 1947). Wayne Rasmussen, in the official USDA account of the Emergency Farm Labor Supply Program, describes each of the programs that the federal government implemented between 1943 and 1947 to increase the volume of available agricultural labor including the Bracero Program, the Crop Corps, and the Women's Land Army WLA) (Rasmussen 1951).

Looking at the precedent of military service in WWI and concentrating on conscription in the rural South, Jeanette Keith examines the extent to which the American public supported WWI and the mobilization methods associated with it. She also examines how politics affected mobilization policy, how regional variations affected outcomes of institutional processes, and whether mobilization processes inadvertently created dissent (Keith 2001). Albert A. Blum and J. Douglas Smyth present a history of

planning for selective service beginning in WWI and continuing through WWII. They focus on the relationship between military planners, the American Legion, and organized labor while also considering political involvements and changing public opinions (Blum and Smyth 1970). Public opinion about war is social scientist Hadley Cantril's focus. He shows, through polling data, the variations in American opinion towards WWII and gives some theories about opinion formation. Using two snapshots of American opinion from 1939 to 1941, he shows the changes, presents some general patterns of opinion, and explains who held them (Cantril 1940).

Several authors focus on interwar planning for and WWII execution of military mobilization. Byron Fairchild and Jonathan Grossman ascribe the extent to which military personnel were involved in planning for and executing industrial mobilization and management to the military's interest in materiel production and its high level of administrative efficiency. They highlight, principally from the perspective of the War Department, the interactions and relationships between military and labor representatives concerned with the utilization of industrial manpower. They address industrial mobilization planning in the interwar period and organizational problems that arose during WWII. They discuss the effects of legislation, competing labor requirements, contracting, union activity, unorthodox labor sources, and Selective Service (Fairchild and Grossman 1959). James S. Nanney and Terrence J. Gough each concentrate on interwar planning for and wartime execution of military manpower mobilization during WWII. They illustrate the relationship between military manpower mobilization and overall industrial mobilization (Nanney and Gough 1982).

In a similar vein, William A. DeHart and Mapheus Smith focus on the conflicts and contestation surrounding the formation of agricultural deferments in the Selective Service System in WWII. They provide an account of pre-WWII precedents for agricultural deferments. They also illustrate problems that occurred over the course of the war and how deferment legislation transformed to meet those challenges (DeHart and Smith 1947). Albert A. Blum discusses the steps taken by several organizations within the federal government to adjust Selective Service legislation when the War Department realized that older draftees were less desirable than younger ones (Blum 1954). Also commenting on a specific section of Selective Service procedure, George Q Flynn presents a view of how policies regarding conscientious objectors were formed and implemented during WWII. He centers his discussion on Major General Lewis Hershey, the head of the Selective Service under whose charge the conscientious objector program operated. Flynn lays out the way that a registrant was granted conscientious objector status and how he was treated and employed (Flynn 1983).

The military controlled sources of labor beyond those in American uniforms; it also controlled the prisoner of war population. John Brown Mason describes the roles of the Department of State and the War Department in dealing with prisoners of war and provides a general picture of their treatment including medical care, religion, education, and labor-utilization. Discussing the handling and treatment of prisoners of war, he credits America with faithful application of the Geneva Convention despite having had essentially no historical precedent to follow. He also says that the United States had two distinct phases dealing with prisoners of war: obsession with prisoner security and need for prisoner manpower (Mason 1945). Echoing Mason, Arnold P. Krammer discusses the

problems of caring for prisoners of war in WWII and lauds the American government for adhering to the Geneva Conventions. He describes a process in which the government concerned itself first with establishing a physical system to handle prisoners of war, then determined how to keep them occupied and productive and then began a process of political reeducation. He criticizes the lack of streamlining in all of these processes but offers the excuse that there was no precedent to draw upon (Krammer 1976). Howard S. Levie provides a broader overview of utilization of prisoner of war labor during the first half of the twentieth century and discusses the problems it presented during that time (Levie 1963).

Discussion of another labor source comes from Ernesto Galarza who, attempting to inspire sympathy for agricultural labor, particularly braceros, discusses the Bracero Program as it existed in California. Galarza portrays braceros caught in an exploitative labor system and despised by their American peers. He offers information on the history and formation of the program (Galarza 1964). Emphasizing the Bracero Program outside of California, Erasmo Gamboa evaluates the interaction of agricultural and state and federal governmental interests in the Pacific Northwest and provides a picture of how braceros worked and lived. He construes braceros as possessing agency not accorded to them by Galarza via his attention to their struggles against exploitation (Gamboa 1990). George C. Kiser focuses primarily on the political foundations and administration of the Bracero Program, which he argues were rampant with political conflict. He also traces the early historical roots of the program and the issues in Mexican labor in the decades leading up to WWII (Kiser 1973).

Sources discussing the role of women in general and women in agriculture in specific include Elliot W. Brownlee's account of a variety of historical explanations for the small percentage of women participating in the labor force until the 1940s and includes more modern possible explanations based on fertility and market forces (Brownlee 1979). Katherine Jellison explores the relationship between farm women and labor-saving technology and the way that federal farm policies helped shape that relationship. She addresses the disconnect between government's and manufacturer's desires to clearly define the woman's place as a housebound consumer and women's own desires to remain a productive part of the business side of farming, which technology made increasingly possible (Jellison 1993).

Collected in a volume of essays from a conference on American farm women in history, Sarah Elbert, Lorna Clancey Miller and Mary Neth all concentrate on farm women's roles in economics, politics and their communities and on the way that changes in farming affected women. Their work demonstrates that farm women's activities were much more diverse than most theories or government policies admit. Elbert highlights the endogeneity of women's labor to farm survival while Miller and Neth each address women's roles in political organizations (Elbert 1988; Miller and Neth 1988). Focused more specifically on women's contribution to wartime agriculture, Stephanie Carpenter discusses the emergence and maintenance of the American Women's Land Army. She discusses pre-war conditions that influenced the organization and the conflicts surrounding its formation. She also arrays the regional variations on acceptance or reluctance regarding women in agriculture (Carpenter 2003).

Discussion of the government's role pervades many of these books and articles and is the focus of a series of other authors. Albert T. Lauterbach argues that, while WWI may not have caused the depression in 1921 or the Great Depression, it did cause widespread unemployment and the Agricultural Depression. He argues that the government disbanded wartime systems too quickly. He says the government had an inconsistent economic policy following the war with, on the one hand, a desire to get out of Europe as fast as possible, and, on the other hand, a need to stay involved in order to help Europe recover and settle wartime loans. Lauterbach argues that the government's sole systematic economic policy was the tariff policy that followed the depression in 1921 (Lauterbach 1942). Writing in 1919, Walter B. Palmer offers a contrary, optimistic prediction of the economic future following WWI. He suggests that, after a short time of adjustment and without substantial governmental intervention, America would enjoy continued industrial prosperity at rates roughly equivalent to those during the war. He claims that America would become the leader in the world economy and that the war had benefited industry by energizing and broadening it (Palmer 1919).

James Hart discusses theoretic total war management requirements and how they applied to WWII. He argues that total war requires a centralized government administration that can handle both high level policy and administrative details well. He argues that the president needs to have final authority but, at the same time, must clearly and logically delegate. He argues that democratic government is inherently reactionary and, therefore, ill-suited to total war. He also argues that the nature of American democracy is one of ruthless internecine competitions for power, which makes fights

between governmental organizations unavoidable and exacerbates incompatibility with total war management requirements (Hart 1943).

James E. Pate argues that governments must consider all manpower requirements in relation to each other and that there is predictable progression from surplus to shortages. He says that countries move from labor surplus to a shortage of skilled labor to localized shortages of skilled and unskilled labor to overall labor shortage and that each of these phases requires specific actions. Pate discusses the work of the War Manpower Commission (WMC) and its techniques for balancing manpower requirements between military and civilian organizations. He offers a list of specific actions to counter labor shortages: inventory what exists, determine requirements, and route laborers to requirements (Pate 1943).

Offering another specific historic example of government intervention, David Ginsburg provides an analysis of the authorities and sanctions incorporated in the Emergency Price Control Act of 1942. He discusses problems of deteriorating product quality, price speculation, market manipulation, and hoarding. He also describes government's authorities to handle those problems including price fixing, antitrust laws, and the power to buy and sell commodities to regulate market. He devotes a section to describing the way the act regulated agricultural products (Ginsburg 1942).

Although some of these authors present information directly pertinent to the existence of a manpower shortage during WWII, none of them, nor indeed any other author I could find, attempts to paint the confluence of factors that produced the agricultural manpower shortage during the war. Several authors discuss remedial actions, but none of them look at the full complexity of the origins of the problem beyond what is

required to explain their own remediation. Authors writing about the contributions of women did not attempt to include the contributions of conscientious objectors. Authors writing about braceros made no mention of Lend-Lease requirements or post-war famine. I am, therefore, attempting to address the lack of a comprehensive description of the origin of the agricultural manpower shortage during WWII.

CHAPTER 3

METHODOLOGY

In an address at Cooper Union in New York City in 1860, President Abraham Lincoln made a now famous statement “Let us have faith that right makes might; and in that faith let us to the end, dare to do our duty as we understand it” (Bartlett and Dole 1919, 6668). This a wonderfully inspiring thought but it does raise several important questions. The ones of interest to me are: “what is understanding?” and “how do you achieve it?” French Renaissance thinker Michel de Montaigne’s claim that “Men are most apt to believe what they least understand” suggests that these two questions are imperative (Bartlett and Dole 1919, 9326). As a military practitioner, I turn, then, to doctrine to determine what the United States military means when it directs me to understand and how it intends me to accomplish this action.

Military doctrine asserts that “To understand something is to grasp its nature and significance. Understanding includes establishing context” (United States Army 2012, 2-3). The command to understand is qualified by the admission that understanding can never be perfect because “there will always be gaps in our understanding” (United States Department of Defense 2011b, III-22). This gap is likely to be especially wide when we are presented with “situations so complex that they defy complete understanding” (United States Department of Defense 2011a, II-5). The military expects its leaders to attempt to minimize the gap through “broad education, training, personal study, and collaboration with interagency partners” (United States Army 2011, 8).

General David Petraeus addresses this issue of minimizing the gap in his article “Beyond the Cloister.” He argues that it is important to put military leaders in

intellectually uncomfortable places, like graduate level academic settings, where they can confront their own intellectual fallibility. They must embrace the highly contestable nature of the world and recognize that “debates we imagined to be two-sided turn out to be three-, four- or more-sided” (Petraeus 2007). He says that the military needs “pentathlete leaders” who are capable of operating at all levels of conflict and who are prepared to bridge the gap between the military and academic worlds (Petraeus 2007). Leaders must cultivate a spirit of discovery, exercise their creativity, and improve their ability to think about the world critically (Petraeus 2007).

The criticality of belief in one’s intellectual fallibility and in the contestable nature of what might appear to be facts is highlighted by the doctrinal caveat that understanding is “rarely achieved the first time” (United States Department of Defense 2011b, III-3). Doctrine reminds us that our initial understanding, arrived at through planning, is not likely to be either “accurate or complete” so we must “continuously assess” our subject (United States Army 2012, 4). It also reminds us that there may be significant changes either to the subject of our understanding or to our understanding of the subject (United States Department of Defense 2011b, III-6). Continuous assessment of our subject will enable us to catch those changes and evaluate their ramifications (United States Department of Defense 2011a, II-9).

Resonating with Petraeus’s comments about multi-sided debates and the value of entertaining ideas that conflict with our own is Rudra Sil’s and Peter Katzenstein’s discussion of the benefits of analytical eclecticism. While they admit that traditional academic divisions have benefit, insofar as they allow each division to develop its own common understandings and engender competition of ideas between experts interested in

the same issues, they argue that the downside of this traditional separation is that it prevents the exploration of how pieces from different traditions fit together to form the “inclusive nexus of causes” (Sil and Katzenstein 2010, 412). They would argue that it is impossible to explain every aspect of a given real world problem using a single academic tradition because “multiple mechanisms combine to generate social phenomena” (Sil and Katzenstein 2010, 420). Real world problems are messier than carefully crafted research scenarios and require that we look for the connections between ideas. They hold that the desire for pragmatic answers is the most important factor in any research project.

They believe that experts have a responsibility to address themselves to broad problems in the real world and to seek for causal explanations “at the level of mid-range theory” rather than for first principles (Sil and Katzenstein 2010, 412). Since the academe does not routinely engage in this sort of effort, it falls to the military practitioner to accomplish it as best he can. Sil and Katzenstein have one caveat for the planner, however. There is a possible problem with what they call “theoretical incoherence”; terms used in one tradition do not necessarily mean the same things in another, just as assumptions made in one tradition are not necessarily valid in another. They caution that they are not interested in making unending lists of possible causal factors, but I would argue that, before you can disregard a factor, you must first know it exists.

The method that allows the planner to bring analytically eclectic theories together and apply them to a real world problem is called abductive reasoning. Since a military planner has no way of determining which of the multitude of available academic theories about a given problem type is correct, he cannot afford to use deductive reasoning. Since he is operating in a time-constrained environment and is not, after all, an expert, he does

not have the capacity to attempt inductive reasoning. What is left to him is abductive reasoning in which he uses “familiarity with established theories to generate a causal explanation for a set of observations” (Perez 2012a). To do this, the planner must survey a wide selection of theories applicable to the environment he is facing, compare these theories to the observed data at his disposal, and determine which theory or, more likely, which combination of theories seems most reasonable. The initial and final selection of theories should be driven by the environment and not by any preconceived notions. Because the characteristics of each environment are different and because the characteristics of a given environment vary over time, following this methodology will almost always result in unique descriptions of the environment and problem and correspondingly unique solutions.

While not simple, this certainly seems workable. Why, then, do our understandings still so often come up short? What is it that is interfering with our ability to understand? There are several plausible answers to these questions. According to Michael Mosser and Paul Yingling, part of the problem rests with the information available to military practitioners and what they do with it. They each argue, though to differing degrees, that there is a gap between the academic world generating knowledge and the military practitioner using the knowledge. Mosser points out that academics may feel or be perceived by others to be “professionally, if not academically, sullied” by contact with the military (Mosser 2010, 1078). While military practitioners think academics are disconnected from the real world, academics think military practitioners act without enough forethought. Mosser claims that the difference is really how these two groups view situations in the world. He says that academics see the world as a puzzle to

be solved and are interested in obtaining the optimal solution, which, since they are unconstrained by time, they have the reasonable expectation of achieving. Military practitioners, on the other hand, see the world as a problem they are compelled to solve and, since they are operating in a time constrained environment, are only interested in a solution that is good enough (Mosser 2010).

Yingling adds to this the claim that the incentives inherent in academic and military structures generate perverse outcomes. In both organizations, the desire for personal advancement requires some measurable level of success. While Yingling concedes Mosser's claim that the pressure for academics to achieve tenure may lead them to tackle relatively safe research problems, he also points out that the pressure for military practitioners to act with dispatch often results in a lack of critical thought (Yingling 2010).

Another source of interference comes from our involuntary patterns of thought. While no more susceptible than any other population, military practitioners have the potential to cause much greater harm when they fall into the "hidden traps in decision making" described by Hammon, Keeney, and Raiffa. These traps include things like the "status-quo trap," which is our innate tendency to make decisions that maintain the current order of things. We do this because any change is a potential opportunity for failure and the bad feelings that result from failure (Hammond, Keeney, and Raiffa 2006, 121). An example of this might be a Company Commander who opts not to change a policy left by his successful and well-liked predecessor even though it is less than optimal. He may believe that he has a better solution, but his inborn reluctance to making a mistake stays his hand. The "sunk-cost trap" is our tendency to make decisions that

justify earlier choices even when those earlier choices now lack validity. Our inability to admit that we made a mistake leads us to make further mistakes (Hammond, Keeney, and Raiffa 2006). When that same Company Commander, having invested a flawed policy with his own authority, is presented with proof that the policy is indeed far less than optimal but remains unwilling to change, he may be caught in the sunk-cost trap. To change his policy now would be an admission that he made a mistake in not changing it in initially. Instead, he leaves the policy in place and his dogged attempts to prove that he was right lead to further mishaps. These traps and others can be categorized together as heuristics. These are shortcuts our brains take when trying to make complex decisions in an attempt to simplify the process. In trying to make things easier, our brains often also introduce errors into our understanding.

Blair Williams offers several more examples of our brain's interference. He describes "illusory correlation" as what occurs when the brain associates two items that are, in fact, unrelated (Williams 2010, 45). An example of "illusory correlation" at work is a First Sergeant who, because it never rains when he takes his unit to the field, chooses not to include any wet weather gear on the packing list when his unit deploys. Williams also discusses "retrievability bias" occurring when previous events have either occurred frequently or received sufficient attention that our belief in their recurrence is increased (Williams 2010, 42). During field training exercises, the same First Sergeant always gets attacked by the opposition force at dawn and twilight. When he deploys, his first impulse is now to assume that his real world enemy force will attack then too and sets his guard rotations accordingly.

Peter Facione offers an additional heuristic and describes “dominance structures.” Our inherent aversion to risk and loss drives us to give more weight in our decisions to what we stand to lose than we do to what we stand to win (Facione 2011, 18). We essentially overvalue what we already possess. When a Company Commander is instructed, after deployment, to turn his equipment in to a maintenance program in order to get replacement equipment, his reluctance to surrender what he has is generated by his risk/loss aversion. He knows that he is supposed to get better equipment and has no real evidence to suggest that this will not happen, but he still resists having to give up what he has. The equipment he will be issued is discounted relative to the equipment he has to turn in. Facione also discusses the idea that, when we choose a solution to a problem, we become so invested in that solution that we inflate its good points and discount its bad ones. It becomes the dominant structure in our understanding of the subject and we resist anything that might cause us to reevaluate its worth (Facione 2011, 20).

Despite all of the above described negative effects of mental traps, biases, and heuristics, it is important to keep in mind that they are actually necessary to our mental processes. Without our “satisficing” tendency, for instance, we would never be able to determine when our understanding was good enough; we would constantly work towards an optimal and potentially unachievable understanding (Facione 2011). Similarly, it is our “retrievability bias” that allows Soldiers to make rapid assessments of situations by comparing them to the most likely threat scenarios, which we have repeatedly presented to them in training.

Reaching a good enough understanding of the environment into which they are directed to intervene is critical for military practitioners (United States Department of

Defense 2011a, III-20). Environments are never static and the ones that the military is directed to intervene in are typically in such crisis that they are changing even more rapidly than normal (United States Army 2011, 2). Because of this, planners should never assume that their higher headquarters' description of the environment based on earlier estimates is still correct (United States Department of Defense 2011b, IV-6). Another caution for both higher and lower headquarters is that, while the higher headquarters may have a "clear strategic perspective of the problem," the lower headquarters likely has a better understanding of the details of the environment (United States Department of Defense 2011b, III-3). It is, therefore, important that both sides admit the limits to their own knowledge and place value on the other's knowledge.

Planners should realize that environments are typically far too complex for any one person to understand them unassisted and this characteristic is exacerbated by the number of possible actors involved. With each addition of joint, interagency, and multinational forces, the complexity increases, although, theoretically, so too should the assets available to facilitate understanding (United States Department of Defense 2011b, III-6). With limited resources available, in a time constrained environment, determining when understanding is sufficient is particularly important because "failure to focus on the relevant characteristics of the operational environment leads to wasted time and effort" (United States Department of Defense 2009, xvi).

This leads us to consider what the military believes the "relevant characteristics" to be. There is some difference of opinion on how to define these characteristics. For the Army, they are delineated using the operational variables (political, military, economic, social, information, infrastructure, physical environment, and time) and the mission

variables (mission, enemy, terrain and weather, troops and support available, time available, and civil considerations) (United States Army 2012, 1-7). The Army also highlights the importance of considering the “shared beliefs, values, norms, customs, behaviors, and artifacts” of the cultures present in the environment (United States Army 2012, 1-9).

When operating jointly, the relevant characteristics are described as “the composite of the conditions, circumstances, and influences that affect employment of capabilities and bear on the decisions of the commander” and include “physical areas and factors” and the “information environment” (United States Department of Defense 2011a, IV-1). A list of “additional factors” to consider includes things like the natural physical world, human demographics, manmade infrastructure, and applicable laws and rules (United States Department of Defense 2011b, III-9). Joint doctrine places emphasis on the need to “understand the series of complex, interconnected relationships” between all of the relevant characteristics in order to achieve a “holistic view” (United States Department of Defense 2011b, III-10). Two further factors are addressed in joint doctrine: tendencies and potential. Tendencies are the inclinations of people individually or in groups to think or act in particular ways. Being only inclinations, tendencies have only generative, rather than determinative, causality. Potential is the ability of an interaction or relationship to grow or develop (United States Department of Defense 2011b, III-11).

As military practitioners, we do not seek to understand a given environment for enjoyment or the increase of knowledge as an academic might. We seek understanding so that we can reach the end state desired by our government. It is often the case, however,

that the government has not clearly specified how to reach the end state. The military definition of a problem is “an issue or obstacle that makes it difficult to achieve a desired goal or objective. In a broad sense, a problem exists when an individual becomes aware of a significant difference between what actually is and what is desired” (United States Army 2012, 2-2) When the military is directed to achieve a governmentally desired end state different from the conditions prevailing, it is fairly clear that there is now a problem to be solved. Joint doctrine tells us that “Defining the problem is essential to solving the problem” (United States Department of Defense 2011b, xx-xxi). We are also reminded that the problem we define is only one of several connected problems that will all be affected by any attempt to solve our own problem (United States Army 2012, 2-2). For instance, when the military seeks to build American public support for an increasingly unpopular operation by building schools or empowering women, it bumps up against the traditions of the people in whose country it is operating. This intersection of the problem of American support and with that of host nation acceptance is likely to produce a new problem in the form of energized or newly formed resistance groups.

Horst Rittel and Melvin Webber present a complementary view of problems and point out that, in general, there are two kinds of problems: tame ones and wicked ones. They define tame problems as having a “relatively well-defined and stable problem statement” and an unmistakable point when success can be declared. Tame problems have clearly right and wrong solutions and are ones on which multiple consecutive or parallel solutions can be tried without deleterious results. They are also problems with recognizable historic and current parallels that can all be solved in roughly the same way.

Wicked problems are the opposite on all counts. They are “ill-defined, ambiguous and associated with strong moral, political and professional issues,” and, since those involved each see the problem differently, there is little agreement about the precise nature of the problem. Wicked problems are unstable and, either spontaneously or in response to attempts at solution, tend to spawn additional wicked problems. There is no clear stopping point with a wicked problem; there are only the points of good enough and insufficient resources. Solutions are never clearly right or wrong but simply better or worse, and, because attempting solutions invariably leaves ripples, the intervening party cannot afford to be too wrong lest people’s lives be adversely affected. Rittel and Webber admonish intervening parties that they will likely have to observe for an extended period of time before they reach any understanding of the problem (Ritchey 2005).

The Army says that understanding the problem and the environment is what conceptual planning is all about (United States Army 2012, 6). Planning is defined as “the art and science of understanding a situation, envisioning a desired future, and laying out effective ways of bringing about that future” (United States Army 2011, 10). Accomplishing this, especially with complex problems, requires iterative discourse (United States Department of Defense 2011b, III-6). Planners should keep in mind that planning is only one phase of solving a problem and that the other three phases, preparing, executing, and assessing, will often occur simultaneously with planning (United States Army 2011, 10). This is at least in part because understanding of the environment and the problem changes as the solution is implemented and the results are assessed. There are different planning methodologies in Army-only and joint operations.

For complex, ill-defined problems, the Army uses the Army design methodology while joint organizations use operational design methodology.

While quite similar, in that both are described as “a process of iterative understanding and problem framing,” each methodology has suggestions for improving understanding that are worth highlighting (United States Department of Defense 2011b, III-1; United States Army 2012, 7-8). The Army recommends using framing, narrative, and visual modeling to facilitate understanding. Framing involves building mental models and constructing hypotheses about the environment and the problem. It requires choosing, arraying, assessing, and interpreting the characteristics of the environment in order to understand both the environment and the problem. Proper framing ensures that planners have successfully captured all relevant items and are attempting to solve the correct problem. It is critical that that they address the root of the problem rather than simply tackling the symptoms (United States Army 2012, 2-9). Once the environment and problem are conceptually framed, the planner both writes a story or a narrative to describe them and draws a visual model to depict them (United States Army 2012, 2-5). It is imperative to keep in mind the fact that the way the planner frames the environment and problem will greatly influence their subsequent proposed solutions (United States Army 2012, 2-5).

The joint community recommends using red teams and experts. Red teams are a shadow organization performing the same planning tasks as the primary organization but from a different perspective. The intent is to provide an independent and possibly opposing view of reality to challenge the assumptions and logics of the primary organization (United States Department of Defense 2011b, III-5). Recognizing that many

environments the military is asked to intervene in are beyond the military's native expertise, joint doctrine advocates the participation of interagency and nongovernmental organizations that possess the needed expertise (United States Department of Defense 2011a, IV-4; United States Department of Defense 2009, xv).

Without access to expert knowledge, we find situations like that of Lieutenant Colonel Robert Brown leading a battalion in Afghanistan in 2009. Confused by circumstances he was faced with, Lieutenant Colonel Brown spent his time gleaning information on local Afghan conflict history from Afghan elders and officials. He spent hours searching the internet for anything relevant to the history in his local area that might increase his understanding of his environment. Later events suggest that his attempts bore false fruit but that, given the data and data sources he had at his disposal, should not be surprising (Jaffe 2010).

Even with expert knowledge, our ability to correctly frame the environment and the problem is far from guaranteed. A conversation on 9 July 2012, between Dov Zakheim and John Mearsheimer, about the likely result of Iran becoming nuclear-capable clearly illustrates one of the problems with experts. Mearsheimer, a political science professor at the University of Chicago, and Zakheim, a former Pentagon official now working at the Center for Naval Analysis, can both be plausibly assumed to be experts but they each offer a very different view. Where Mearsheimer argues that nuclear weapons are essentially peaceful and deterrent in nature and would stabilize the Middle East, Zakheim argues that nuclear weapons in Iran's possession would spark a destabilizing arms race in the Middle East (Zakheim and Mearsheimer 2012).

Another example of the same problem is evident in Khaled Abou El Fadl's book *The Place of Tolerance in Islam*. Abou El Fadl, an Islamic Law professor at UCLA, argues that Islam has been hijacked by literalists and that Muslims need to reread the Qur'an with an eye for injunctions to tolerance. In another essay in the same volume, Abid Ullah Jan, director of the Independent Center for Strategic Studies in Peshawar, Pakistan, counters that Islam is not being intolerant but rather reacting legitimately to Western intolerance and argues that the real problem is American and allied hegemonic designs (Abou El Fadl 2002). In each of these dyads, experts offer compelling, well-substantiated and largely irreconcilably opposed views. This disparity of theories forces the lay planner to rely on abductive reasoning. The planner must assess all of the expert theories that seem to apply to his environment and decide which one or ones to use.

Scott Page would argue that using multiple experts and planners is beneficial to decision making. In his lecture "The Power of Diversity," Page argues that different people possess different perspectives on what constitutes a possible solution, tend to use different heuristics, array data into "meaningful structured categories" differently, and, therefore, produce different predictions when presented with the same information. He argues that this diversity improves problem solving and cites evidence proving that, in cases where the problem is difficult and the people involved are all reasonably intelligent, diverse groups almost always substantially outperform homogenous groups. This is because the more diverse group has more mental tools at its disposal. Page also points out that groups are always smarter and more capable than individuals; when solving problems, diversity can trump ability. This is because each individual's intelligence and

array of mental tools is inherently limited, but the crowd's is limited only by its size (Page 2007).

Philip Tetlock would, however, offer a note of caution on the use of experts in planning. He points out that, on average, experts are no better than an educated layperson at making medium and long range predictions about political matters. Since military employment is inherently a political decision and since few military actions reveal all of their consequences quickly, this caveat applies to military matters as well. Tetlock provides a vote in favor of abduction via his theory of foxes and hedgehogs. In Tetlock's model, hedgehogs are people who interpret everything they experience in terms of a single central vision. These people tend to be very confident about their own rightness and are more likely to predict what others might consider outlandish or improbable outcomes. Foxes pursue many ideas, even opposing ones, without trying to fit them all together into a coherent whole. They tend to be skeptical of grand theories and reticent about making predictions. Foxes tend to be right more often than hedgehogs and do better with short and long term predictions. In essence, the foxes are using the hedgehogs by taking their theories or pieces of their theories, mixing them together, and coming up with their own solution (The Long Now Foundation 2007).

Though writing specifically about his own field of political science, Ian Shapiro makes some suggestions that seem to be broadly applicable to experts and planners. He reminds us that every causal claim is based on one or more theories, even if the person making the claim does not consciously realize that fact. If I say that women should work, it could be because I believe that it is empowering for them or it could be because I think their unemployment is a waste of necessary labor or it could be that I do not think it is

equitable for men to have to provide for women. Each of these possible theories represents a different valid viewpoint concerning a single issue. If an individual changes her viewpoint, what she believes caused a given event is likely to change too. It is, therefore, important to admit that there is unlikely to be a single general theory that fits all real world situations. No single theory, for instance, will explain why all women choose to work. In part, this is because theories make assumptions about the world that are not necessarily valid in the real world. Also critical to Shapiro is the fact that fixating on the possible existence of a single all-encompassing theory prevents us from solving real world problems already extant. He is far more interested in having his colleagues and, by extension, all experts spend more, though by no means all, of their time focusing on the real problems in the world rather than constructing perfect problems against which to test their theories (Shapiro 2005). This would certainly benefit military practitioners looking for theories applicable to the real world problems in which they are compelled to intervene.

One of the many possible pieces that fits into the nexus of causes is the idea of emergent causation. In *A World of Becoming*, William Connolly proposes that the world is composed of open systems that are in constant cycles of dissolution and resolution. When these open systems touch, they may push each other into disequilibrium and may activate some previously insignificant potentials that Connolly terms preadaptations and litter. While systems are in disequilibrium, emergent causation is predominant and when systems shift into a temporary period of stability, efficient causation is dominant. He rejects the notion of divine will at least in part because he believes that “agency is never consummate” (Connolly 2011, 27). Instead, Connolly argues that everything, including

nonhuman systems, has some degree of agency and describes those levels of agency as proto-agency, minimal agency, and complex agency. This suffusion of agency is important because it multiplies infinitely the number of possible sources of causality. He believes that, subsequent to the interaction of open systems, things will occur that could never have been predicted based on the precursive conditions and that cannot be traced back to any specific cause after their occurrence.

Because things emerge when we intervene in an environment or a system, it is important that our interventions be in the nature of experiments rather than forceful attempts at sweeping change. After each experimental intervention, it is critical to allow a period of time for the system to experience whatever change results and for us to observe and learn. With the knowledge gained during this period of experiential observation, we are better positioned to experimentally intervene again. Intervention is important to Connolly because he concurs with the notion that we must act in the world. Along with acting with dispatch, however, he enjoins us to “cultivate wisdom” so that our actions are guided and reasoned (Connolly 2011, 7). He believes that cultivation and action occur in two different registers of time: durational time and mundane time. He argues that mundane time flows in accordance with the clock and occurs when we are taking action in the world. Durational time occurs while we are mentally suspended, dwelling on something of significance. For military practitioners, residency in durational time cannot last too long if we are ever to make use of what we learn then. Connolly believes that it is important to make use of the wisdom gained in durational time and argues that our focus should be on caring for the “diversity of life and the fecundity of the earth” (Connolly 2011, 79).

Connolly would likely instruct military practitioners to remember that they need to accept the contestability of their beliefs about the way the world works and embrace the notion that differences are productive in interactions. He would tell them that their experience is valuable but that emergence requires us never to forget the possibility of surprises. Surprise is inevitable for Connolly because, while he sees the past resonating with the present and flowing into the future, he also believes that the “future is not entirely implicit in the past” (Connolly 2011, 29). One of the problems he recognizes with his instruction about contestability is that many people will respond to it with Nietzschean resentment. They will be unwilling or unable to simultaneously affirm their own beliefs about the way the world works, accept that others have differing views, and, most importantly, admit that everyone, themselves included, might be wrong. He would likely argue that this disgruntled response is one of the things that often precipitates military action.

Connolly is not alone in believing that emergence presents interesting problems. Serge Loode’s article “Peacebuilding in Complex Social Systems,” however, more directly addresses the sorts of issues of interest to military practitioners. Loode describes complex systems as ones that are more than the sum of their parts and that cannot be understood in total by understanding all of the constituent parts. Like Connolly, he claims that complex systems are always connected to other systems and that, out of the interactions of these systems, “novel and coherent structures, patterns and properties arise” (Loode 2011, 71). Echoing Ritter and Webber, Loode states that there are no right answers to problems in complex systems just better and worse ones. Complex systems

require flexibility and adaptation because, in a system dominated by emergence, there is a general lack of clear causal mechanisms to which action can be successfully addressed.

Loode would caution planners that it is not possible to create an all-encompassing plan to fix a complex social problem. Since we do not understand how complex systems work in the first place, we are unable to design a better one. Instead, we need to focus on the positive and negative feedback loops in a system that respectively “bind together elements that are necessary for action initiation and maintenance” and “dampen system dynamics and constrain actions by other elements that are linked” (Loode 2011, 76). We need to accept that our interventions will likely produce unintended consequences and that the results of our intervention will take a great deal of time to fully develop.

The notion that things simply happen for no definable reason in complex systems is rather frustrating from the perspective of a military practitioner who is compelled to intervene. While Loode’s and Connolly’s recommendations are certainly valid, they are not entirely useful when what the government desires is rapid action with measurable results. Without ignoring the potential for emergent phenomenon or Connolly’s caveat about the likelihood of surprise, we must now consider the possibility of efficient causation. The corollary to Shapiro’s comment about every causal claim containing multiple possible theories is Craig Parsons’s claim that theories of causation are not really as multifarious as academic literature would lead you to suspect. Parsons proposes that all explanations of efficient causation can be lumped into one of four categories: structural, institutional, ideational, and psychological (Parsons 2007). His arguments justifying the capaciousness of these categories are quite complex, but the categories themselves are relatively simple and easy to use.

Before I describe each category, however, there are two complicating factors worth mentioning. First, it is important to keep in mind that the causal logic behind a given action may depend on the perspective of the subject. One individual may act a certain way because of patriotism while another takes the same action because of legal compulsion. The causal logic in the first case would likely be ideational while the second would likely be structural. Second, it is highly likely that more than one causal logic is in play at the same time. An individual might act out of patriotism and legal compulsion at the same time and so be responding to both ideational and structural logics. The difficulty, then, becomes determining which was the dominant logic (Parsons 2007).

Structural logic is in evidence in situations where an actor, be it an individual or a group, understands the way the world works and what its role is in it. Given those understandings and presented with a given situation, the actor sees only one possible rational action to respond to the situation. In fact, not only that actor but any other rational actor with the same role in the same situation would feel compelled to do the same thing. This is not simply a case of the individual making an uneducated or random decision but rather a case of a rational individual making the only rational choice possible (Parsons 2007, 62). The factors compelling the actor must be ones external to the actor and cannot be ones that the actor could adjust during the course of the given time period. They may include features of the material world like the Hindu Kush Mountain Range or the East Australian Current they may be manmade structures like New York City or the United States Constitution.

Institutional logic begins with an actor creating the “formal or informal rules, conventions or practices” and the “organizational manifestations” that facilitate group

behavior and that Parsons collectively terms institutions (Parsons 2007, 70). Subsequent to the creation of the institution, the environment surrounding the institution changes such that the institution begins producing consequences not intended when it was created. These unintended consequences are not the result of the ideas that generated the institution but of the institution itself. As with structural logic, the compelling factors must be exogenous to the actor and cannot be manipulable by the actor in the given time period. An illustration of institutional logic might be as follows. When, after a frostbite injury in October, a battalion commander issues an order that vehicles cannot be dispatched without operational heaters, his intent is to ensure that his soldiers are never again endangered by the cold during winter operations. In June, however, having neglected to adjust his policy, his battalion fails to accomplish a mission because all of the vehicles not already tasked to another mission have broken heaters and there are no parts available to fix them in time. While, for the commander, this is a simple issue to remedy, requiring only the adjustment of a policy he wrote, for the private in the motorpool attempting to dispatch a vehicle, this is an impassable obstacle. This was clearly not what the battalion commander planned to have happen when he wrote his policy in October, but it is the unintended consequence of the institution he created.

Ideational logic is in play when an actor does something because of an idea. For Parsons, ideas include things like norms, beliefs, and identities (Parsons 2007, 96). Unlike structural logic, there is no requirement that the individual or group act rationally. It is often difficult to attribute an action solely to ideational logics because it is so difficult to prove that there were no structural or other logics also in play. For instance, if a battalion commander, who personally contributes the maximum amount each year,

orders that all of his companies aggressively participate in the Combined Federal Campaign, it could be that he is inspired primarily by his own beliefs about the importance of charity, but it would be very difficult to prove that he was not also bounded by the structural logic of the Army's policies regarding the Campaign. Unlike structural and institutional factors, the ideational factors compelling the actor are endogenous to the actor but it is still unlikely that the actor could change them during the given time period. It is unlikely, for instance, that someone who is a right-minded and devout Army football fan would spontaneously decide to become a deviant Navy football fan instead.

Psychological logic predominates when an actor's irrational behavior is compelled by hard-wired human factors. While it is true that an actor could be compelled to act logically by hard-wired human factors, it would be almost impossible to prove that those factors and not one of the other logics was actually the compelling force. To attribute a behavior to psychological logics, therefore, it must be irrational. Even more so than ideational logics, psychological logics are almost always a contributing rather than a primary cause of action (Parsons 2007, 134). When a soldier, who accidentally wore white socks on his first successful airborne jump, continues to wear white socks on all future jumps, he exhibits an associative bias. In his mind, he now associates safe parachute landing falls with white socks and feels compelled to continue wearing them. He does this despite the fact that he knows that the regulations prohibit wearing white socks and that his leaders will be displeased if they find out he is wearing them. His disregard for the structural logics of the regulations demonstrates the irrationality of his actions.

One example of a theory based on structural logic is Jeff Isaac's discussion of the multiple "faces of power." This is a very useful mental tool for understanding the interactions between actors in an environment. It is important to recall that whether an act stems from structural logic or another logic depends on the position of the evaluator. The first face is the child of Robert Dahl who proposed that power could be identified when actor A's behavior compels actor B to do something that is not in actor B's interests. Observing this face of power requires intersubjectively observable occurrences of "conflict and compliance" (Isaac 1987, 9) When a platoon sergeant orders his soldiers to conceal evidence of an infraction during a patrol, he is wearing the first face of power. It is clearly in his interests not to be admonished or even prosecuted for the infraction he allowed or perhaps committed. It is clearly not in his soldiers' interests to obstruct an investigation or become party to a cover-up, which could open them up to prosecution.

Isaac's second face belongs to Peter Bacharach and Morton Baratz and is evident when actor A controls events such that actor B never has the opportunity to take actions that are in its interests but adverse to actor A's interests. It is more difficult to observe this face of power in action since it is essentially a case of actor A suppressing conflict and limiting the interactions of other actors (Isaac 1987, 10). It may or may not be intersubjectively observable since, while actor A is aware of its actions, actor B may not fully understand what has been done to it. For instance, a platoon leader, who disagrees with his company commander's immoral behavior, might find himself stationed on a remote outpost where he is unable to contact the battalion commander in order to register his objections. The company commander may have had the savvy to make the situation appear natural to the platoon leader or he may have been more overt in his maneuvers.

Either way, he has effectively prevented the platoon leader from interacting with the battalion commander and, thereby, suppressed any conflict between the platoon leader, the battalion commander, and himself.

The third face of power is Steven Lukes's account of actor A influencing actor B's beliefs and desires so that actor B never wants to act in a way contrary to actor A's interests even when it is in actor B's interests (Isaac 1987, 13). Actor A's influence techniques need not be dishonest or coercive and actor B need not be unaware of the attempt or even unwilling to participate. This is the face exposed in the interaction of an Army recruiter and a prospective recruit. Over the course of their interaction, the recruiter familiarizes the recruit with all of the guaranteed benefits of service like the education, the training, the relationships, and the travel but is, perhaps, not quite as voluble about the possible risks. The prospective recruit begins to see himself in the same uniform the recruiter wears so well and begins to desire the camaraderie that the recruiter promises. It is clearly in the interests of both the Army, which constantly needs new soldiers, and of the recruiter, who needs to make mission, to have the prospective recruit decide to become an actual recruit. Since the result of military service is quite plausibly death, however, it would be easy to argue that it is not in the prospective recruit's best interest to join.

The fourth, and final, face of power is Isaac's own formulation and stems from the social roles that actors A and B fill in their shared social structure (Isaac 1987, 22). Each actor possesses powers inherent to its role and acts in reaction to those powers. Roles and their attendant powers are not fixed but rather evolve over time. When a good soldier who has failed to meet the Army's height and weight standards comes before his

company commander to be counseled on his failure and likely separation from service, their interaction is guided by this fourth face of power. There is no personal desire on the part of the commander to eject his soldier from the military nor is he seeking to establish dominance over his soldier. He is simply acting in accordance with his duties and responsibilities as a company commander. When the soldier obediently stands in front of his desk and signs the counseling statement, he is not attempting to curry favor or demonstrate subservience; he is simply doing what soldiers do.

Understanding the nature of the power relationship in each interaction in the environment is critical. Intervening in a situation of open compulsion requires different tactics from intervening in a situation of perception manipulation. It might be a relatively simple matter to convince the prospective recruit that being a soldier is not the optimal life for him by highlighting the risks involved and providing an array of equally satisfying alternate career choices. To convince the private covering up an infraction that he should defy his platoon sergeant, implicate his platoonmates in obstruction of justice, and publicly reveal his own disgraceful conduct will likely require a great deal more effort and, possibly, counteracting coercion.

As all of these faces of power have been explained in light of the actors' interests, it is important to be clear about how Isaac defines interest. He provides three discreet forms of interest: subjective interest, objective interest, and real interest. Subjective interest is what the actor would say it wants if asked. Isaac, borrowing Lukes's description, says objective interest is what is actually in the actor's interests or, to rephrase, what the actor rationally ought to want. Real interest is the interest associated with the role the actor fills and is what it is the actor's duty to want in a given role. A

major in the United States Army, might give her subjective interest as getting promoted to lieutenant colonel, becoming a battalion commander and then retiring. To an objective and reasonably omniscient observer, a major who is good enough to be selected for battalion command should aspire to be at least a colonel or maybe a brigade commander and a general officer. The observer would argue that retiring after a successful battalion command is not in the officer's objective interest professionally or economically. In her role as an army major, the officer's real interest is in doing the best job she can at her current rank and making herself the best officer possible so that, if she is selected for further advancement, she is competent to execute her expanded duties. It is possible for all three forms of interest to be in conjunction but it is also possible for all three of them to diverge significantly (Isaac 1987, 25).

When assessing actors in an environment, it is important to understand what their subjective, objective, and real interests are. As individuals fill multiple roles simultaneously (e.g. mother, daughter, sister, wife), so too do they have multiple, simultaneous subjective, objective and real interests. The interests of any given role may be congruent with the interests of one or more of the other roles, but it is highly likely that at least some of them will be inconsistent. As a soldier, a man may want to deploy but, as a father and a husband, the same man may resist deployments.

Several useful theories applicable to Parsons's ideational logics are proffered by Linda Zerilli, Murray Edelman, Rogers Smith, and Jason Glynos. Zerilli draws on the work of Hannah Arendt in the areas of imagination and judgment. Zerilli equates political judgment to aesthetic judgment; it is essentially a value judgment about what an individual believes or feels. She argues that political judgment, of which military action

is both a product and a contributor, is, therefore, about what parties believe to be right rather than what is logically, demonstrably right. Political judgments are never “true” but, because an individual believes them to be true, the individual also believes that others will, perhaps must, believe them to be true. In a world full of differing political judgments, the only way to account for all of the permutations is imagination. Imagination allows us to see relationships between logically unconnected things and to reach beyond our “identity-based experience” (Zerilli 2005, 174).

Zerilli argues that political dialogue is not concerned with conveying incontrovertible truths but with convincing others of the validity of our aesthetic judgment through rhetoric. She warns us that we should never assume that, if we simply lay out our facts and data logically enough, we will convince everyone else of the rightness of our truth. Because political judgment is subjective and because subjective judgments are not static, Zerilli argues that it is impossible to ever achieve “permanent resolution” of political conflicts or, by extension, military conflicts (Zerilli 2005, 181). She also provides what is both warning and hint when she points out that when an individual engages in political dialogue, he reveals his judgments and, thereby, “discloses to an extent also himself” (Zerilli 2005, 164). This is a valuable reminder for military practitioners who disclose themselves, sometimes inadvertently, through their dialogue and actions and who constantly seek to assess other actors in the environment.

Murray Edelman offers a similar note of caution and advice in his discussion of the significance of language. Military practitioners often invoke the statement “words mean something,” a notion central to Edelman’s dilations. He claims that language serves to “construct” people in that our choice of words and phrases to describe a given subject

reinforces and, at times, shapes what we believe and how we see ourselves (Edelman 1985, 14). For Edelman, the language we choose to use is reflective of an internal strategy of justification and compulsion, inasmuch as people seek to justify their own behavior and compel others to support them. Whether or not others find our language compelling is a clear indication of their “problems, aspirations, and social situation” (Edelman 1985, 14).

Rather cynically, though perhaps accurately, Edelman asserts that, in political dialogue, language serves as a means of maintaining “established inequalities” and that truth is less important in political dialogue than the “beliefs that language helps evoke” (Edelman 1985, 11). He cautions us to be wary of the linguistic dichotomy wherein official language papering over institutional flaws merits categorization as rational and objective but contrary language elucidating those same flaws is categorized as irrational and subjective. Additionally, he warns that qualifying words are often indicators that the speaker is attempting to rationalize something as, for example, “genuine compassion” or “real change” (Edelman 1985, 18).

Offering much broader analytical tools, Rogers Smith describes the means that political groups use to build their senses of peoplehood. He argues that, because groups want to assert claims of stronger or weaker authority over a wider or narrower range of issues, they must generate a sense in their members that they have the right and responsibility of that authority in the face of other groups asserting overlapping authority (R. Smith 2003, 21). Smith starts from the position that no people sprang fully formed into the world and he sees the process of peoplebuilding as a result of coercion and persuasion mixed in varying ratios. Coercion is required because membership in a given

people need neither feel nor, in fact, be voluntary (R. Smith 2003, 20). Persuasion is accomplished through a continuous process of storytelling seeking to convince the individual that the group is worthwhile insofar as it want to and has the ability to achieve what the individual wants (R. Smith 2003, 59).

The process of storytelling involves at least one of the following storythreads: economic stories, political power stories, and ethically constitutive stories. Economic stories argue that supporting the group will increase the economic good of all members (R. Smith 2003, 60). Political power stories argue that supporting the group will increase the political power of all members (R. Smith 2003, 62). Ethically constitutive stories argue that membership is intrinsic to who the constituent is and, often, who the individuals parents were and who their children can be (R. Smith 2003, 64-65). These stories tend to rely on religious, ethnic and gender bases. Smith points out that each of these stories has variations for members and variations for leaders and that storythreads must be sufficiently capacious to accommodate both variations even in cases where they are logically incompatible.

Illustrating these three storythreads is a brief analysis of the Association of the United States Army. This organization tells its members that, for over 60 years, it has “worked to support all aspects of national security while advancing the interests of America's Army and the men and women who serve” (Association of the United States Army 2010). Its economic story promises its members that it wants them to have and will get them better pay, better health care, better housing, and better retirement benefits. It offers its members reassurances of its ability to achieve the members’ ends by claiming that it was effective in positively influencing Congressional decisions during the recent

session. Its political power story promises its members better individual security. It will accomplish this by ensuring that the Army has the best equipment and proper force structure, which will make the individual's chances of survival better. Its ethically constitutive story does not draw on gender, ethnicity or religion but rather on shared values including integrity, professionalism and excellence. It claims that, anyone who is an American soldier, past, present or future, ought to be a member. Ironically, as part of its inherently exclusionary story, it claims that "inclusiveness" is one of its values.

Smith repeatedly highlights the importance of leaders in peoplebuilding. While he accords agency to group members as well as leaders, he sees the creation of peoplehood as primarily an attempt on the part of leaders to gain power through the group in order to accomplish their agenda (R. Smith 2003, 37). He argues that groups are formed through the interactions of multiple competing prospective leaders and the constituents they would each like to claim (R. Smith 2003, 32). As constituents incline first to one leader on one issue and then to another leader on another issue they define the boundaries of the group's self-conception. As each prospective leader spins his version of the group's story, he seeks to either maintain the status quo or to modify the group identity (R. Smith 2003, 54). As both leaders of a group with a certain self-conception and members of that same group sharing in its sense of self-conception, leaders actions are generatively bounded by their own and the group's "identity, interests, and ideals" (R. Smith 2003, 34, 46).

Smith provides two additional ideas of particular value to the military practitioner. In consonance with Army and joint doctrine, he points out that, in order to understand a given story and the institutions it spawned, you must understand the context in which it exists (R. Smith 2003, 46). He also points out that peoplebuilding is inherently an act of

exclusion since, in defining who belongs in the group, the story also implicitly defines who does not belong in the group (R. Smith 2003, 56). In times of armed conflict, the group will almost certainly attempt to engender a stronger and broader sense of peoplehood in its constituents in order to justify the accompanying hardships and losses (R. Smith 2003, 44).

Jason Glynos provides another triumvirate of critical explanatory logics and focuses particularly on what he terms fantasmatic logics. Glynos's logics provide a means to describe and explain the "existence, maintenance, and transformation of concrete practices" (Glynos 2008, 280). He proposes that social logics lay out the "rules, norms, and self-understandings" behind a given concrete practice in order to explain what the practice is (Glynos 2008, 280). For example, the Army has a concrete practice of using mobile repair teams to fix equipment after a unit returns to homestation from deployment. Each team has a certain number of people with certain skills and equipment. Each team only fixes particular pieces of equipment and may require that the owning unit provide support in the form of equipment, personnel and an operating area. The repair teams have standards that they must meet for repairs and procedures to follow when a piece of equipment is beyond their abilities.

Political logics demonstrate how the concrete practice emerged and solidified historically or was subsequently transformed with special emphasis on struggles attendant to either formation or transformation (Glynos 2008, 280). When the concrete practice of using repair teams emerged, it was hotly contested by fixed maintenance organizations at the units' homestations who argued that they could perform the maintenance at least as well and that it was their mission to do so. They argued that the mobile teams were taking

their workload and would adversely affect their manning structures. The units themselves argued against the process because they did not want outside interference in their operations and did not want to have to provide the teams with support. While described as “concrete”, practices generally do not remain static over time and political logics are what explain how these transformations occur. For example, when the practice of using mobile repair teams emerged, there was only one kind of team and it only repaired a small set of equipment. As the practice became accepted and units decided that it worked well, additional teams were added that could work on different sets of equipment. The entire operation transformed over time, slowly at first and then with increasing rapidity.

Glynos’s third offering is fantasmatic logic, which attempts to explain why people continue to engage in a practice even if it may not be in their best interests to do so. He argues that fantasmatic logic illustrates why people resist changing their practices but also why, when change finally occurs, it takes the velocity and azimuth it does (Glynos 2008, 280). A fantasy, by nature, can never actually be fulfilled or else it stops being fantastic. Fantasy, therefore, requires the existence of an insurmountable obstacle or series of obstacles that the fantasizer convinces himself actually are surmountable. It also implies that failure to overcome the obstacle will result in a disastrous outcome. Of course, should the fantasizer actually succeed in surmounting the obstacle, the result would be the end of the fantasy (Glynos 2008, 285).

As an example, America has a fantasy that, if we have a strong enough military, no one will dare to attack us and we will all live safely ever after. This fantasy compelled us to invest heavily in our military forces because, if we failed, our fantasy warned us that we would be prey for stronger, less democratic nations. Having almost achieved our

fantasy of safety by making ourselves the strongest military power in the world, however, we found that there was a new obstacle preventing us from actually achieving our fantasy. With the attacks on the Pentagon and the World Trade Center, we realized that we had a new obstacle between us and safety. Our attempt to surmount this new obstacle to our fantasy resulted in wars in Iraq and Afghanistan as well as smaller involvements in a number of other countries. While attempting to address the obstacle of terrorism, we also found that another obstacle to our fantasy was growing in the form of cyber warfare. Fixated on our fantasy that superior force will bring us safety, we are now building new military career fields with cyber skills.

The almost unshakable belief in the fantasy and the implicit warning about the results of failure make it difficult for the fantasizer to consider other possibilities or to interpret events other than through the lens of his fantasy (Glynos 2008, 282). Glynos terms these other possibilities “counter-logics” and claims that they exist unrecognized within the dominant social logics. The cycle repeats itself at this point as investment in the counter-logic turns it into a fantasy in its own right. To continue the previous example, a counter-logic to the American might makes safety fantasy is the notion that perhaps might actually inspires fear, resentment, and counter-might. Perhaps, rather than deterring aggression from foreign actors, our obvious strength antagonizes them into acts of defiance and attempts at dominance.

Returning to Craig Parsons’s causal logics, we come, next to psychological logic. Psychological logics cover a great deal of terrain that does not always properly fit into the world of the social sciences but more aptly in the realm of the hard sciences. Psychological logics could include a wide variety of claims. Seeing the color blue, for

instance, will likely slow the pulse, lower the blood pressure, and helps when studying or concentrating (Howard 2006, 711). The thickness of the corpus callosum in the female-differentiated brain tends to produce greater skill at languages and relationships (Howard 2006, 266). Children who attend daily gym class perform better on intelligence tests than children who are sedentary (Howard 2006, 222). Naturally lower levels of cortisol production result in decreased stress levels and increased incidence of antisocial behavior (Howard 2006). While potentially less than useful when assessing the behavior and interactions of large-scale groups, these are all scientifically valid arguments offering causal claims about why individuals act as they do. Some of these represent situations in which intervention to adjust behavior is realistically possible, but others clearly do not. In each of these examples, the individual's behavior is influenced by endogenous factors over which they have no control. While the individual's resulting action may not be due solely to these causal logics, they are at least contributory factors.

Two other instances of psychological logics may prove more insightful and useful to military practitioners. Work by behavioral economist Daniel Kahneman, for instance, draws on the way the brain functions to explain why we should be careful about trusting experts. Kahneman explains that the brain uses two systems of thought that he terms intuition and reason. Decisions made by the intuitive system tend to be quick, involuntary, and effortless and the decision maker likely possesses a high degree of confidence in the decision. Decisions made by the reasoning system are slow, voluntary, require effort, and, typically, require employment of a set of learned rules. The reasoning system acts as an imperfect monitor on the intuitive system in order to try to assure that

the intuitive decisions are, indeed, reasonable ones. If performed often enough, some decisions migrate from the reasoning system to the intuitive system.

Kahneman's problem with experts is that, like everyone, they make decisions that they believe are the result of their reasoning system but that are really the result of their intuitive system. Rather than actually make the decision their brains were presented with, their brains use the heuristics previously mentioned to handle a simpler decision, a subset of the original decision. This simpler decision is one that they can answer using their intuitive system. Often, when asked about the future, for instance, what experts are actually doing is looking at the past and carrying its trends forward. Also troubling is the fact that experts are unreliable in their decisions. A computer model constructed using the expert's decision making criteria will reach the same decision the same way every time, but the expert, based on factors external to the data, will return varying decisions over time. Experts suffer from what Kahneman calls the "illusion of validity" in that they believe they can do something that they really cannot do (Kahneman 2007).

Daniel Ariely offers a similar view of human behavior when he says that, in high stakes situations, even people with good intentions and good experience still get it wrong. This is because of systematic, repeatable psychological mistakes that they cannot avoid or correct. Knowing that they are likely making these mistakes does not stop them from happening. Ariely says that people are highly suggestible and malleable in their psychological processes. How a question is posed to an individual changes the answer she provides even if the situation is unaltered. If presented with a default answer, for example, the individual is highly likely to accept it or a very close variant of it. In order for an intelligent individual to act rationally in the pursuit of their interests, they first have

to determine what the rational course of action is. In complex situations, however, this is likely beyond the individual's ability. The problem, as Ariely points out, is that while people are willing to accept their physical limitations, they are not as accepting of their mental limitations (Ariely 2008).

The last of Parsons's logics, institutional logic, is well-represented by Elinor Ostrom et al's discussion of the perverse incentives many interactions are rife with. Ostrom argues that people involved in collective action follow certain rules-in-use and norms and that this collective action occurs at three levels: operational, collective-choice, and constitutional (Gibson et al. 2005, 8). At the operational level, actors are directly involved in the collective action. At the collective-choice level, actors formulate the rules governing action at the operational level. At the constitutional level, actors decide who gets to make the rules at the collective-choice level and how those rules should be made (Gibson et al. 2005, 24). An illustration of how these three levels fit together follows. A soldier, who has performed in an outstanding manner, receives an award. The soldier and his company commander, who submitted him for the award, are at the operational level. The Deputy Chief of Staff, G1, who writes the procedures for submitting and approving awards, is at the collective-choice level. The Secretary of the Army, who gives the G1 authority to write the procedures, is at the constitutional level.

Ostrom states that perverse incentives are those things that encourage individuals to select suboptimal outcomes in collective action situations (Gibson et al. 2005, 9). The resulting collective action problem could be caused by lack of information or lack of motivation at any of the levels of collective action. Ostrom points out that not all collective action problems require governmental or other outside intervention but some

may. She cites three problems with attempting to solve collective action problems: no one knows how to solve it, the proposed solutions are flawed, or a workable solution exists but is not selected (Gibson et al. 2005, 50).

At the operational level, an information problem might take the form of a principal-agent situation. A principal-agent situation arises when actor A, the principal, directs actor B, the agent, to take an action but actor B does not follow the direction as intended. Actor B has interests of his own, separate from actor A's, and actor A lacks sufficient information to assess actor B's actions as deviant (Gibson et al. 2005, 43). An example would be a company commander who sends a platoon on a hopefully nonviolent mission in a remote area. The platoon leader, who wants to get promoted, is looking for an opportunity to prove himself as a combat leader. Beyond the effective control or observation of his company commander, he takes actions, which generally further the company commander's mission, but that definitely advance his own goal of experiencing combat. The company commander, with no reliable way to assess whether the platoon leader could have accomplished the mission without violence, accords him credit for having gotten the mission done.

A motivational problem at the operational level might take the form of free-riding. In free-riding, because all actors know that they will benefit from a public good or service even if they do not contribute, some actors lose the motivation to contribute (Gibson et al. 2005, 36). This is illustrated by a headquarters staff section that collectively uses a government owned civilian vehicle. In an attempt to make it readily available for everyone in the section to use as the mission requires, the vehicle passes easily from one user to the next without inspections. Since each individual knows that

everyone else is using it and that everyone ought to be cleaning and fueling it, some individual stop doing their share to remedy the accumulating dirt and the decreasing fuel level.

At the collective-choice level, an information problem might be a case of missing or asymmetric information in which one individual in the group attempting collective action either does not have enough information or does not have the same information as other individuals and cannot, therefore, make the optimal choice (Gibson et al. 2005). For instance, a battalion S3, responsible for deciding who has to do what work and how, may experience an information problem when one of his companies submits an inaccurate report on the status of its equipment and personnel. Not realizing that company A actually has readily available forces, he tasks company B, which is already overextended. The entire battalion would better accomplish its mission if company A handled the task, but the S3 lacks the information to allow him to reach this optimal solution.

A motivational problem at the collective-choice level could be one of corruption (Gibson et al. 2005). A commander, who controls how businesses in his area operate, decides that he wants to skim money off of reconstruction funds and commit other immoral acts. He needs people working for him who are willing to look the other way while he executes his plan. To ensure their silence and assistance, he hands out plum assignments and sinecures to those who will cooperate.

Ostrom provides a very useful framework for assessing collective action situations that she calls the Institutional Analysis and Development Framework. She argues that for any interaction, you must assess both the action arena and the context in which that arena exists. She presents a series of questions to help guide analysis of the

action arena. In order to illustrate how this process works, I will provide a possible, coherent set of answers to describe an interaction between a soldier and his re-enlistment counselor but I will provide answers only in terms of the soldier.

Question one asks who the participants in the interaction are. A quartermaster soldier. Question two asks what positions each participant holds. The soldier is a citizen, a father, a husband, a student, a defender of the country, and a member of a unit. Harking back to Jeff Isaac, we should recall that in each of these positions or roles, the soldier has different subjective, objective, and real interests that we must keep in mind as we assess question three. Question three asks what possible actions each participant could select. The soldier could request to reenlist in the Army or he could decide to serve his remaining time and be separated from the service. Question four asks what the outcome of each potential action would be for the soldier. If the soldier asks for a deferment, he keeps his job, he can select his next duty station, he gets closer to a retirement pension, he is likely to be deployed, and he can continue to work on his bachelor's degree using tuition assistance. If the soldier decides to leave the service he can spend more time with his wife and children, he can move back to his hometown, he has to find a new job, and he loses any possibility of a military pension.

Question five asks what costs and benefits the participants assign to each possible action and outcome. The soldier may benefit from reenlisting but he risks getting deployed and possibly injured or killed. He may benefit from being safe at home with his family but he risks not being able to find a new job with equivalent pay and benefits. Question six asks what information each participant has about the interaction. The soldier knows he has a marketable skill, but also knows that the economy is not good for job

seekers. He knows his wife and children would prefer if he stays home, but he also knows he needs to be able to support himself when he is older. He knows that his current unit is not slated to deploy right now but also knows that that is no guarantee. He knows that several soldiers in his unit were injured or killed on their last deployment. Question seven asks how much control each participant has over his choice. The soldier's family has a level of control over his choices. His choice is also constrained by time because, if he waits too long to reenlist, he will be automatically separated from the service.

In addition to understanding the factors directly influencing the interaction, we must understand what the factors indirectly influencing it are. Ostrom says the "context" is what "frames and affects" the action arena (Gibson et al. 2005, 25). The context includes three variables: rules-in use, biophysical/material conditions, and attributes of the community. Somewhat surprisingly, the rules-in-use are not the laws, contracts and court rulings applicable to the situation but rather the rules that the participants understand and that are routinely enforced (Gibson et al. 2005, 33). Legislation that the participants are unaware of or that they know will not be enforced will not affect their interaction and can be ignored.

Biophysical/material conditions could be anything from the amount of precipitation to the structure of a city to the natural resources available (Gibson et al. 2005, 34). This is a very broad category but Ostrom enjoins analysts to focus on the goods and services most important to their subject and categorize them in terms of whether they are a private good or a common-pool resource. How an institution reacts to the biophysical/material condition is dependent on the categorization of the good or service. When discussing attributes of the community, Ostrom is primarily interested in

the group's ability to self-organize (Gibson et al. 2005, 35). How well groups have historically been able to manage their own problems is often a good indicator about their future success. This ability is affected by attributes like religion, race, and wealth distribution.

The Institutional Analysis and Development Framework was developed principally for use with civilian institutions so it is not necessarily a perfect fit when military planners try to use it to analyze interactions in an operational environment. For this reason, Celestino Perez modified the framework in two significant ways. Ostrom's "action arena" becomes the "proximate context" for Perez while Ostrom's "context" becomes Perez' "distal context". In the proximate context, Perez retains Ostrom's seven questions to define the nature of the interaction, but he adds a requirement to consider the participants in terms of Rogers Smith's stories of peoplehood, Jeff Isaac's interests, and Jason Glynos's logics of critical explanation. The planner must determine the economic, political power, and ethically constitutive stories for each participant and what each participant's subjective, real, and objective interests are. Potentially overlapping with Smith's stories are Glynos's economic, political, and fantasmatic logics.

While Ostrom broke her "context" into three sections, Perez breaks his "distal context" into four. Loosely drawing on Craig Parsons's four categories of logics, Perez breaks his distal context into the "material structures," "organizations/rules," "ideas," and "psychological elements" that affect the proximate context. Although based on Parsons, Perez does not want the planner to establish actual structural, institutional, ideational and psychological causal links. He simply wants the planner to find and categorize all of the factors affecting the proximate context. Material structures could include a drought, a

river, cities, and weapons. Organizations and rules could include the Army, the United States Congress, and the holy text of the host nation. Ideas could include women's suffrage, racial equality, and capitalism. Psychological elements could include risk aversion, post-traumatic stress disorder, and the illusion of validity (Perez 2012b).

Perez includes cautions about the potential for emergence in complex systems in his framework. The planner must keep in mind that the distal context and the interaction itself may engender something completely new and unpredictable. This echoes Connolly's warning about the need to remember that surprise is always possible. Perez also borrows from Connolly and others his instruction that planners should assess the operational environment with an eye for "experimental interventions" rather than attempting to formulate a grand and sweeping plan to remake the environment. As we learned from Loode, our inability to describe how a complex system works in the first place should make us hesitant to believe that we can design a better one.

What follows is my attempt to understand, frame, and present in narrative an environment of interest to me. This attempt is informed throughout by all of the theory that I have just described. Just as I would not confuse a military commander with theoretic references when presenting an operational environment to him, so too have I avoided coshing the reader over the head with direct references in this narrative. It is my hope, however, that, as you read it, you will see the petticoat and slip of the theoretic underpinnings occasionally peeking out from beneath the dress.

CHAPTER 4

NARRATIVE OF THE ENVIRONMENT

Land Distribution Practices and the Effects of the Natural Environment

Early in American history the question arose of what to do with all of the abundant land in the newly formed country. The idea that won the day can be traced to Thomas Jefferson who believed that every man should own a piece of land and that the small holder was the most important piece of the nation (Griswold 1946, 661). Jefferson rejected the idea of large, hereditary estates as were then found in Britain and was one of the authors of a 1784 ordinance laying out the disposition of western lands (Nelson 1949, 229). Jefferson was an advocate of minimal government allowing maximal independence for citizens. He felt that small communities of independent farmers would be able to handle their own local problems without government intervention and that this would limit the scope of government to national and international concerns (Nelson 1949, 232). The government's plan was not only a departure from the British model but also a departure from the land usage practices then common in New England where most farmers lived in small villages and owned plots of land in the surrounding area (Nelson 1949, 229). The plan created the rural geography that still exists in many parts of America where single family dwellings surrounded by cultivated land dot the landscape.

There was some disagreement as to whether the land should be given to settlers free of charge or whether the sale of national land should be used as a means of funding the costs of government (Cochrane 1979, 178). Initially, most land was sold at low prices of one to ten dollars per acre, but by 1862, the continuous clamoring for land had led to more and more liberal distribution policies culminating in the Homestead Act of 1862

under which 147 million acres of land were given away for free (Cochrane 1979, 174, 180). Part of this shift in policy was the realization in Congress that unsettled land produced no taxes for the government and that the governmental revenue stream could be increased more by accelerated settlement than by the continuing slow sale of public lands (Emerick 1896, 461). To facilitate the westward expansion, the government granted 156 million acres of land to railroad corporations as in the land grant act of 1850 that benefited the Illinois Central Railroad (Emerick 1896, 461). The increasing ease of moving families to the land and farm produce to markets fed the desire of settlers for good land of their own.

The goodness of land is largely determined by three general criteria: where it is located, how fertile it is, and how much other land is available (Emerick 1896, 457). The more favorably located the land is in relation to the market place or to the modes of transportation to get products to the market place, the more valuable it is. The more fertile the land in terms of productive output of commercially marketable products, the more valuable it is. The smaller the quantity of other land still available for settlement or for sale at a cheaper price, the more valuable it is. None of these qualities is fixed. As transportation infrastructure and urban markets develop in one place and disappear in another, the value of the proximate land falls. Over time, soils lose their fertility as the rain or irrigation washes it away or as farmers grow nutrient-depleting crops. As the amount of readily available land in an area increases with falling food and land prices, the value of land decreases. As with most things, when land has little value to its owner, it is not properly maintained and cared for.

By some accounts, the good farmland was mostly gone from the public domain by 1890, but there were continuing acts releasing additional, less-favorable portions of land until as late as 1940. In 1904, portions of the Rosebud Reservation in southern South Dakota were opened for settlement and, in 1915, additional portions of western South Dakota were offered (Hurt 2002, 4). In 1916, the Stock Homestead Grazing Act offered land in the northern Great Plains to ranchers for livestock grazing although most of the land, though unsuitable for it, was converted to wheat farming (Schlebecker 1975, 208). Between 1900 and 1920, additional land was homesteaded in Montana and other parts of the Far West (Cochrane 1979, 185). The New Deal saw the addition of even more cultivated land as Reclamation Service projects to bring irrigation to portions of Idaho and Oregon put almost three million more acres into circulation by 1940 (Gamboa 1990, 26). By the middle of the twentieth century, America had 350 to 400 million acres of land under cultivation with the majority of the land added during the twentieth century being in marginal or submarginal areas (Cochrane 1979, 176). Throughout this period of settlement ran the current of Jefferson's belief that farmers were the foundation of the economy and the foundation of democracy.

Just as farmers are the foundation of the nation, the natural environment is the unavoidable and fickle foundation of agriculture. Farmers are tied to nature as few other industries are. Their work is typically seasonal with man-hour requirements and income coming unevenly throughout the year. Each crop ripens in a relatively short time window and must be harvested within that window for the farmer to get the most marketable product. Crops normally stay at the peak of ripeness for only a short time so the harvest must be done quickly with a high labor requirement during that time. With all a given

crop coming ripe at the same time and having a short period of marketability, farmers quickly glut the market and drive down the aggregate price (Lake 1989, 90). The first farmer to get his product to market will likely get the highest prices and this makes even fiercer the competition for labor to accomplish the harvest first.

Although many early American settlers had experience with farming before coming to America, as a group, early settlers developed a habit of “butchering the soil” (Kemmerer 1956, 579). With so much virgin soil so readily available, there was little impetus to safeguard the fertility of any given piece of land. Land was seen as expendable capital that settlers needed to use up if they were going to better themselves (Jellison 1993, 119). Unlike European peasants who typically farmed the same land for generations, American farmers were very mobile; they knew that they could keep moving west to find newer soil (Schlebecker 1975, 255). Their mobility prevented them from developing any great emotional attachment to the land they farmed and they found it easier to move than to do the labor intensive work required to ameliorate the fertility of their soil (Nelson 1949, 233). In many places, the governmentally determined parcel size was too small to be commercially viable long term that led to overly intensive cultivation in the short term (Libecap and Hansen 2002, 86). The desire for commercial viability led many farmers to devote the vast majority of their holdings to a single crop (Jellison 1993, 118). Monoculture dominant farms were often hard on the soil and were particularly susceptible to boom-and-bust cycles since the farmer had nothing to fall back on in a bad year.

Nature was fully capable of delivering those bad years to farmers with the most dramatic historic example being the Dust Bowl in the Midwest during the 1930s. The

combination of human intervention, repeated years of drought, and the pattern of high winds on the Great Plains precipitated the “black blizzards” that dropped dust as far away as Washington, D.C. and the Atlantic Ocean (Jellison 1993, 119). The unprecedentedly severe drought in 1931 was followed by successive years of drought with 1934 and 1936 being particularly bad (Cochrane 1979, 328; Hurt 2002, 84). By 1933, 50 million acres of land had been ruined and another 125 million had had their fertility degraded by at least 50 percent (Wilcox 1947, 15; Schlebecker 1975, 256). The destruction did not end there as the dust storms continued with the worst occurring in 1934 and 1935 (Schlebecker 1975, 259).

In what was likely a related disaster, the country concurrently suffered repeated plagues of locusts from 1931 to 1939 (Schlebecker 1975, 268). With insecticides not yet available to help control the plagues and prevent their recurrence, damage peaked in 1934 and again in 1936. As the locusts ate the crops in the fields, the leaves on the trees and the clothes on the wash lines, farm losses in 1936 hit \$106 million. In 1939, locusts stripped Colorado, Wyoming, Nebraska, Iowa, South Dakota, Montana, and North Dakota clean (Schlebecker 1975, 269). Any vegetation and ground cover not destroyed by the drought was eaten by the locusts. This compounded the already severe wind erosion and worsened the Dust Bowl conditions.

With farmers seemingly unable to halt the devastating effects of their own poor practices, the government was forced to step into the breach. In 1933, the government created the Civilian Conservation Corps to battle the widespread fertility depletion and soil erosion (Schlebecker 1975, 260). The Civilian Conservation Corps recruited unemployed men between the ages of 18 and 25 for one year of employment. By 1935,

the Civilian Conservation Corps had 600,000 men on its rolls and had passed them out to the United States Department of Agriculture (USDA), the Department of the Interior and the War Department (Schlebecker 1975, 261).

In 1935, the government took another step in its conservation fight when it created the Soil Conservation Service. This new service was charged with developing improved farming practices and educating farmers on how to implement them (Wilcox 1947, 19). During WWII, the Soil Conservation Service would focus much of its efforts on reminding farmers not to abandon the improved techniques as they attempted to increase output (Wilcox 1947, 106). The efforts of these two organizations would pay dividends during WWII as farmers largely controlled any impulse they may have had to increase cultivated acres by putting marginal or submarginal lands into cultivation. Instead, farmers simply shifted their lands from less essential crops to more essential crops or shifted a portion of their summer fallow and idle land into more intensive crop production (Wilcox 1947, 103).

The government's devotion to conservation continued in WWII as it shifted many of its subsidy payments to farmers to payments directed purely at conservation. During WWII, 60 percent of the funds paid to farmers by the AAA were spent on soil amendments including lime, phosphate, potash, green manure, and cover crops (Wilcox 1947, 106). The government's conservation efforts paid dividends in another way as the overall fertility of American soils had increased since the Dust Bowl (Wilcox 1947, 19).

Just as nature could deliver disasters, she could also deliver boons. During WWII, the rainfall patterns were better than average and contributed to an increase in wartime production. Studies suggest that the increased rainfall alone was responsible for 30

percent of the production increase (Wilcox 1947, 288). Among the side effects of increased rainfall was the corresponding increase in vegetation on grazing lands. The more vegetation, the more head of stock ranchers could run and the better the condition of the animals going to the slaughter house. This meant that more and higher quality beef was available for the war effort.

Changes in Farming from the Late 1800s to WWII

As settlers moved into the semi-arid Great Plains, in the nineteenth century, they were well aware of the climatic change that happens somewhere between the 96th and 100th meridians (Libecap and Hansen 2002, 86). They could observe the low rainfall, the high evaporation, the change in plant and animal life and the dustier atmosphere. The area was, in fact, called the Great American Desert by some early travelers. The settlers' understanding of what caused the change, however, was lacking. The conditions were foreign to anything they might have experienced farming in Europe or in eastern America (Cochrane 1979, 265).

Until part way through the twentieth century, the Weather Bureau had only intermittent and localized data and there is little evidence that it was effectively communicated to settlers (Libecap and Hansen 2002, 93). Instead, folk theories emerged like the notion that the "rain follows the plow," which was published in a widely circulated book by Charles Dana Wilber in 1881. This theory suggested that human activity could produce rainfall through mechanisms like the transit of transcontinental trains shifting airflow patterns, planting trees increasing humidity, and cultivating the soil making it absorb rainfall (Libecap and Hansen 2002, 94). Modern understanding of climate factors makes these ideas seem comic, but settlers at the time had no better

theories and so established homesteads in inappropriate areas using inappropriate farming practices. The result was farms that were too small, insufficiently diversified, undercapitalized, and unsustainable.

Changes over the course of the nineteenth century in American agriculture set the stage for conditions in the twentieth century. Through most of the nineteenth century there was a continuous shortage of labor in agriculture caused by the continued supply of free and/or cheap land (Cochrane 1979, 189). Anyone interested in owning a farm of their own had realistic hopes of acquiring one and so had little incentive to work as a laborer on someone else's farm at a price that the farmer could afford. Conveniently for farmers, the nineteenth century was also a time of increasing productivity with a concurrent decrease in manpower requirements. This was possible because of improvements in animal husbandry techniques, farm implement design, and accessibility and utility of transportation, as well as increasing specialization and increasing acres under cultivation (Emerick 1896, 436). Crop specialization became essentially regional: Southern planters dictated that their tenants and sharecroppers produce only cotton, New England and the Mid-Atlantic were dominated by dairying and truck crops, and the Midwest produced wheat, corn, and beef cattle (Hurt 2002, 7-8).

Less convenient to the farmer was the trend of rural to urban migration that began around 1850. This decreasing ration of rural to urban dwellers was happening in both America and Europe around the same time. Cities attracted people because they had more educational, social and religious opportunities, they were seen as more mentally stimulating and they were a more reliable source of political advancement and upward social mobility (Emerick 1896, 448). Additionally, there was a growing perception that

city workers were somehow socially superior to agricultural workers. Between 1850 and 1890, the disparity in wealth between rural and urban areas grew dramatically, and in the farmers' minds unfairly, as city wealth increased sixteen-fold but rural wealth only increased four-fold (Emerick 1896, 439). This widening gap can be attributed in large part to the introduction of steam power, which found more ready application in centralized industry than in agriculture. Steam allowed industry to greatly increase production of goods for which there was almost unlimited demand elasticity while demand for agriculture's product remained relatively inelastic (Emerick 1896, 442). A consumer would far more readily increase the number of shoes in her closet than the number of eggs she eats for breakfast.

As agriculture began to commercialize and farmers produced more surplus food for sale, they began to realize that they could not effectively control the marketplace the way that industry could. Farmers were unable to generate monopolistic or even oligopolistic control of the market because there were simply too many of them spread out over too much territory (Emerick 1896, 446). They were unable to regulate their own collective production level and so had no ability to regulate the prices they were paid. In the late nineteenth century, there was a growing trend towards increasing the size of each farm operation; farmers needed to "go big or get out" (Elias 2009, 6). To succeed, farmers needed to increase specialization, decrease diversification, obtain larger plots of land, more machinery, and better methods of transportation to the market. Inefficient farmers adversely affected their neighbors ability to succeed by simultaneously contributing to the excess supply depressing the price per unit and tying up capital in the form of land without which more efficient farmers could not become more productive.

The American belief system of the time led farmers to believe that all work was equally valuable and that sufficient hard work was bound to generate economic success, the basis of peace and prosperity (Cochrane 1979, 305). They believed that government should provide collective goods needed to make citizens more successful proprietors, should not take proportionally more from the rich than from the poor, and should allow proprietors to run their businesses as they think proper. Above all, they believed that a man's ability to get rich by successfully running a farm or business was what made him socially useful. What they increasingly found, however, was that hard work was not producing economic success for agriculture at the same rate that it was producing it for industry. They felt threatened by the political system that seemed to put them at the mercy of industrialists, urban politicians, and the will of the growing urban working class (Lake 1989, 87). In reaction, farmers became increasingly politically active and militant.

Not trusting the political establishment, farmers created organizations like the Grange, the Farmer's League, the Agricultural Wheel, and the Populist Party, which actually made a respectable attempt at winning the Presidency in concert with the Democrats behind William Jennings Bryant. Farmers realized that they were increasingly in the minority of the population and, in contravention of the American belief system, wanted the government to fix their problems. They wanted better regulation of the essentially monopolistic railroads that had farmers over a barrel when it came to transportation costs for getting farm products to the market. They wanted government assistance with organizing cooperative marketing via things like farmer-owned grain elevators that they believed would allow them to counter the power of large purchasers (Lake 1989, 90). Finally, they wanted monetary reform in the form of increased currency

in circulation that they hoped would reverse the widespread deflation then occurring and make it easier for them to get loans.

The railroads may not have been kind to farmers, but the railroads needed the products they grew to facilitate expansion of rail lines and to increase the value of railroad company land (Libecap and Hansen 2002, 100). To that end, the railroads, like the USDA and many farm organizations, disseminated information to settlers about a new farming technique known as dryfarming. The USDA published multiple bulletins about the technique and, in 1905, established the Office of Dry Land Farming (Libecap and Hansen 2002, 97). Dryfarming was touted as “scientific soil culture” and was in keeping with the Progressive Era belief that science should be used to improve human quality of life. The practice promised a fix for the limited rainfall in the Great Plains and offered farmers the chance to free themselves from the vicissitudes of nature through hard work. It, therefore, made success or failure a matter of will, an idea that was very much in keeping with the American belief system.

The theory was that too much evaporation rather than too little precipitation was the real culprit in Great Plains farming and that this could be solved by a very labor intensive process of breaking up the hard soil to let the rain soak in (Libecap and Hansen 2002, 101). The water would then be stored in the ground and remain available during times of drought when the dryness of the upper levels of soil would naturally draw the water from the lower levels to the surface. The more cultivation, then, the more water stored in the soil and the less susceptible to drought a farmer would be.

That the theory initially seemed to work in practice was largely a result of the fact that the years from 1906 to 1916 were unusually wet ones and the virgin soils of the

Great Plains were still very fertile (Libecap and Hansen 2002, 103). In response, there was a homestead boom that lasted until 1921. Even after the drought started, settlers continued to believe that if they simply worked hard enough, they could make dryfarming work. Coinciding with the start of the drought in 1917 was the beginning of WWI, which spurred a rise in farm prices and farm income that masked the economic effects of decreasing productivity. There was, of course, no truth to the theory of water storage, so the more farmers cultivated, the more water evaporated from the soil and the more the wind blew away the fertile topsoil. This was one of the poor farming practices that led to the Dust Bowl.

Farmers were not the only ones to recognize that they were in difficulty. President Theodore Roosevelt was also aware of the increasing rural to urban migration and, in 1907, appointed a Commission on Country Life to investigate the problem and recommend solutions (Jellison 1993, 2). The Commission was heavily influenced by the Jeffersonian agrarian ideal that, by then, was interpreted as meaning that agriculture was the most important human activity, that all other economic activity simply supported agriculture, and that - since agriculture was the natural state for man - non-agricultural, city life must be unnatural (Nelson 1949, 232). The fact that cities were often overcrowded, had inadequate housing and high unemployment, and contained corrupt political and business machinery gave credence to the demonization of cities (Jellison 1993, 2). The influx of foreign immigrants to cities aggravated urban conditions and was seen as degrading to the Anglo-Saxon race (Elbert 1988, 251).

The Commission and reformers of the time believed very strongly that America ought to remain predominantly agricultural with as many small family-owned farms as

possible. It reported to President Roosevelt that the problem was not a new one but rather was the result of the continuing lack of a highly organized rural society (Hurt 2002, 16). This lack was likely a direct result of the land distribution pattern established in 1784 wherein farmers were widely scattered without effective means of communication. The Commission also acknowledged that farmers were being treated unfairly by transportation enterprises, financiers, and industry.

The Commission spawned the popular social movement known as the Country Life Movement that was essentially the rural arm of American Progressivism (Jellison 1993, 4). The members of this movement saw farmers as special people who were the voice of democracy, the source of national wealth, and, most importantly, as the foundation of national virtue, they were the protectors of the nation's morality (Hurt 2002, 14). They opposed the corporate farm ownership that was increasing as departing farmers sold out to larger operations (Elbert 1988, 252). The movement sought ways to improve the poor rural quality of life, which they believed would stem the rural to urban migration pattern. By keeping farmers farming America would maintain its rural based values.

Despite the concerns of farmers and government, the time from roughly the turn of the century to 1921 was a favorable one for agriculture. Farm incomes doubled during this period and farm values tripled (Hurt 2002, 10). A period of good years from 1897 to 1910 saw most of the country finally settled and the end of most of the pioneering hardships that farmers had experienced (Cochrane 1979, 99). Work was becoming easier through improvements in farm technology and widening utilization of those improvements. In each year during that period, farm prices rose faster than nonfarm

prices and began to slowly reverse the expanding disparity between rural and urban wealth. This rise in prices was due in part to the 21 percent increase in national population from 1900 to 1921 (Cochrane 1979, 349). Farm output did not increase as quickly as population so demand exceeded supply progressively more each year.

The real “Golden Age” of farming, however, was the years from 1910 to 1914 (Lake 1989, 91). During this short period, farm commodity prices were high and stable, the number of farmers was at the highest it would ever be, and farmers believed that all their years of hard work had finally produced the good life that they deserved (Cochrane 1979, 100). Aiding the good life were favorable terms of international trade for farmers and the fact that, by the end of the “Golden Age,” the nation had been at peace for almost 15 years (Cochrane 1979, 350). The terms of trade were so favorable, in fact, that exports of raw food products more than quadrupled between 1910 and 1921 (Cochrane 1979, 270). Militant agrarians like the members of the Populist movement were pacified by the high profits like those experienced by wheat farmers for whom profits increased over eleven-fold from 1913 to 1917 (Schlebecker 1975, 210). The general belief was that agriculture and industry had finally reached a fair equilibrium in terms of prices (Lake 1989, 93).

Lasting from 1915 to 1918, WWI was particularly significant for agriculture because it raised prices enough to make “Golden Age” prices seem reasonable and spurred farmers into a credit crisis. As might be expected, export demand increased during the war prior to direct American involvement. Once America entered the fight, domestic demand increased as the nation focused on war mobilization. Farmers brought 40 million more acres of land under cultivation to meet that demand with much of it, as

discussed previously, in marginal areas (Lauterbach 1942, 515). Poor harvests in 1916 and 1917 caused by drought reduced farm output, but that reduction in supply simply drove prices even higher for those whose crops survived (Lake 1989, 94).

By 1919, farm prices were over twice as high as they had been during the “Golden Age.” The high prices and the demand for increased acreage drove up land prices by 60 percent as farmers engaged in bidding wars with each other. There was, in fact, a general inflationary trend throughout the country as wages and prices rose simultaneously (Palmer 1919, 121). Once America began calling men up for military service, farmers began to experience a manpower shortage. They addressed this shortage by expanding their capital investment through the purchase of farm equipment (Lake 1989, 94). In order to engage in their bidding wars, to pay for their new machinery, and to improve their farm structures, farmers took out mortgages on their land and bought on credit.

Concerning post-war economic prospects, there was a certain amount of disagreement. On one hand, it seemed very unlikely that wartime prices could be sustained after the conflict was over and that implied that prices should drop rapidly. On the other hand, analysts at the time pointed to historical examples like the British after the Napoleonic wars and the United States after the Civil War, which they argued proved that the winning side should experience post-war prosperity (Palmer 1919, 119). In 1919 and through most of 1920, the economy held strong and seemed to bear out the notion that the nation had simply reached a new plateau of prosperity. Farmers began to believe that there would not be a post-war drop in prices and this sparked a second wave of land bidding wars (Lake 1989, 95). By 1920, the average farmer carried mortgage debt that

was 235 percent of what they had carried in 1910 (Lauterbach 1942, 515). The continued high agricultural prices were largely due to the fact that European farmers had not yet recovered (Lake 1989, 95). Much of the continent was suffering famine conditions with a continued high demand for American imports. Russia, in a state of political turmoil, was also experiencing a delay in agricultural recovery and was prevented from resuming its own agricultural export trade (Palmer 1919, 121).

By fall of 1920, however, these conditions had sorted themselves out enough that the demand for American agricultural products began to fall. From a high of \$4.1 billion in 1919, agricultural exports dropped to \$1.8 billion by 1922 (Cochrane 1979, 111). Instead of suffering from a food shortage, the globe was now suffering from a food surplus (Lake 1989, 95). This was exacerbated by the fact that WWI had encouraged expanded production in Canada, Australia, and South America, previously insignificant in terms of agricultural export (Lauterbach 1942, 515). It was further exacerbated by a general rise in trade barriers limiting American farmers' ability to market their products abroad.

The result of all of this for American farmers was the drop in their income from \$9 billion in 1919 to \$3.3 billion in 1921 and the onset of the Agricultural Depression (Hurt 2002, 44). Farmers could not afford to pay the debts they had incurred while expanding their capital for war production. The farm labor force began to shrink as the nonfarm labor force grew by 46 percent (Lake 1989, 99). Approximately 500,000 farmers went bankrupt and remaining farmers found their purchasing power diminished to 63 percent of pre-war levels (Hurt 2002, 45; Lake 1989, 63). Farmers had become accustomed to their new quality of life; they did not want to return to life without

automobiles, telephones and disposable income (Hurt 2002, 45). They might not have minded quite so much if the slip in living standards had been shared equally by all Americans. The reality, however, was that farm prices were falling faster than nonfarm prices, so the average farmer's income was only 70 percent as great as the average industrial worker's income (Hurt 2002, 63). Farmers felt that their profits were being siphoned off by the parasitic middlemen standing between them and the end consumer (Nelson 1949, 232). They felt that their suffering was particularly unfair since they saw the debt that was crushing them as something that they had undertaken in direct support of the national war effort (Wilcox 1947, 6).

After almost a decade of suffering, farmers were joined by the rest of the nation in the aftermath of the 1929 stock market crash. From 1929 to 1933, the gross national product fell steadily and the Great Depression took firm hold of the nation (Schlebecker 1975, 225). The value of agricultural exports slipped again from \$1.8 billion in 1928 to \$662 million by 1932 (Cochrane 1979, 111). This was a mere 16 percent of the agricultural export value reported in 1919 and represented a drop to roughly the level of export values back in 1870 (Cochrane 1979, 270). Factoring largely in this further drop in agricultural prices were the abundant harvests worldwide in 1928 and 1929 (Lake 1989, 100).

As supply worldwide increased without a concomitant increase in demand, prices could do nothing but fall. The trend of good harvests continued and 1931 saw farmers in American producing the second largest cotton crop and the third largest wheat crop in history (Hurt 2002, 63). The New Deal programs begun after 1933 targeted at reducing farm output levels were largely ineffective such that, between 1930 and 1940, farm

output actually rose 12 percent (Hurt 2002, 94). During the same time period, the national population rose only seven percent. With domestic demand growing more slowly than production and the international market largely closed, low farm prices drove farmers into poverty. By 1935, 2.5 million farm families were living in poverty (Wilcox 1947, 14).

In general, governments have only three choices when they are presented with a food surplus: they can attempt to export it, they can attempt to reduce the number of farmers, or they can subsidize their farm population (Lake 1989). Exporting is the best option because it reduces the domestic supply while increasing taxable farm income. It does raise food prices for consumers but, assuming the government has some control over levels of exports, this can be controlled. The real limiting factor on exportation is the importing country's policies over which the exporting nation typically has little control. Reducing the number of farmers is the second option and is something that happens naturally as a consequence of increasing national prosperity, increased employment opportunities, and improved education. The shift of people from farmers to consumers will produce at least a minor increase in domestic requirement. Reduction can be inhibited by improvements to rural quality of life like electrification and free rural postal delivery. The third choice is to directly or indirectly subsidize farmers. Indirect methods at the government's disposal include increasing trade protections through adjusting tariffs or imposing import restrictions. More direct methods include paying farmers not to grow crops on a given acreage, paying the farmer an export subsidy, or guaranteeing the farmer minimum prices for his output. Since subsidies tend to increase production levels,

governments should couple subsidies with some form of mandatory production restriction.

At the beginning of WWII, America's farmers kept the nation mostly self-sufficient in terms of food production. In some years a low harvest might require the importation of coarse grains from Canada and there was always a need for importation of some non-staples like tea, coffee, cocoa, and spices (Roll 1956, 11). The nation also needed its sugar production augmented by importation from Hawaii and the Caribbean and its production of fats and oils augmented by imports from places like the South Pacific and South America (Roll 1956, 47). A consequence of this self-sufficiency and the years of worrying about crop surpluses was that the American government did not, in general, see food as something that required intervention to control imports.

While agricultural production at the start of WWII was up 16 percent since WWI, farmers themselves were in sad shape (Wilcox 1947, 6). Farmers, who made up 48 percent of the nation, earned only 37.5 percent as much as nonfarmers (Hurt 2002, 94). This disparity in income was mirrored by other quality of life indicators. In rural areas, only 30 percent of houses had running water and only 25 percent had high-line electricity. Amazingly, these numbers were double or triple what they had been in 1929 (Wilcox 1947, 17-18). In urban areas, by contrast, 95 percent of homes had running water and electricity. Despite holding almost half of the population, rural areas had less than a third of the nation's doctors. Only 25 percent of children completed high school in rural areas while, in urban areas, 47 percent of children completed high school.

Of the six million farmers in the nation, two million were essentially subsistence farmers who made \$400 or less per year (DeHart and Smith 1947, 38). These farmers

themselves consumed half of everything they produced and what they marketed amounted to only three percent of the total amount marketed nationally. The labor present on these farms was almost certainly underemployed. Another two million farmers made \$400 to \$1000 per year and produced 13 percent of the nation's total. A portion of the labor in this group was likely underemployed. The final two million farmers made over \$1000 per year and produced 84 percent of the nation's marketed food. By 1941, all of these farmers derived, on average, one-third of their income from some form of government subsidy (Hurt 2002, 93).

Included in these six million farmers were 1.8 million tenant farmers and sharecroppers half of whom were located in the South (Wilcox 1947, 16). A quarter of all tenant farmers had been on their land less than two years and, in general, they had little incentive to improve their farms to obtain greater output. A tenant who successfully improved his farm might well find his rent raised or find himself evicted in favor of a richer tenant. Lacking a sense of ownership and having a high discount rate produced by feelings of insecurity, tenants were likely to engage in farming practices that depleted the soil and allowed the farm structures to deteriorate. The transitory nature of the population prevented them from developing strong social organizations that might have stabilized the population and allowed greater collective action to improve their lot. In point of fact, the conditions of tenancy in 1939 were little improved over what they had been 20 years earlier.

Another category of agricultural labor that existed was the migrant population. At the beginning of WWII, one-third of all migratory laborers in the nation followed one of six major, voluntarily established patterns of migration (Rasmussen 1951, 83). The other

two-thirds either followed a minor migratory pattern or moved somewhat haphazardly as they saw fit. Migrants typically moved at their own expense and without any government interference or guidance to ensure that they were in the right place at the right time. Individual farmers and farm associations annually recruited migrants and often pulled them from out of state (Gamboa 1990, 5). The jobs for which migrant laborers were recruited were likely to be of short duration as, for example, the hops harvest that lasts only 3 weeks. Despite being short, each job had a very high manpower requirement as, for instance, the Yakima Valley in 1935 that required 33,000 workers for its peak harvest time but only 500 workers for the remainder of the year.

Even though they needed migrant laborers, farmers often viewed them with disdain because they would take wages that no one else would tolerate and they often did work that was considered unfit for proper white people like stoop-work thinning sugar beets (Gamboa 1990, 14). Migrants were equally unpopular with nonmigrant labor in the areas where they worked because they were seen as unfair competition that undercut local labor's bargaining position on wages. Despite the annual recurrence of their presence, the transitory nature of their work and the low opinion in which they were held prevented farmers from providing adequate housing for migrant workers (Rasmussen 1951, 103). Housing inadequacy was a problem shared by the nonmigrant farm laborers as well.

Impact of International and Intranational Population Movements

While annual migrations certainly influence manpower availability, there are other forms of manpower relocation that must be considered. Immigration and non-temporary migration are two forms of manpower relocation that have had even more

significant effect on American agriculture. America, of course, is almost entirely a nation of immigrants, but the volume and source of immigration has changed dramatically over the course of the nation's history. In each of the 10 year periods before and after the Civil War America admitted only 2.5 million immigrants (Fields 1932, 671). The immigrants who came were primarily northwestern European men between 15 and 39 years old who were driven from their own nations by disasters like revolutions or famines and lured to America by prospects of gold, liberal land policies, recruiting campaigns waged by railroad and immigration offices (Kemmerer 1956, 579). Improving sea and rail transportation facilitated their movement to and then across the country.

By 1905 and 1906, the annual rate of immigration had risen to over a million and it hit a peak in 1907 at 1.3 million immigrants (Cochrane 1979, 264). Abundant streams of European and Asian immigrants limited the opportunities for and hence the immigrants from Mexico and further south (Kiser 1973, 55). The presence of unfriendly and unpacified Native Americans between America and its southern neighbors also served to limit immigration from that direction. Immigration dropped during WWI as a consequence of the war itself and also of the Immigration Act passed in 1917. This act, the most restrictive in American history up to that point, raised the head tax paid by each immigrant upon arrival from one dollar to eight dollars and required that all immigrants be literate (Kiser 1973, 63).

By 1921, immigration rates had risen again and annual admission for the year was roughly 805,000 (Cochrane 1979, 264). Sometime between 1882 and 1907, however, a shift in the national origin of the immigrants had occurred. Since America was no longer as appealing to the citizens of the more advanced northwestern European countries, their

numbers in the immigration queue began to drop (Kemmerer 1956, 580). They were replaced by southern and eastern Europeans so that, whereas, in 1882, 87 percent of immigrants were from northwestern Europe, in 1907, 81 percent of the immigrants arriving in America were from southern and eastern Europe (Cochrane 1979, 265). With the frontier increasingly far away and good land increasingly unavailable, these immigrants settled mostly in cities (Elias 2009, 4).

For a number of reasons, the government enacted new immigration legislation in the early 1920s. In part, the short recession following WWI generated a desire to reduce the number of immigrants competing for jobs with those already in America. In part, the war had sparked increased nationalism and a “red-scare” that made immigrants more suspect and less welcome (Kiser 1973, 78). There were also essentially racist concerns about the decreasing “whiteness” of the nation and the possibility that the traditions and values of this new breed of immigrant were likely to destroy American traditions and values (Cochrane 1979, 265). The 1921 quota law took the 1910 census as its baseline and dictated that no more than three percent of the number of people of each race who had been in the country in 1910 could be admitted as immigrants in any one future year. In 1924, a more restrictive quota law was passed that shifted to the “whiter” base year to 1890, a year that was prior to the majority of the southern and eastern European immigration. Neither law applied to citizens of Western Hemisphere nations so farmers retained a few sources of cheap labor (Kiser 1973, 78).

Once the stockmarket crashed and the Depression began, immigration slowed dramatically. From the post-war high in 1921 of 805,000 immigrants, numbers fell to 97,000, 35,000, and 23,000 in 1931, 1932, and 1933 respectively (Fields 1932, 671). In

fact, people were leaving America faster than they were coming; for every one immigrant entering the country, three emigrants were leaving it. The decrease was largely but not entirely due to the worsening economic situation and the lack of available jobs in America. The government also took a hand in the process by more strictly enforcing immigration requirements on Western Hemisphere nations and even began to deport people (Gamboa 1990, 10).

Additionally, in 1930, President Hoover issued guidance to all American consuls that they were not to admit anyone who was likely to become a public burden (Fields 1932, 672). This was a serious concern since, in 1929, only one of nine immigrants admitted had enough money to support himself for a year and 41 percent had less than \$50 in their pockets. These tightening restrictions were not unique to the United States; most European countries had similar immigration restrictions. While Asian and African nations maintained relatively open immigration policies, few immigrants wanted to go there. South America was actually the most attractive destination for immigrants during the Great Depression. Further immigration retarding policies included the criminalization of the practice of offering employment to foreign nationals to induce them to immigrate (Fields 1932, 675).

The rise in people departing the United States was accelerated by legal discriminatory hiring practices. Some states had laws requiring that employers hire citizens before non-citizens and, in some states, non-citizens were barred from specific professions like teaching, medicine, law enforcement, banking, and the law or were barred from owning or operating specific machinery (Fields 1932, 693). Unions had equally discriminatory policies; 80 percent of unions required that their members be

citizens. Based on laws and rules like these and on employer specific hiring practices, it is estimated that 60 percent of jobs were limited to citizens.

Migrations within the nation were also the cause of major changes in national manpower patterns. In 1790, only 3 percent of Americans lived in cities of 8000 or more people but, within a hundred years, that number rose almost tenfold to 29 percent (Emerick 1896, 435). With the rise of cities came the decline in agricultural population that, sometime between 1870 and 1880, fell below 50 percent of the total population (Hurt 2002, 3). The process was facilitated enormously by continuing developments in transportation that eased movement of both people to their new homes and of the products they produced in their new homes to market (Emerick 1896, 463). This trend continued into the twentieth century as higher wages and shorter hours in the early 1900s lured farmers to jobs in industry (Hurt 2002, 9). Urbanization of the population inherently produced increasing distance between the consumer and the origin of his food (Elias 2009, 2). Concomitant with this was a decrease in consumer knowledge of food preparation and preservation. Additionally, the vast majority of unemployed labor, now centralized in cities, was no longer available for farmers to draw upon during peak times.

Patterns of population migration within a country are strongly strong linked with international patterns of immigration and emigration (Walker, Ellis, and Barff 1992, 235). This correlation is clear in at least some of the major American migratory events in the nineteenth century. Between 1910 and roughly the end of WWII, nine million people, half African-American, half white, migrated out of the South (Kirby 1983, 594). Southern African-Americans were pushed out of the South in what is often termed the “Great Migration” by a combination of racial oppression, an overabundance of children, low

wages, the sharecropping system, and the depredations of the boll weevil that decimated cotton crops repeatedly between 1919 and 1929. African-Americans were pulled to northern industrial centers in increasing numbers after 1915 by the expansion of industry to support WWI and by the decrease in immigration after 1917 both of which created job opportunities that had not previously existed (Walker, Ellis, and Barff 1992, 235). Even during the Great Depression, this movement never stopped completely as sharecroppers and tenant farmers were unintentionally pushed off the land by New Deal policies (Kirby 1983, 591). While the causes of the migration of southern African-Americans have been more extensively studied than those of the white half of the migrating population and while the racial factors influencing the white population were certainly different, the economic factors affecting the two populations appear to be largely the same (Kirby 1983, 595).

More well-known than the “Great Migration” is the migration of Okies during the Great Depression. Despite the popular image generated by John Steinbeck, Okies and the people from Texas, Arkansas and Missouri who moved with them were not all agricultural workers, but there were a significant number of tenant farmers among them (Teaford 1990, 219). Driven out of agriculture by the increased mechanization of agriculture and by the unintentional effects of New Deal legislation, former tenant farmers were among the roughly 350,000 migrants who moved west along Route 66 to agricultural work in places like California and Arizona (Kirby 1983, 595).

A third major population shift was that of millions of “hillbillies” from Appalachia and nearby regions to Midwestern urban centers between WWI and roughly the end of WWII (Teaford 1990, 222). Much like southern African-Americans and

whites, “hillbillies” were pulled to the cities by the increased job opportunities generated by the decrease in cheap immigrant labor and the increase in war industry. By 1930, as many as 391,000 residents of Tennessee, Kentucky, and West Virginia had moved to Ohio to work in cities like Akron (Kirby 1983, 597). Some of these migrants were former coal miners whose local mines had played out but many of them were subsistence farmers who were tired of trying to make a living on poor, rocky soil. With the highest birthrates in the nation, over twice the national average in places, “hillbillies” could ill afford to pass up an opportunity to make more money in industry.

All of these migratory events had several things in common. They decreased the available agricultural population in the South largely to the benefit of industry rather than of agriculture. Critics of the time were likely right that these migratory patterns were necessary purges of agriculture that would winnow out the unfit, deflate unreasonably high land values, correct poor credit practices, and decrease the number of farms in marginal areas (Lake 1989, 99). The shrinkage of the agricultural labor force by 10 percent from 1910 to 1930 certainly seems to suggest that the entire agricultural industry was becoming leaner and theoretically more efficient.

Government Involvement in Agriculture from 1900 to WWII

While there was little immediate reaction to the findings of President Roosevelt’s Commission on Country Life, the years leading up to WWI would see the initiation of several measures designed to improve agriculture. Believing that industrial success hinged on a plentiful national supply of cheap food, the government had strong incentives to try to address the deficiencies identified by the Commission (Hurt 2002, 14). Among the problems identified were that there was a shortage of funds available for loans to

farmers, that the renewal charges on the short-term loans that farmers could get were exorbitant, and that the loans had excessively high interest rates of 10 to 15 percent (Cochrane 1979, 289). At the direction of President Wilson and in conjunction with private organizations, a fact finding mission called the American Commission went to Northern Europe in 1913 to study how agricultural credit and cooperation were handled there (Cochrane 1979, 112).

In 1916, the government produced the Farm Loan Act that attempted to establish a better system of agricultural credit in America. The Federal Land Bank system incorporated twelve federal land banks with a parallel system of private land banks. The government regulated the interest rates charged by the federal land banks and thereby influenced the interest rates of the private banks. The intent of the system was to provide credit to farmers on realistic terms (Schlebecker 1975, 212).

The Rural Post Roads Act, also passed in 1916, helped to address another of the Commission on Country Life's concerns, which was the lack of social organization in rural areas (Schlebecker 1975, 212). While specifically intended to speed mail delivery, the money appropriated for the act were placed under the control of the USDA for the first three years of the program. Under the terms of the program, the federal government agreed to pay half of the costs of road improvement. The act saw the quantity of paved roads increase by a third from 276,000 miles in 1915 to 369,000 miles in 1920. This increase engendered a dual improvement in social connection in rural areas; written communication passed more quickly to and from rural areas and farm family interactions increased as their ability to travel in their local areas increased.

Also of assistance to farmers, albeit less directly, was the growth of the USDA, elevated to cabinet status in 1889 (Kemmerer 1956, 584). Between 1899 and 1917, the Department's budget increased tenfold from \$2.8 million to \$28 million so that by WWI, the USDA was the second largest government agency (Hurt 2002, 34). President Wilson in particular believed in supporting the nation's agricultural foundation.

During WWI, the government involved itself in agriculture through two acts aimed directly at food and indirectly through the seizure of the railroads. In 1917, the government enacted the Food Production Act that mandated that all counties have agricultural extension agents who were charged with locating resources for and allocating resources to farmers (Hurt 2002, 36). The agents encouraged food production through control of resources including recruitment and placement of agricultural labor. The county agents also sat on local draft boards to recommend which farmers should receive draft deferments.

The second act, also enacted in 1917, was the Food and Fuel Control Act, also known as the Lever Act (Schlebecker 1975, 210). This act gave President Wilson control over the distribution and consumption of food and established the United States Food Administration whose official motto was "Food Will Win the War." The Administration was charged with encouraging food production and, to that end, was empowered to establish minimum food prices. In order to control wartime inflation, the Administration had to maintain a delicate balance between keeping prices low enough for consumers to afford but high enough for farms to make a profit. The Lever Act also prohibited hoarding or monopolizing of supplies and gave the Administration the power to control the distribution of materials necessary for food production. The Administration success in

its efforts to increase production of necessary products and, at the same time, decrease production of unnecessary products can be seen in the voluntary shift of 12 million acres of crop land to wheat production, a 25 percent increase.

The third major government intervention was the seizure of the railroads and their subsequent control by the Secretary of the Treasury (Schlebecker 1975, 211). By means of the war, farmers finally got what they had been clamoring for decades, regulation of the railroads that had been charging them such high transportation costs on their products and depriving them of a greater share of their profits than they thought reasonable. The Secretary of the Treasury established time tables and cost schedules that were favorable to farmers. In addition, the government controlled flow of agricultural products through the transportation pipeline was far more effective at achieving the control of supply entering the marketplace than farmers had ever been able to achieve on their own.

Coming out of WWI, the problem for the nation was actually insufficient government intervention. The government saw its role in the demobilization process as primarily concerned with disbanding the military quickly, cancelling open contracts, and dealing with war surplus (Lauterbach 1942, 506). Unfinished war contracts valued at \$3.8 billion were suspended soon after Armistice Day and by 1920, the government had only paid out \$438 million in contract termination settlements. Industrial and agricultural enterprises that had, in good faith, expanded production capacity to meet government demand were left in the lurch. This was very significant since, of 37 million workers employed in 1918, 9.4 million worked in a war related industry.

The government's approach to disbanding the military was equally short-sighted. Believing that the reemployment of soldiers was strictly a private matter, the American

government demobilized its 4.2 million-man army within approximately one year of Armistice Day. Unlike the British military, which released individual servicemen based on the criticality of the skills they possessed and the likelihood that they would find civilian employment, the American military released entire units at one time. Initially, the tactic seemed sound as most soldiers were successfully employed in the post-war boom of 1919-1920. By 1922, however, 5 million workers were unemployed. While the former soldiers were not necessarily the ones who lost their jobs, in the aggregate, the effect was the same as if most of them had.

Although President Harding believed that the Agricultural Depression was simply a natural economic dip that would correct itself in time, he did take measures to assist the economy as a whole (Hurt 2002, 48). In 1921, Congress passed the temporary stopgap Emergency Tariff Act that raised duties on farm imports in a display of extreme economic protectionism (Lake 1989, 95). The act was a reaction to the falling national income that dropped from \$61 billion in 1920 to \$55 billion in 1921 and to farmers' falling share of national income that dropped from 21 percent in 1920 to only 10 percent in 1921 (Lauterbach 1942, 5116). The Fordney-McCumber Tariff Act passed in 1922 made the provisions of the Emergency Tariff Act permanent. In 1923, the newly passed Intermediate Credit Act attempted to build on the system established under the Farm Loan Act of 1916 and to further improve credit accessibility for farmers (Cochrane 1979, 289). The 1923 act added twelve intermediate credit banks to the Federal Land Bank system designed to make loans to farmers associations or cooperatives with the intent that those groups would then make smaller loans to their members.

Farmers were desperate for a return to their “Golden Age” and formulated a plan to that end called “Equality for Agriculture” (Cochrane 1979, 286). This plan envisioned the government enacting favorable tariffs that would restrict imports of agricultural products, raising domestic prices by legislating a price floor, and buying farmers’ surpluses at domestic prices, which it would then dump on the world market at whatever price it would bring. The price floor that farmers wanted was known as “parity” and represented the mandatory valuation of farm products at levels that would provide farmers with enough income to purchase the same amount of goods that they had during the “Golden Age” in 1910-1914.

Congressional bills codifying this plan were introduced to the House and Senate every year from 1924 to 1928 but never made it into law (Cochrane 1979, 118). In part this was due to the increasing power of industry decreasing the political clout of agriculture. A version of the McNary-Haugen bill finally made it through Congress in 1927 but President Coolidge vetoed as being too hard to implement, too expensive for the government, and as unequally beneficial to agriculture (Lake 1989, 97). Coolidge recognized the fact that agriculture is a disparate but interdependent enterprise in which helping one sector can harm another as when rising corn prices help grain farmers but also hurt dairy farmers and stockmen. Coolidge wanted the bill to include mandatory production restrictions because he thought that the plan was likely to incentivize increased production. He refused to put the government into the position of continually losing money on ever larger annual farm surpluses. In addition, the government was concerned that providing food to international markets at prices below domestic market

prices would allow other nations to set their manufacturing costs lower than American industry could then afford to.

When the bill crossed President Hoover's desk a year later, he vetoed it for much the same reasons. Hoover's solution was to instead ask farmers for voluntary acreage reduction (Hurt 2002, 63). He started a "Grow Less, Get More" campaign with attempted to convince farmers that it was in their best interest to reduce their production and thereby increase prices. While he was right in the aggregate, individual farmers were stuck in a prisoner's dilemma. They did not trust that other farmers would decrease their production and so could not bring themselves to do so either.

Although successive administrations took limited measures to assist agriculture, the essential ineffectiveness of these measures and the general unwillingness to take broader measures of greater likely efficacy, meant that the government's de facto position was unfavorable to farmers. The de facto position was that there were too many farmers farming on marginal land, that land values were excessive, and that farmers were simply victims of their own poor credit decisions (Lake 1989, 99). If the government simply let the market take its course, it believed that these problems would resolve themselves naturally and, in the process, farm surplus would disappear.

President Hoover's final attempt at remediating the farm problem was the Agricultural Marketing Act passed in June 1929 just months before the stockmarket crash in October 1929 that precipitated the Great Depression (Cochrane 1979, 120). As its title suggests, the act was designed to improve the system of marketing agricultural products and also to reduce the commodity speculation interfering with price stability. The act established the Farm Board and empowered it to loan money to farm cooperatives using

their crops as collateral. Through these loans, the Farm Board would gain control over the disposition of the collateral crops and would have sufficient control of enough of the supply of a given crop that it could use market forces to regulate prices. In less than three years, the Board expended the \$500 million appropriated for this purpose and was still unable to control or even significantly influence prices. The effort proved that cooperative marketing was simply not a viable technique for solving the agriculture problem due largely to the atomistic nature of agriculture (Hurt 2002, 62). Without mandatory crop reduction provisions accompanying the loans, the act did exactly what President Coolidge had feared the McNary-Haugen bill would do; it incentivized increased agricultural production. By 1932, the Board was out of money and glutted with surplus commodities that it could not sell without further depressing agricultural prices.

When it became clear that the rest of the nation was plummeting into the Great Depression to join farmers, the government became much more aggressive about intervening in the economy in general and agriculture in specific. One of the first general measures was the Hawley-Smoot Tariff enacted in 1930 in response to increasing demands from farmers and industry (Cochrane 1979, 294). The tariff has been described as a “beggar thy neighbor” policy because of the extremely high tariffs imposed on imports entering the United States (Lake 1989, 100). The United States hoped to keep foreign products out of its own markets while flooding foreign markets with American products. Unsurprisingly, other nations retaliated with their own high tariffs and the world economy began to retract into regional trading blocs. Rather than aiding the American economy, the Smoot-Hawley Tariff caused the decline of American exports in 1933 to only \$694 million, a level not experienced in over sixty years. President

Roosevelt helped reopen world markets for agriculture and industry beginning in 1934 through the Reciprocal Tariff Agreement Act (Cochrane 1979, 294). Under this act, the President was empowered to lower American tariffs on the products of countries that agreed to lower their own tariffs on American products and a round of “I’ll lower mine if you’ll lower yours” agreements slowly produced the desired result.

In 1933, the government implemented a broad program of interventions in agricultural credit through a selection of acts including the Farm Credit Administration executive order, the Farm Credit Act, the Emergency Farm Mortgage Act, and the Commodity Credit Corporation (CCC) executive order. While there has never been a legal limit on the amount of land that an individual or corporation may own, all of these acts clearly espoused the Jeffersonian idea that the family farm is important for the nation (Nelson 1949, 233). Under all of these and other Depression era acts, there was a maximum amount that any individual could receive in government benefit payments regardless of the amount of land he owned; they were not designed to help agribusinesses or large commercial farming operations.

Recognizing that the Farm Board was essentially moribund, President Roosevelt disbanded it in 1933 and replaced it with the Farm Credit Administration (Cochrane 1979, 120). One of the primary functions of this new entity was the centralization of all farm credit operations that, at that time, were conducted by multifarious government agencies in an uncoordinated manner. The Farm Credit Administration was quite successful in this endeavor and, by 1937, held 40 percent of all farm mortgage loans in America (Hurt 2002, 88). The Farm Credit Act was the latest installment in the attempt at creating a workable system of farm credit begun by the Farm Loan Act in 1916 and

amended by the Intermediate Credit Act in 1923. With this revision, the Farm Credit Administration was authorized to establish a central bank and twelve regional banks to provide loans to farm cooperatives and associations (Cochrane 1979, 290). It also established mechanisms to facilitate farmers' attempts to organize cooperatives capable of borrowing from the intermediate credit banks previously established by the Intermediate Credit Act.

Part of the reason that the Farm Credit Administration held so many farm loans was the Emergency Farm Mortgage Act. Under this act, the government agreed to refinance farm mortgage loans not held by the Federal Land Banks, to reduce the rates on and extend the time limits on Land Banks loans, and pledged \$200 million in loans designed to rescue farmers from failure (Cochrane 1979, 290). Many of the loans not held by the Farm Credit Administration were held instead by the CCC, which loaned money to farmers using their future crops as collateral (Elbert 1988, 249). If the farmer could sell the crops at harvest for more than the amount of the loan, he could do so and pocket the profit. If the sale of his crops would bring in less than the amount of the loan, the farmer could walk away with no penalty for default. The CCC would keep the crops and would absorb the losses when it later sold the crops. By essentially guaranteeing a price floor for participating farmers, the CCC removed much of the uncertainty from agriculture (Hurt 2002, 84). Of future significance, the CCC inherited the surplus commodities purchased by the Farm Board.

Another act passed in 1933 took a different tack in addressing the farm problem. The theory behind the act was that the low farm prices were due largely to a surplus in supply. If surplus could be eliminated, the prices of farm products would naturally rise.

The Agricultural Adjustment Act empowered the USDA to essentially pay farmers not to grow crops (Schlebecker 1975, 238). The act was aimed at specific surplus commodities including wheat, cotton, corn, rice, tobacco, hogs, and dairy products (Hurt 2002, 69). It managed, for the first time, to combine subsidies with mandatory crop reductions. Farmers were effectively paid to rent their land to the Secretary of Agriculture who would then likely choose to let it lie fallow.

Farmers benefited from the act because it authorized the AAA to pay farmers cash advances against the value of their crops (Cochrane 1979, 140). This effort was similar to that of the Farm Board in earlier years, but the hope was that the acreage reductions would prevent the output increases that the Farm Board had unintentionally encouraged. The subsidies had the additional goal of acting as an economic stimulus; the government hoped that, if they put money in farmers' pockets, the farmers would spend it on manufactured goods thereby producing growth in the stagnant economy (Hurt 2002, 70). This goal seems to have been achieved to some extent as demonstrated by increasing farm mechanization.

The Supreme Court found the act to be unconstitutional in 1936, but, by a rather neat exercise in pettifoggery, the government quickly found a way to do what it wanted to anyways. Quickly passed in 1936, the temporary Soil Conservation and Domestic Allotment Act kept most of the provisions of the Agricultural Adjustment Act but instead of paying farmers not to grow anything, the AAA paid them to grow soil-conserving crops like alfalfa rather than soil-depleting crops, which were conveniently defined as being the same crops that were in surplus (Lake 1989, 101). In 1938, Congress finally

passed a new Agricultural Adjustment Act that made the conservation provisions of the 1936 act permanent.

In light of all of these interventions on behalf of agriculture, it seems odd that the government showed a distinct trend of excluding agricultural labor from labor legislation during the Depression. The National Industry Recovery Act in 1933, permitting the government to regulate working standards, authorized codes of fair competition in business, and guaranteed employees union rights, did not include agricultural workers (Gamboa 1990, 23). They were likewise omitted from the National Labor Relations Act of 1935 giving employees the right to unionize, to bargain collectively, and to strike. Even the Social Security Act of 1937, providing benefits to the unemployed, the elderly, widows, and fatherless children and authorized a lump-sum death benefit, did not apply to agricultural laborers (Kemmerer 1956, 587). The Sugar Act of 1937 establishing a minimum wage and prohibiting child labor did apply to agricultural workers, but only to those in sugar production (Rasmussen 1951, 7). No similar legislation applicable to other agricultural sectors was forthcoming. The Fair Labor Standards Act of 1938 continued the pattern of legislative exclusion. This act set the maximum length of the workweek at 44 hours with eight hour days and no more than four hours of overtime. The act guaranteed nonfarm workers a minimum wage rate and an overtime pay rate. It also prohibited most child labor including any work by those 16 and younger and no dangerous work for those 18 and younger.

The benefits conveyed to industrial workers through all of this legislation contributed to the vast disparity in farm versus nonfarm wages and conditions that had emerged by the start of WWII. A farm worker in the Northwest earned \$2.52 per day

whereas an unskilled, entry-level worker building roads earned \$5.92 per day (Gamboa 1990, 11). In a year, the average agricultural worker could expect to earn \$507 while his industrial counterpart could expect to earn \$1205 (Wilcox 1947, 251). In addition, while industrial workers were limited to 44 hours per week including overtime, the average farmer worked 56 hours per week with no overtime (Wilcox 1947, 100). Indeed, farmers rarely even paid themselves or their family members wages for the work they performed (Hurt 2002, 9). During the war, farmers increased their hours to 72 hours per week and some farm women reported that they were working 14 or 15 hours per day (Jellison 1993, 146). With a gap this wide, it would only be natural for agricultural workers to be eager for any opportunity that promised better pay or less hours.

With the start of the war in Europe in 1939, farm prices in America rose dramatically (Cochrane 1979, 143). The government had a serious problem with shifting its focus from combating agricultural surplus to encouraging production level increases. Prior to the war, the government had fought for over ten years to reduce surplus and raise farm prices. In the time from 1932 to 1939, with all of its efforts, it had only managed to increase the farmers' percentage of parity from 63 percent to 79 percent (Wilcox 1947, 121). It had been focused on managing excess rural population, preventing soil depletion, and improving the inadequate rural quality of life. After the war started, however, it had to rapidly shift to worrying about high farm price and possible food and manpower shortages. The lingering "surplus fear" adversely affected government decisions through most of the war. As late as the beginning of 1944, in fact, the AAA had not completely lifted all production controls on agriculture (Wilcox 1947, 45). Policy makers throughout government found it difficult to change from a peacetime to a wartime mindset.

In some ways, however, the New Deal programs helped to prepare the government for wartime regimentation. At the start of the war there were nine major governmental organizations helping farmers and the government was spending 15 percent of the annual budget on agricultural programs (Wilcox 1947, 20). The pattern of massive government intervention established in the Depression made the transition to wartime government intervention easier. By the end of the Great Depression, farmers, who were traditionally independent-minded and objected to government interference, had come to see government assistance as an entitlement. Farmers had learned to put trust in the government's system of payments and incentives and so were more prepared to trust the government's guidance in wartime.

The negative side of having so many government agencies involved in agriculture was that there was a serious lack of centralized coordination and control. As an example, the USDA was interested in keeping agricultural prices high for farmers while the newly formed Office of Price Administration wanted to keep prices low for consumers (Schlebecker 1975, 215). The USDA had the authority to control production of agricultural commodities and market the surplus, but the newly formed War Production Board (WPB) had the authority to allocate resources that determined whether the farmer had the equipment necessary to produce in the first place (Roll 1956, 50). If the WPB decided to make more tanks and fewer tractors, the USDA's ability to increase production of corn would be impeded.

Rising food prices were only one indicator of the onset of an inflationary spiral. As more people were employed in industry because of war demands and were earning higher wages, there was more money available to buy goods. With so many goods going

to the war effort, there were fewer goods available than there was money to buy them. According to the Office of Price Administration, with the rise in wages, the country was headed for a situation in which consumers had \$86 billion dollars to spend but only \$69 billion dollars worth of goods to buy (Wilcox 1947, 125). The result was that from August 1939 to July 1941 there was an 11 percent rise in retail prices, an 18 percent rise in wholesale prices, and a 50 percent rise in the price of basic commodities (Wilcox 1947, 116).

The first attempt at controlling the agricultural component of inflation was the Steagall Amendment in 1941, which aimed to increase the quantity of food available and thereby halt or reverse the rise in prices. This legislation established a price floor for 14 staple commodities at 85 percent of parity and farmers were guaranteed that this level would be maintained until two years after the war (Wilcox 1947, 42). With the vicissitudes of price and income removed from their production computations, farmers were more than willing to increase production and, indeed, cotton and grain production both increased rapidly (Schlebecker 1975, 213).

In January 1942, with inflation still on the rise, the Congress passed the Emergency Price Control Act giving the president authority to set ceilings on prices, to purchase commodities as required, to take measures to assure price stability, and to rein in credit excesses (Hurt 2002, 99). By the time this legislation was signed, retail prices had risen another 9 percent and wholesale prices another 7 percent as compared to July 1941. The Emergency Price Control Act also set the price ceiling for agricultural commodities at 110 percent of parity (Ginsburg 1942, 36). The thought was that, in order for farmers to reliably earn parity prices, the maximum price had to be set above parity.

The imposition of price ceilings in what for farmers was a seller's market was not greeted with happiness. Farmers felt that their interests were being sacrificed to the government's concerns about inflation (Gamboa 1990, 37). There was increasing sentiment that President Roosevelt supported labor but not farmers (Wilcox 1947, 49). Additional price control legislation came from the General Maximum Price Regulation enacted in April 1942 that froze nonfarm prices at March 1942 levels (Wilcox 1947, 126). This regulation was quite effective at retarding the increase of most aspects of the cost of living, but it did not apply to farm prices.

Price control alone, however, was insufficient without concomitant wage control. President Roosevelt, however, felt that stabilizing workers' wages without halting the rise in the prices of their food was unfair and he threatened to take unilateral action if Congress did not lower the ceiling on food prices (Wilcox 1947, 128). In October 1942, the Congress amended the Emergency Price Control Act by dropping the price ceiling to 100 percent of parity (Hurt 2002, 100). To compensate farmers for this loss of profit, however, the price floor was increased from 85 percent of parity as dictated by the Steagall Amendment to 90 percent. With food prices tethered, the President issued an executive order in October 1942 stabilizing wages nationwide (Rasmussen 1951, 33). No farm or nonfarm wage rate could be altered without the approval of the National War Labor Board. This posed a problem for agriculture, however, since agricultural wages were still so much lower than industrial wages. It is true that agricultural wages had been rising over the course of the war and 1945 would find wages at 274 percent of their pre-war level in 1939 (Wilcox 1947, 98). Even with rising wages, however, by the end of the

war, there was still a wide gap in income between industrial workers making \$2300 per year on average and agricultural workers making \$1545 per year (Wilcox 1947, 251).

There was a golden mean that had to be reached with farm wages in which farmers were not paying too much for labor but laborers were being paid enough. If farm wages were too high, farmers would be unable to make a profit at the governmentally restricted prices and would lose their incentive to produce. If agricultural workers were not paid enough and knew that they had no possibility of wages in agriculture getting any better, they would leave agriculture for industry. The solution came in November 1942 in two parts. First, authority for farm wages shifted to the USDA with the Secretary authorized to allow agricultural wages to rise to \$2400 per year (Gamboa 1990, 35). Second, the government authorized the creation of local committees to establish the prevailing wage for each crop in a given area (Galarza 1964, 42). In some cases, wages were so high that the committees directed that wages be reduced. Without those reductions, farmers, operating at a loss given governmental price control, refused to continue production.

A Short Overview of the Great Depression

The size of the farm population peaked in 1916 with 32.5 million farmers constituting 32 percent of the total national population (Hurt 2002, 46). A number of factors including the end of easily available land, the destruction of formerly good land through erosion and depletion, smaller export markets, technological improvements, the retirement of land through AAA payments, and droughts and locusts in the 1930s caused the farm population to fall to 30.5 million, 25 percent of the total, by 1930 (Rasmussen 1951, 6). The Great Depression reversed this trend and 1935 found the farm population

standing at 32.1 million (Hurt 2002, 46). Not only were farmers who would otherwise have left the rural areas bottled up there by the lack of job opportunities in more urban areas, but many of those who had left previously seeking opportunities in the cities were forced to retreat back to their families (Cochrane 1979, 123). At least in the rural areas food was more readily available and family members could be reasonably assured of finding a place to live (Lake 1989, 100).

Other than the presence of a roof over their head, however, they were likely to find a miserable quality of life. In North Dakota in 1940, one third of the residents of the state were on the relief rolls (Jellison 1993, 90). Electrification of farms in North Dakota decreased by 36.5 percent as farmers found they were unable to pay their electric bills. Only 6 percent of North Dakota farms had running water and only 10 percent had indoor privies. In addition to prior rural residents, some urban dwellers moved to rural areas believing that they would be able to find manual labor jobs in agriculture. As nonfarm income dropped from \$79 billion in 1929 to only \$39 billion in 1933, large numbers of people were willing to work for desperately low wages (Wilcox 1947, 9). With 12 million unemployed in the country, any job was better than nothing (Kemmerer 1956, 584). Many of those displaced by the Depression, like the “Okies,” joined the mobile migrant population circulating the country. These conditions resulted in a condition of both high unemployment and high underemployment in rural areas (Cochrane 1979, 124). Unfortunate as these conditions were, they proved to be the perfect precursor to the manpower needs of WWII. This was a population ripe for diversion into the military and industry.

It was also a population that had come to view government intervention as an entitlement rather than something to be avoided. The government view of intervention had shifted as well. In 1887, when presented with a bill authorizing the distribution of seeds at government expense to drought victims, President Cleveland vetoed it with the justification that it was the task of the people to support the government but not the task of the government to support the people (Kemmerer 1956, 582). By the end of the Depression, the government had embraced the notion that its intervention was both necessary and obligatory (Hurt 2002, 95). Farmers received more direct government during the Depression help than any other economic sector of the population.

Early on in the Depression good weather, combined with improved technology, led to overproduction with the result that there was no aggregate shortage of food (Elias 2009, 7). What existed was a transportation problem. Food prices were so low that farmers lost more on transportation costs than they could hope to make on the sale of their goods. With a 40 percent drop in prices between 1929 and 1934, it simply was not worth it to farmers to transport their food to market (Elias 2009, 130). Of course, even with such low prices, city people could not afford to buy the food once it got there. Farmers resorted to destroying their crops and cutting their losses even as people in cities were starving. The government stepped in to solve the problem by establishing the Federal Surplus Redistribution Corporation in 1933, which was charged with buying surplus crops from farmers and distributing them gratis to needy families.

By the time the government took this step, Americans food consumption per capita in pounds had fallen by six percent (Schlebecker 1975, 238). Since the first things that were likely to be removed from the diet were the most calorically concentrated like

meat and dairy this represented a more serious decrease than the number might suggest at first glance. Meat became very scarce and the USDA attempted to convince Americans to add soybeans to their diet as a protein substitute (Elias 2009, 22). Modern attitudes towards tofu and soy milk should quickly make clear how successful that attempt was. Americans who lived through the Great Depression never looked at food the same way again. This fear of food deprivation likely had a positive side effect during WWII as people realized that nothing they were experiencing on the homefront was as bad as it had been during the Depression. Starvation conditions during the Great Depression had an unforeseen negative consequence on wartime mobilization as well. Doctors giving physical examinations to prospective volunteers and draftees found a high incidence of malnutrition-related problems (Elias 2009, 136). In 1941 alone, 133,000 men were rejected by the military for conditions related to both Depression shortages and the generally poor state of public understanding of nutrition.

Interwar Planning For WWII and Why It Was Ineffective

Having experienced a prior world war roughly twenty years before, it is tempting to argue that the government should have been better prepared for WWII and should not have needed to resort to this patchwork of measures the second time around. The truth, however, is that governmental planning during the interwar period was limited and largely ignored when it came time to execute. It is a truism of military planning that no plan survives contact with the enemy, but the American government's plan did not even survive long enough to hear the sound of the guns. Entering WWI in 1917, despite having had several years to consider the European war from a distance, the War Department had virtually no useful plans for organizing and equipping a ground force (Nanney 1982, 2).

Mobilization was not authorized in any significant manner until after America declared war. American planners in the interwar period assumed that mobilization for future wars would likewise be delayed until after formal declaration of hostilities.

WWI revealed numerous planning and execution shortfalls but did not last long enough for most of them to be effectively addressed (Lauterbach 1942, 512). Interwar planners found themselves swimming in a sea of problems with no proven solutions and were largely unable to tackle most of them usefully. Among the problems revealed but not solved during WWI was the issue of how to effectively and equitably fix prices and wages. On the positive side, planners clearly saw that there would be a need for some level of governmental control of the economy.

From the perspective of the twenty-first century it may seem odd, but in 1920, the National Defense Act gave sole responsibility for wartime planning to the War Department and, more specifically, to the Assistant Secretary of War (Fairchild and Grossman 1959, 3). This included not only things like military strategy and materiel procurement but all aspects of industrial mobilization. For several years, the Planning Branch in the Office of the Assistant Secretary of War was the only government agency planning for industrial mobilization. Its efforts were inhibited by the scarcity of funds for planning and by the scarcity of personnel to do the planning (Gough 1982, 81).

The personnel scarcity was due, in part, to the so called “Manchu Law” of 1912 that restricted how long an Army officer could remain in a staff position away from troops and, in part, to the small size of the active force (Nanney 1982, 4). While Congress authorized a maximum strength of 280,000 men for the Army in the 1920 National Defense Act, during the interwar period it was normally manned at only 40 percent

(Blum and Smyth 1970, 386). Congress believed that America was sufficiently geographically isolated that the Navy would be able to protect it from any threat long enough to allow the Army to increase its force size accordingly. Additional factors inhibiting planning were the dual inheritances from WWI of pacifism and disillusionment, which prevented most people from wanting to seriously consider the possibility of another war and the fact that planners were very inexperienced and had few, if any, precedents to draw upon (Gough 1982, 81). Although its efforts were augmented in time by bodies like the Army Industrial College and the Joint Army & Navy Munitions Board, the Office of the Assistant Secretary of War did most of the heavy lifting until 1940 (Fairchild and Grossman 1959, 4).

Sentiments outside the War Department after WWI would have significant influence on the Departments plans. Veterans of WWI believed that those who had not served had profited unfairly because of it (Blum and Smyth 1970, 381). The American Legion, representing a large and influential constituency advocated the passage of national service legislation. The Legion thought that all capital and labor should be conscripted in time of war and felt that the failure to make this happen in WWI had unnecessarily extended the war. It was unable to get this legislation passed by Congress despite its efforts during the 1920s. On the other side of the issue was the American Federation of Labor, an increasingly powerful organization, flatly opposed to the conscription of labor.

War Department planners recognized that each of these groups represented important constituencies and had political influence and, therefore, wanted to find a way to please them both (Blum and Smyth 1970, 383). This led to a succession of interwar

plans that courted first one and then the other side and managed to please neither for long. What War Department planners failed to realize was that, as WWI receded in the national memory and Americans became absorbed with the economic difficulties of the Depression, the influence of the American Legion waned and the influence of labor organizations waxed. With the Democrats in office executing New Deal programs, the government had an increasing affinity for labor while the military remained more conservative (Blum and Smyth 1970, 395). Being concerned more with what industry was producing than with how it was being produced, military planners tended to believe that the owners of industrial production should have primacy in guiding industrial mobilization rather than the workers who were seen as simply one of many factors of production. The hierarchical nature of military organization and culture likely influenced planners' attitudes towards the captains of industry and the masses who labored for them.

Early plans in 1922 and 1924 failed to effectively tackle issues of manpower mobilization (Fairchild and Grossman 1959, 5). At this point, the War Department agreed with the American Legion's desire to have Congress pass legislation facilitating wartime mobilization. By the end of the decade, however, it had become clear to both the Legion and the War Department that this would not happen, so military planners began appending proposed legislation to their plans as a means of keeping them handy for emergencies (Gough 1982, 76).

The 1928 plan finally roused the interest of labor organizations in industrial mobilization planning. The plan appeared to suggest the wartime coercion of civilian workers and employers. Despite repeated denials by the War Department, there was a widespread belief held by new commentators of the time, the American Legion, and the

American Federation of Labor that the military intended to draft labor (Fairchild and Grossman 1959, 14). The plan was criticized by pacifists and Marxists as leading the nation towards the ills of fascism. Of special significance is the fact that these and later plans all contained the critical and ultimately faulty assumption that no conflict would ever require a military large enough to seriously impinge on agricultural or industrial production (Fairchild and Grossman 1959, 7). Indeed, none of its plans, even as late as 1939, ever envisioned an Army larger than four million men (Gough 1982, 75).

A witch hunt, directed against big business and sparked by the Depression, caused the pendulum of the War Department's obsequiousness to swing towards labor. In 1930, as the economy worsened, there was a growing belief that big business had engaged in profiteering during WWI and that labor had paid the price for industrialists' illicit gain (Gough 1982, 77). Congress created the War Policies Commission to study whether private property ought to be expropriated during wartime. The Commission was not permitted, however, to investigate whether labor ought to be similarly managed.

The increasing mistrust of big business led to increased influence for organized labor. It was in this climate that the War Department produced its 1931 plan. The American Federation of Labor believed that the War Department should consult it on industrial mobilization as had happened during WWI and the War Department bowed so far as to allow the American Federation of Labor to approve the 1931 plan (Gough 1982, 78). Army G-1 criticized the planners for giving labor too much influence and complained that focusing on the good of labor organizations rather than the good of the war effort would cause preparedness to suffer. Despite this opposition, the approved plan

gave organized labor representation at all levels in the proposed wartime organizations (Blum and Smyth 1970, 394).

By 1933, however, the pendulum had swung away from labor in response to continued internal criticism about the excessive role accorded to labor (Nanney 1982, 6). The new plan weakened the role of organized labor, which was not even consulted during the preparation of the plan. Labor was understandably agitated. The formation, from 1934 to 1936, of the Special Senate Committee Investigating the Munitions Industry, otherwise known as the Nye Committee, added fuel to the fire then facing the War Department (Blum and Smyth 1970, 398). In reviewing the 1933 plan, the Nye Committee predicted that it would lead to the wartime emasculation of organized labor and the rise of a military dictatorship. Predictably, the War Department responded by swinging back towards organized labor in its 1937 plan.

Since agricultural manpower would become such a national problem, it seems fair to ask what the USDA was doing to prepare for a possible war. The disappointing answer is largely nothing. In 1937, the Department of Labor and the USDA established a temporary committee, the Committee on Agricultural Labor, to examine the state of agricultural labor in light of what appeared to be a growing trend towards unionization (Rasmussen 1951, 11). The Committee recommended that the USDA establish a farm labor division but this recommendation was never acted upon.

The Committee lay dormant until May of 1939 when the Secretary of Agriculture revived it to look at general agricultural labor problems. It was not until October 1939 that the USDA raised the issue of a probable future shortage of farm labor (Gamboa 1990, 22). It should be remembered that, at this point, agriculture's chief concern was

surplus food production, so there was no widespread agreement about the existence or possible development of a farm labor shortage (Rasmussen 1951, 13). There were reports of localized shortages and localized surpluses of farm labor, but some USDA officials thought that labor was fluid and could simply be redistributed as needed (Rasmussen 1951, 22).

The USDA's assessment in 1939 was that agriculture could give up at most 1.5 to 1.7 million workers without lowering agricultural output. Agriculture would end up giving up many more workers than this, but the USDA's inability to accurately project manpower requirements are not particularly surprising. Until May 1941, there was no concerted effort to collect statistics on farm labor needs (Gamboa 1990, 25). Even then, the ability to collect was limited and the labor needs were so volatile from day to day that the data collected was unreliable. With such poor data available to decision makers, it is equally unsurprising that even high-level decision makers like the president and the head of the WMC believed that voluntary measures could fix the problem (Gamboa 1990, 32). It would not be until early 1943 that the WMC would seriously start developing mitigations for the farm labor shortage.

The Army started trying to mitigate its shortages much earlier. In September 1939 the Army stood at 174,000 enlisted men and 13,800 officers, only 62 percent of its authorized strength (Nanney 1982, 12). While General Marshall wanted to begin slowly increasing the size of the force, President Roosevelt was more concerned with the materiel needs of the force. The real challenge in the summer of 1939 was what to do about the War Department's newly released mobilization plan. The Assistant Secretary of War was in favor of beginning to implement the plan's recommendation that a group of

“super-agencies” be created to control industrial mobilization, but President Roosevelt was not as taken with the idea (Gough 1982, 82). He appointed the War Resources Board in August 1939 to review the plan and present him with a recommendation.

The War Department had been tardy in its consultation with the American Federation of Labor on the 1939 plan and had taken the rather suspicious seeming precaution of classifying the majority of the appendices including those dealing with manpower mobilization (Blum and Smyth 1970, 402). The AFL was not pleased with the plan despite the fact that it authorized occupational deferments, clearly stated that the military should not be in control of civilian labor, and gave the AFL, CIO, and Railway Brothers representation on the proposed Labor Administrator’s advisory council (Fairchild and Grossman 1959, 16). Labor and New Dealers lobbied against the plan on the grounds that it appeared to allow the potential use of “work or fight” policies, it envisioned the suspension of the right to strike and some labor legislation, and advocated the indirect government coercion of labor. Organized labor was concerned that the plan would leave to military and/or big business domination. They also criticized the membership of the President’s War Resources Board because it included mostly businessmen and not a single representative from organized labor (Gough 1982, 82).

When the Board sent its report to the President in November it recommended that he follow the plan and create the super-agencies proposed. It is unclear why, but President Roosevelt kept the Board’s recommendation secret, quickly deactivated it and publicly rejected the 1939 plan. It may be that he did not want to delegate his authority to “super-agencies” preferring to keep control of the war effort in the White House (Nanney 1982, 13). It may be that he gave in to the critical voices of Labor and the New Dealers. It

may be that he saw acceptance of the Board's recommendations at that time as admission that war was unavoidable. It may be simply the nature of democratic governance that often forces leaders to wait to act until they have sufficient support from interested parties (Hart 1943, 27).

Whatever the reason the rejection, one of the side effects of the president's decision was that the country would never enjoy truly centralized manpower control (Gough 1982, 84). Instead, there would be a continual struggle between the armed services, the Selective Service System, the Department of Labor, and the WPB among others (Haber 1952, 394). There were simply too many competing demands for labor and no one below the President had authority over all of the requesting parties. Even the eventual creation of the WMC never solved the problem entirely (Pate 1943, 160).

The notion that, in late 1939, the President was not willing to publicly take active steps to prepare for war is in keeping with public opinion of the time. Until the attack on Pearl Harbor, the majority of the American public simply did not support military intervention. In 1939 the majority of Americans thought that Britain and France would win the war but over half of them also thought that American military intervention was unavoidable (Cantril 1940, 387). At that time, almost half of all Americans thought that the United States should help if the Allies looked to be losing but only one third thought one year of compulsory peacetime service was necessary for preparedness.

By August 1940, public opinion had shifted somewhat, but was still not in favor of military intervention (Cantril 1940, 394). A great majority of Americans believed that Britain should keep fighting and saw Germany as dangerous to American interests. Despite the fact that 76 percent of the population believed that America should do

something to help Britain, there was no agreement on what that “something” should be except that it ought to be painless, it ought not to increase the chances of American military intervention, and it ought to directly benefit the United States. While a majority of Americans thought it was more important to keep out of the war than it was to help Britain, 75 percent of the nation was willing to pay more taxes to improve national defense.

The population was split into three general groups: one-quarter “isolationists,” one-third “interventionists,” and two-fifths “sympathizers.” The isolationists, mostly women, the poor, the elderly, and military age males, saw the war as a European problem in which America should not be involving itself. The interventionists, mostly affluent men over the age of 30, thought Britain could not win without American military aid and thought winning against the Germans was more important than keeping America out of the war (Cantril 1940, 400). The interventionists thought it likely that Germany would turn its sights on America after it defeated Britain (Cantril 1940, 402). The sympathizers thought America should not fight and that Britain could win with additional nonmilitary American aid (Cantril 1940, 403). President Roosevelt was faced with the dilemma of how to prepare for the possibility of conflict without antagonizing too greatly the pacifists and isolationists.

By nature, public opinion is reactive rather than anticipatory and does not long stay aroused unless the people feel directly involved (Cantril 1940, 405). It would take Pearl Harbor to arouse public opinion and give it something clear to react to. Until Pearl Harbor, the President limited preparations to things like the Lend-Lease program and determining how to handle the loss of imports caused by the war (Wilcox 1947, 37). He

could not risk openly preparing for a war that the public did not support. General Marshall was in much the same position. While he believed that the military needed to expand, he could not risk the appearance that the military was dragging an unwilling nation into war (Gough 1982, 85). The impetus for wartime mobilization had to come from civilian leaders in government. If he or the President aroused too much negative feeling in the populace or government, it would likely produce such dissention that it would hobble subsequent war efforts. The public debate over what to do so absorbed Congress that it could not manage to look past whether to repeal the neutrality laws to questions of what to do once the country was drawn into the conflict (Fairchild and Grossman 1959, 17). Despite two decades of work, the War Department's plans were largely ignored as war came closer to home.

Farmers Try and Fail to Effectively Organize

One of the biggest problems facing agriculture was its historic inability to effectively organize its constituent members. Farmers never wielded power in proportion to their numbers in the population (Hurt 2002, 16). Their limited capacity for unified action was a result of geographic dispersion, regional economic differences, the general independent-mindedness of farmers, and the atomistic nature of farming. Without the ability to control factors affecting supply like the weather, soil fertility, insects, diseases, and the availability of labor and without the ability to accurately estimate demand for their products, they were unable to regulate the prices of their goods. Even worse was the fact that, as they became increasingly dependent on external sources for seeds, fertilizer, and the like, they had to buy all their inputs at retail prices but were forced to sell their outputs at wholesale prices (Hurt 2002, 47).

Farmers attempted several methods of addressing their problems but none of them proved successful. Farmers tried to address their problems through third party politics via the Populist Party as previously discussed, but this proved to be futile. They tried to address their problems through cooperative marketing a la Aaron Sapiro, but this proved equally futile (Cochrane 1979, 292). Aaron Sapiro was a firebrand lawyer who tried to organize farmers to take advantage of their exemption from the 1922 Capper-Volstead Cooperative Marketing Act's anti-trust prohibitions. His attempts to organize nationwide cooperatives that would control supply at the national level through binding contracts with individual farmers faltered on the rocks of farmers' unwillingness to sign on the dotted line when the time came. He was never able to control a large enough share of the supply of any crop to prove to farmers that they could become collective masters of their own fate. Agriculture's revolutionary zeal became less socially acceptable after WWI with President Harding's request for a "return to normalcy" (Jellison 1993, 25). Its fight against the middlemen in big business became equally pointless as government and business made nice with each other during the 1920s. What was left to farmers was influencing their congressmen to enact legislation favorable to farmers.

To effectively lobby Congress, farmers needed organizations that could act as their political action committees. The most common early organizations were livestock shipping associations, cooperative grain elevators, and cooperative cotton warehouses. By 1900, there were 2000 farmers' cooperatives in existence and this grew, by 1920, to 4000 grain cooperatives and 1000 stockmen's associations. Conveniently for the founders of farming organizations, the legitimacy gained by organized labor during the interwar period, made cooperative action more legitimated in general (Kiser 1973, 111). In 1920,

the two most powerful farm organizations were the American Society of Equity and the Farmer's Union (Hurt 2002, 21). At this time, the Patrons of Husbandry, more commonly known as the Grange, reemerged with a platform that included improved roads, free rural delivery of parcels, agricultural education and extension services, national income tax to lessen the burden of property tax, and the direct election of senators to eliminate railroad influence from the selection process in statehouses. The most radical organization of the time was the Non-Partisan League advocating farm reform through moderate socialism.

In part reacting to the growing influence of the Non-Partisan League, large-scale farmers and members of the USDA worked toward the 1919 creation of the American Farm Bureau Federation (Jellison 1993, 26). Developed from a group of state-level farm bureaus, the Farm Bureau quickly became the largest of the farm organizations. The primary focus was on lobbying Congress on behalf of farmers especially those in the Midwest where it derived the majority of its 200,000 members by 1933. The Farm Bureau was seen as an agent of big business because its members were likely to be large-scale, landowning farmers and it promoted farm policies most beneficial to large-scale farmers (Hurt 2002, 53). It opposed labor militancy and unionization, was worried that New Deal legislation was promoting socialism in America, and resolved to help the government drive Bolshevism from the country. It saw the Farm Security Administration, created by the New Deal, as socialist, and it actively worked to bring about its demise eventually managing to influence Congress to cut the FSA's appropriations by 30 percent (Gamboa 1990, 33). Being an essentially conservative organization, it is unsurprising that it was also a gendered organization and supported the idea of separate functions for men and women (Neth 1988, 344). The sexual division of labor had men in the business world

and women in the social world. It was not until 1959 that the Farm Bureau had its first woman on its board of directors.

The National Farmers' Union, founded in 1902, was, in many ways, the antithesis of the Farm Bureau. Some of its members were also members of the Farmer's Holiday Association, which advocated violent resistance to the government and believed that farmers should strike, should stop production in order to force prices to rise (Jellison 1993, 78). The Farmers' Union itself was unconcerned by the New Deal's potential for socialism and it spent its efforts focused on issues of concern to small-scale farmers. Like the Farm Bureau, its membership came largely from the Midwest although it was particularly appealing to small-scale wheat farmers. While it did not advocate violence against the government, it did believe that farmers should reduce production to gain control of the market (Hurt 2002, 54). Also like the Farm Bureau, the Farmers' Union lobbied Congress for its help increasing farm profits. Despite its tolerance for socialism, it opposed any attempts by the government to restrict farmers' freedom of action. More liberal by nature, the Farmers' Union integrated men and women with a one person, one vote mentality (Neth 1988, 348). This is not to say that the organization was not unofficially dominated by men, but it did clearly recognize that women's work on farms was critical to success and worked to promote women's education.

Effects of Technological Improvements on Agriculture

There is a direct relationship between technological progress and manpower requirements. Assuming that a farmer can afford to invest in it, the more technology advances, the less manpower is required in agriculture. Technology for my purposes is

not limited solely to things like trains and tractors, but also includes things like roads and education.

Throughout American history, there has been a constant national effort to improve the available modes of transportation from roads and bridges to canals and waterways to railroads. In the twentieth century, the country came full circle back to its obsession with roads as the interstate highway system was largely built during the interwar period with excess Depression era labor (Cochrane 1979, 224). In the late nineteenth and early twentieth century, it was really the railroads that were critical for farmers because they provided farmers with economic options (Cochrane 1979, 233). They facilitated increasing agricultural commercialization by enabling movement of large quantities of goods to remote markets.

Without question, railroads were the cheapest, fastest, and most reliable way for farmers to move bulk commodities. In 1840, there were only 2812 miles of track in the United States but, by 1892, there were over 175,000 miles (Emerick 1896, 460). This dramatic increase was accompanied by a number of phenomena. Immigration increased from less than one million between 1783 and 1840 to over 15.5 million between 1840 and 1892. While railroads were not the only or necessarily the primary factor in this increase, they certainly made dispersion of this influx across the country easier. Immigrants who were not interested in a lengthy journey across country in a wagon would have been far more attracted to a comparatively rapid and comfortable journey by train.

As railroads helped to move the frontier further west, the values of land across the country greatly altered with land values in the west increasing and land values in the east decreasing to the point that some eastern farms were abandoned as unprofitable (Emerick

1896, 463). The increase in total accessible land made the value of already settled land decline and the increased accessibility of western land with virgin soil made depleted eastern land less valuable. Once most land settlement was finished, the railroads helped to equalize the location value of land since it made proximity to markets less important.

The negative side of railroads for the farmer was the fact that, for most of their history, they were essentially unregulated. Nationally oligopolistic and regionally monopolistic, railroads held all of the cards and could force farmers to pay through the nose to get their goods to market (Lake 1989, 87). Farmers knew they needed the railroads but they resented what they saw as the unreasonably high percentage of their profits that went to transportation. It was a decades-long dream of farmers to have the government actively regulate railroads operations and, of course, to do so in a way favorable to agriculture. It would not be until around 1900, however, that the government would begin to significantly interfere with railroad companies.

Getting their products to market was all very well, but farmers needed to know how to produce them in the first place and how to gain the largest profit by doing so in the most efficient manner. Although rural education in one-room schoolhouses may not have been as good as urban education, literacy was still an important part of the national culture and the government made it an integral part of rural development. As new lands were settled, the government mandated that section 16 in every new township be dedicated to the support of public education (Cochrane 1979, 236). The intent was that literate farmers would be able to participate in political processes and would be prevented from becoming a new peasant class by virtue of their ability to make educated business decisions.

This national culture of education was further represented in 1862 when President Lincoln established the Land Grant Colleges and directed them to focus on agriculture and the mechanical arts (Cochrane 1979, 242). The growth of these institutions was somewhat uneven through the 1870s and 1880s but, by 1900, several of them had multiple agricultural departments accompanied by experiment stations and demonstration farms. The experiment stations and demonstration farms were particularly important because farmers were generally uninterested in theories (Rasmussen 1951, 166). They only wanted information that had proven practical value and these sites gave farmers a place to observe success first-hand. By 1913, Land Grant Colleges in 38 states had extension departments attempting to provide education to farmers throughout the state. The body of agricultural research being produced by the Land Grant colleges was augmented by the research being done within the USDA. The USDA was well-funded and staffed by some of the most highly qualified agricultural scientists in the nation.

Between these two sources, there was a great deal of information that needed to get to the farmers in the fields. The 1914, Smith-Lever Agricultural Extension Act was an attempt to better bridge that gap and it mandated that all states place extension agents in every county (Hurt 2002, 32). By 1917, there were 1400 extension agents across America working to disseminate the latest research coming out of the Land Grant Colleges and the USDA to farmers and, in time, these agents would become the farmers' primary source of information on technological improvements (Jellison 1993, 24). State and federal funding on agricultural research and extension work rose to \$36 million in 1925, to \$53 million in 1930 and \$72 million by the start of WWII (Cochrane 1979, 247). Even during the depths

of the Depression, the government was spending \$43 million dollars per year to help educate farmers.

While farmers were often eager students, they were not necessarily good teachers. Most farmers who employed agricultural laborers did not have enough laborers to make retaining the services of an overseer economical and had, therefore, to conduct any training the laborers required on their own (Rasmussen 1951, 164). Aside from being a tremendous draw on farmers' limited time and the fact that teaching is not nearly as simple a skill as many people assume, farmers often had little incentive to even attempt to do it well. The transitory nature of agricultural labor population meant that a farmer who spent time thoroughly training a worker might soon find his now-skilled laborer working somewhere else. Additionally, the seasonal nature of farming meant that the laborer was likely not going to be doing the same job for long enough to become truly proficient anyways.

This situation was particularly unfortunate in light of the research that agricultural researchers tried to do on work simplification. The systematic study of how to improve repetitive work processes had been used in American industry and even in European agriculture during the interwar period, but it was not widely applied to American agriculture until 1943 (Rasmussen 1951, 156). Understandably, the excess labor available during the Depression decreased interest in any study attempting to improve efficiency and reduce man-hours. The work was complicated somewhat by the fact that farmers operating in different parts of the country, growing different products needed widely different processes improved. There were never enough researchers to tackle all of the variations. Without farmers willing to both learn these improved techniques and

interested in passing them on to their laborers, however, the work the USDA did do on work simplification largely went unused. Even more unfortunate was the fact that, as manpower resources were drying up during the war and farmers were likely becoming more interested in ways to reduce their man-hour requirements, so were the funds for research of this type.

An area where agricultural research paid greater dividends for farmers was plant breeding. In fact, crop improvements have been credited with 14 percent of the increase in farm production between 1935 and 1944 (Wilcox 1947, 288). The rediscovery of Mendel's laws of heredity in 1900 coupled with the botanical work of Hugo De Vries and the mutation and gene therapy work done by Thomas Morgan laid the foundations of scientific plant breeding (Cochrane 1979, 104). Improved understanding of plants led to increased understanding of plant diseases and improved means of controlling those diseases. The development of hybrid corn in the 1920s was a truly revolutionary event in agricultural history both because it dramatically increased yields from 40 to 120 bushels per acre and because it made farmers forever dependent on seed companies (Hurt 2002, 51). Hybrid varieties do not breed true in subsequent generations so the vigor of the original hybrid is lost when farmers attempt to plant the hybrid's seeds. No longer could farmers simply hold back a portion of each year's crop to use as seed corn for the following year rather they had to pay the seed company every year for their seed corn. While output increases in other crops were not nearly as dramatic, most crops benefited from scientific plant breeding and breeders managed to produce varieties that were more drought tolerant and disease resistant (Cochrane 1979, 127).

Animal husbandry benefited from the same scientific breeding research as well as improvements in nutrition, medicine and other fields. As with plants, greater understanding of animals led to greater understanding and control of their diseases and to improved breeds that produced more milk and meat (Cochrane 1979, 109). Improvements in nutrition science led to better feeding techniques and supported improvements in milk and meat production. As important as nutritionists had realized milk was for health and for the prevention of deficiency diseases, improved animal husbandry was important for more than simply food (Mumford and Wilcox 1919, 117). Many industries used animal based products and soldiers going into WWII needed wool for their uniforms and leather for their boots. In addition to improvements in the animals and their feeding, there were improvements in the machinery that chopped their silage, cleaned their stalls, and extracted their milk (Schlebecker 1975, 245). All of these factors combined to decrease the man-hours required for one animal. That said, however, the vast increase in the number of animals being kept increased the man-hours required to care for them from 3.8 million man-hours per year in 1909-1913 to 5.2 million in 1932-1936.

As the number of food animals in America climbed, however, the number of draft animals plummeted. Increasing mechanization meant the removal of 23 million draft animals from American agriculture between 1910 and 1940. The decline in draft animals would eventually free up most of the 79 million acres of land used, in 1915, for growing feed for draft animals (Olmstead and Rhode 2001, 692). By the end of WWII, the decline was also saving 760 million man-hours per year - roughly 380,000 workers or 4.4 percent of the national population (Schlebecker 1975, 245). As widespread mechanization began

to look inevitable, breeders of draft animals stopped attempting to improve their stock and instead began to curtail reproduction.

The Horse Association of America opposed the shift away from draft animals. It argued that farmers were losing their self-sufficiency and would increase their chances of bankruptcy (Olmstead and Rhode 2001, 667). History has shown that the Association was at least partially correct. Shifting from draft animals to machines certainly made some aspects of farming easier for farmers and dramatically increased their output, but it also made farmers more dependent on industry by virtue of their new need for fertilizer, fuel, tires, repair parts, and so on. Farmers could no longer reproduce and fuel their own power source. In addition to replacing their prime power source, farmers had to replace all of their implements as well. The plow that a horse traveling one and a half to two and a half miles per hour could pull would not work behind a tractor traveling at three to five miles per hour (Schlebecker 1975, 249). The inverse was also true, of course. The implement that a tractor could pull with ease would never work hooked up behind a mule team. The shift from actual horse power to mechanical horsepower was irreversible.

Even assuming they had wanted to during the greatest shortages of WWII when everything from labor to tires was scarce, farmers could not have reverted to using horses instead of machines. There were not enough horses available to do the work following the decline in their numbers and the farming implements were not interchangeable. Given that the demise of draft animals has been credited with seven percent of the increased farm production between 1935 and 1944, it was ultimately a positive move for the war effort (Wilcox 1947, 288).

The process of mechanization actually started long before the turn of the century but it picked up speed after the turn of the nineteenth century with the production of the first successful gasoline-engined tractors. From the beginning, American agriculture was looking for a better mousetrap with the first American patent for a cast-iron plow issued in 1797. By 1837, John Deere had built his first wrought iron and steel plow and in less than twenty years his company was turning out 10,000 plows per year (Cochrane 1979, 190). The mid-1850s saw improvements in everything from harrows to mowers to grain drills as increases in efficiency in one place spurred a desire for improved efficiency in another. The years from 1865 to 1900 saw much of this technology fully adopted in agricultural operations (Cochrane 1979, 196).

During the 1880s and 1890s, development of gasoline-engined tractors to replace the expensive and dangerous steam-powered behemoths then in use was already underway. Just after the turn of the century in 1901 the first successful gasoline-engined tractor was built and by 1909 there were 30 different companies producing a total of 2,000 tractors per year (Cochrane 1979, 108). Early tractors were still quite large and cumbersome to maneuver and difficult to produce so the development and release of small, agile, mass-produced tractors like Henry Ford's 1917 Fordson was an enormous improvement. The Fordson was lightweight, low-cost and could pull two plowshares at once (Hurt 2002, 10). By 1920, there were 246,000 tractors in use owned by 3.6 percent of the nation's farmers. Where early tractors were only cost effective for large-scale farmers, with the Fordson and, even more so, with International Harvester's general purpose Farmall tractor, some smaller-scale farmers could afford to mechanize and, by 1930, there were 920,000 tractors in use (Hurt 2002, 49). Coming in 1924, the Farmall

was the culmination of a number of improvements in tractor design. It was maneuverable enough to cultivate growing row crops, it had pneumatic tires, and, most importantly, it had the first power takeoff, which allowed it to power towed implements and to power whatever else the farmer needed (Olmstead and Rhode 2001, 669).

Although almost a million tractors sounds like a lot, it must be remembered that there were around six million farms in the country. The Agricultural Depression had seriously retarded widespread adoption of tractors during the 1920s and the Great Depression pushed numbers sold even lower from 137,000 in 1929 to only 25,000 in 1932 (Clarke 1991, 118). As the rate of farm foreclosures tripled between 1929 and 1933 and remaining farmers struggled to find the cash to service the debt from their WWI capital investments, it is unsurprising that surviving farmers would be unwilling to expose themselves to greater financial risk by either assuming more debt or using what cash they had buying new tractors (Clarke 1991, 115). With family labor perceived as being essentially free, farmers preferred to continue with supposedly cheaper manual methods. After 1933, however, the CCC's price guarantees reduced farmers' fears of bankruptcy and the Farm Credit Administration's provided them safe enough loans that they were willing to return to the dealerships to buy (Clarke 1991, 119). From 1936 to 1939, despite the continuing depression, farmers bought 174,000 tractors per year so that, by 1940, 1.6 million tractors were spread across 24 percent of the nation's farms (Cochrane 1979, 126).

Metal shortages in WWII and the need to divert manufacturing capacity to war materiel meant that production of farming equipment during the war was limited. In 1942, the WPB opted to restrict the steel for farm machinery in favor of military

equipment and only authorized sufficient steel to produce 83 percent of the amount produced in 1940. Quotas for farming in 1943 were originally set at only 23 percent of the 1940 amount, but, after complaints from the USDA, the WPB raised the quota to 40 percent. In order to be allowed to purchase one of the few tractors being produced, farmers had to get a certificate from their County War Board (Wilcox 1947, 55). Some counties were so short that they pooled the machinery available to get the greatest use out of it (DeHart and Smith 1947, 72). By the end of the war, despite the restrictions on tractor production, there were 2.4 million tractors spread across 39 percent of the nation's farms. Part of the large percentage increase was due to the drop in the number of farms over the same period by roughly 400,000 (Schlebecker 1975, 251).

Tractors were not the only equipment that was improving and growing in numbers. Combines rose from 4000 in 1920 to 90,000 in 1937. Corn pickers and shellers rose from 10,000 in 1920 to 168,000 in 1945. The number of farms with milking machines rose from 175,000 in 1940 to 365,000 in 1945 (Schlebecker 1975, 252). All of these increases in mechanization produced reductions in the requirement for agricultural labor. Mechanization is estimated to have saved 940 million man-hours per year in 1944 as compared to the period from 1917 to 1921. This was equivalent to 470,000 workers or 3.6 percent of the national agricultural labor force (Olmstead and Rhode 2001, 665). The reduction in manpower requirements also limited the farmers' exposure to the vicissitudes of the labor market. Remaining competitive commercially, however, virtually required that farmers adopt mechanization. With mechanization, farmers could work larger parcels of land and, indeed, the more acres of land it was used on, the lower the

proportional cost of the equipment became. This meant that small farms were increasingly squeezed out of the market and out of existence.

Another side effect of mechanization was that farm women were freed up to handle other tasks. Whether they lived with the family or simply worked for them during the day, hired laborers expected that the farm women would see to their feeding, clothing and possibly housing. Modern estimates suggest that the value of these services was equivalent to one third of the cash pay that hired laborers earned. In one county in Texas, the hired labor force represented 79 percent of the work force but, with mechanization, that percentage dropped to 58 percent by 1940 (Jellison 1993, 110). Farm women with more time available were enabled by mechanization to undertake tasks that previously required more strength than they possessed but now simply required a modicum of skill. Some farmers actually began to prefer using their wives and daughters when they needed additional labor because they had a greater stake in the continued operation of the equipment and so would likely take greater care while operating it. The manpower shortages during WWII would see the percentage of Midwestern farm women using field machinery quintuple from 1941 to 1942 (Jellison 1993, 139).

Keeping the tractor, in specific, running and the farm, in general, required a bevy of ancillary items that the farmer had to purchase from industry and that proved to be limiting factors during WWII. The pneumatic tractor tires first sported by the Farmall became the standard for tractors, field wagons, and other farm equipment. They made tractors lighter and faster, increased traction, and reduced the vibrations that had previously shortened equipment lifespan (Olmstead and Rhode 2001, 669). The also increased the mobility of the equipment and allowed farmers to move their equipment

between widely spaced parcels over roads that the earlier metal wheels would have destroyed. Pneumatic tires were such a popular improvement that, by 1937, despite Depression conditions, 47 percent of tractors had them (Schlebecker 1975, 249). During WWII, they became increasingly common on field wagons regardless of nationwide shortages. Throughout WWII, the government did its best to ensure that agriculture had enough tires to keep farm equipment running and to keep migrant farm workers mobile as they moved from job to job (Gamboa 1990, 31).

Tires were only one of the petroleum based products that cheap and plentiful fuel had spawned and that farmers required. They also needed things like gasoline, oil, lubricants, and fertilizer (Hurt 2002, 50). With increased petroleum requirements and disturbance of the normal sources of supply, fuel ceased to be either cheap or plentiful during WWII. There were few, if any available alternatives, however, so as with tires, farmers were dependent on the government to do what it could to keep gas in the tanks of farm equipment and migrant vehicles (Gamboa 1990, 31). This was far from a perfect system and work stoppages were the inevitable result.

Petroleum was also integral to the production of fertilizer the use of which had become increasingly prevalent as animal sources of soil amendments disappeared (Cochrane 1979, 307). Petroleum was so cheap that fertilizer quickly became a commercially produced item. Increased use of fertilizer caused a 14 percent increase in farm production between 1935 and 1944 (Wilcox 1947, 288). In addition to fertilizer, farmers needed liming material to correct soil acidity. The use of these materials increased from less than 2 million tons in 1930 to over 13 million tons in 1940 (Wilcox 1947, 11). It should be observed that use of these products, as well as things like

insecticides and herbicides, was undertaken without an understanding of the environmental side effects (Hathaway 1974, 82). It was not until the 1960s that the deleterious effects of environmental pollution became common knowledge, so it would be fair to argue that agricultural success and increased wartime production were achieved at the expense of the natural environment. In some ways, use of these products was equivalent to earlier practices like dryfarming that were thought purely beneficial at the time but were later discovered to be flawed.

There is a truism that says that it takes money to make money. With all of the money farmers spent on tractors and milking machines and fertilizer and all of the rest of the improvements that industry and science presented them, why were farmers never been able to get rich? The answer is that they were faced with a prisoner's dilemma. As has been previously mentioned, farming is atomistic. Each farmer wants to make more money, but each farmer, by himself, is too small to control the market and must, therefore, take the price he is offered for his goods (Cochrane 1979, 393; Wilcox 1947, 6; Hathaway 1974, 74). Since land ownership is a zero sum game and the amount a farmer owns is limited, he cannot count making more money by adding acres to increase output. Cheap manpower might be a solution to the problem, but manpower in America, barring in the pre-Civil War South and possibly the Great Depression, has never been readily available enough to be particularly cheap. The farmer must turn to technology for his increased output.

Leaning on technology starts a vicious cycle in agriculture. One farmer adopts a new technology and increases his output. His increased production has slightly driven down everyone's prices since demand remained essentially fixed. For the adopting farmer

this is not a problem because his increased output has secured for him a larger portion of the profit. The non-adopting farmers, however, have lost money and they now have an incentive to adopt the same technology to increase their own outputs. Once all farmers are using the new technology and output has increased proportionately for all of them, they return to roughly the same distribution of wealth. The problem is that the now greatly expanded supply has driven prices even lower. Since they are each producing more at the lower price, they are probably making roughly what they made before the cycle began but, in the meantime, they have saddled themselves with the cost of the technological improvement.

By the end of the cycle, the only people who have profited are the early adopting farmer, the industry that sold the improved technology, and the consumer who now enjoys a lower price. The early adopter may even have made enough profit that he can expand his operation by buying out his less successful competitors. Each farmer now has an incentive to become the next early adopter and begin a new cycle of output increases and price decreases. It would really be in farmers' best interests if they could all agree not to adopt any new technologies, to stall agriculture while the population grows and demand forces prices to rise. Instead, they continually make suboptimal choices because they do not trust their fellows not to adopt first.

Not all technological improvements in agriculture during the twentieth century directly produced increased farm output; some served primarily to increase farmer's quality of life. The Rural Electrification Administration, established in 1935, was one such improvement (Jellison 1993, 98). Rural electrification was something for which farmers, especially women, had asked the government for years. The reason it was finally

possible in 1935 was that technological developments between 1910 and 1935 made construction simpler and cheaper and allowed power transmission over greater distances (Cochrane 1979, 227). The Administration was a New Deal program that loaned money to rural cooperatives to help them finance high-line electrification (Hurt 2002, 89). Prior to this program, only 10 percent of farms had high-line power but, by 1940, 30 percent did. Without high-line power, farmers were forced to resort to windmills and gasoline generators neither of which was an entirely dependable power source. In WWII, the electrification of rural homes would actually decrease fuel requirements because centrally produced power is more efficiently generated. The Administration made power more affordable but not free so it was most beneficial to middle class farmers who could afford to pay for their share of the costs (Jellison 1993, 98). Areas of subsistence farms were unlikely to be electrified because there were not enough solvent subscribers.

Rural electrification brought rural populations some of the many changes in food processing and storage that urban dwellers already enjoyed. Reliable electric power made possible the use of home refrigerators and electric stoves. It made cooking easier and faster and helped move cooking from an art to a science. Electricity made refrigeration possible everywhere from cold storage warehouses to refrigerated railcars to refrigerated trucks (Elias 2009, 48). Movement and storage of fresh produce from farms to houses combined with improvements in commercial canning technology decreased the average American's need to preserve and store food for the winter. American cookbooks devoted decreasing amounts of space to discussions of pickling and canning vegetables and reduced the number of recipes for fruit preserves (Elias 2009, 23). The loss of home preservation know how was so extensive that during the Great Depression extension

agents had to reeducate women in order to limit cases of malnutrition and deficiency diseases during the winter months. Even home design reflected the change in food patterns as townhome designers stopped including root cellars and fruit closets in which to store processed foods (Elias 2009, 61). With more people distanced from their food sources and less likely to grow a portion of their own food, the compulsion to save the seasonal bounty disappeared.

If Americans were not saving and processing their own food, industry was more than ready to do it for them for a price. The industrialization of the American diet accelerated after the turn of the century abetted, in part, by the increasing industrial mechanization allowing improved commercial processing techniques like evaporation and dehydration (Roll 1956, 22). These processes maintained the nutritional quality of the food but greatly reduced the weight and volume to be shipped making transport cheaper. Between 1918 and 1935, the purchase of store-baked goods increased by 40 percent and, by 1939, 85 percent of bread in America was commercially produced (Elias 2009, 67). American love affairs with peanut butter and boxed cereal, both highly processed foods, began during the early twentieth century followed a bit later by the introduction of Spam in 1937 (Elias 2009, 13). Indeed, meat was as emblematic as anything of the changing relationship Americans had with their food. Where nineteenth century cookbooks assumed that the reader would make her own sausage, twentieth century cookbooks assumed it would be store-bought and that meat, in general, would come to the reader from the butcher and not directly from the animal.

During WWII, the USDA attempted to reverse this trend towards industrial food production. The USDA waged a campaign to convince consumers to produce and process

their own food as part of the war effort. By doing it themselves, consumers freed up capacity in commercial processing facilities that could then be devoted to producing food for the Allies and the American military (Jellison 1993, 137). They also freed up transportation assets and the metals required for canning (Elias 2009, 71). Since home preservation is normally done in glass or stoneware crocks, it helped to some extent to reduce the metal shortage caused by the war.

The USDA encountered another problem with industry, which was largely of the government's own making. During WWI, cold-storage companies had expanded their storage space dramatically at the government's encouragement (Wilcox 1947, 277). When the government cut contracts after the war, one of the industries left in the lurch was the cold-storage industry. With too much space and not enough customers, the industry suffered. The government failed to properly encourage cold-storage companies to increase their storage space during WWII and the companies were disinclined to do it on their own. Without sufficient cold-storage, the record harvest in 1943-1944 went to waste. The food could not be properly stored to be carried forward for the next year's war effort. Almost as bad as the waste of food was the return of the specter of "surplus" food, which the USDA had only recently managed to dismiss from its planning assumptions.

International Food Requirements that America Needed to Fulfill

The requirements levied against American agriculture during WWII came from a multitude of sources. There was the normal peacetime domestic requirement to support the American civilian populace. This normal requirement was not static, however, since the American population was increasing and had grown by seven percent between 1930 and 1940. There was the wartime, but still essentially domestic, requirement to support

the mobilized American military. There was the normal peacetime export requirement primarily from European markets. Then there were the unforeseen wartime requirements to support much of the Allied war effort, the Allied civilian populace and, eventually, the enemy civilian populace.

While by no means a perfect template for what would subsequently happen in WWII, WWI taught several worthwhile lessons. Well before WWI, it was clear that British farmers' output was insufficient to meet the nation's needs. Indeed, American exports to Europe between 1860 and 1880 had so undercut the prices of British and European farmers that they had essentially led to the demise of portions of British agriculture (Emerick 1896, 456). British farmers simply could not make enough money with their crops to pay for the labor required to produce it.

During the war, the British government imposed the Corn Production Act that allowed the government to fix prices and wages in agriculture but also allowed the government to determine the best use that British land could be put to in support of the war and to force the landowner to use it accordingly (Mumford and Wilcox 1919, 116). This level of regimentation would have been antithetical to American sentiments but would likely have produced favorable results. It is certainly indicative of the lengths to which other governments were willing to go and the lengths to which their populaces were willing to allow them to go as compared to that for which the American government and people were prepared.

Prior to WWI, the United States produced 20 percent of the world's crops and 25 percent of the world's meat supply (Mumford and Wilcox 1919, 115). This supply would become even more critical as the outputs of major and minor food producing countries,

like Russia, were unavailable (Hurt 2002, 36). This situation clearly paralleled the import and export conditions that would prevail in WWII. Large portions of Europe were overrun with the accompanying loss of productive acreage and the farmers who worked on those fields were drafted as military manpower. Even with the Corn Production Act, Britain still required, as did France, dramatically increased American support in the form of food and fiber. In a normal year, like the three preceding WWI, the United States exported roughly 493 million pounds of meat per year. To meet requirements in 1915-1916, the United States exported one billion pounds of meat (Mumford and Wilcox 1919, 118).

Looking at the precedent of WWI, it is unsurprising that one of the major initial American contributions to WWII was food exports under the Lend-Lease Act of March 1941. Originally designed to support the British, the system was subsequently expanded to aid Russia as well (Gough 1982, 86). In essence, the American government loaned Britain the money to pay American farmers for their goods. This prevented the British government from having to expend its limited supply of cash as it had been doing under the previous cash and carry policies (Roll 1956, 11). Under this system, Allied purchasing officers had to buy all food through the Food Administration and had to pay the prices set by the American government (Schlebecker 1975, 211).

The model of WWI betrayed military planners in this instance because they had no precedent upon which to base a requirement of this type (Nanney 1982, 28). Lend-Lease requirements were considerably in excess of the normal American yearly domestic surplus (Roll 1956, 22). Conveniently, the American government held a stockpile of surplus crops purchased under the auspices of the failed Farm Board and the CCC. These

stocks were crucial to supporting the early Allied war effort while American agricultural production was still working to accelerate production. Over the course of the war, ten percent of American output went to the allies under Lend-Lease (Wilcox 1947, 12). In some areas, most notably dairy products, however, American production was never sufficient to meet aggregate demand. Evaporated milk and cheese composed a large portion of Britain's first request under the program.

A closer look at Britain will explain that country's model for food management during WWII. At the start of the war in 1938, despite purchasing as much as possible from British possessions before turning to foreign sources under its Empire Trade Agreement, Britain still imported \$118 million worth of goods from the United States and the United States was the sole supplier of some critical British requirements (Holden 1940, 188). Two-thirds of Britain's food was imported through its Ministry of Food, which centralized all national procurement during the war (Roll 1956, 8). The British government practiced complete commodity control with state-run trade monopolies and consumer rationing.

The British use of rationing was similar to the concept of military rationing; the ration was what the government had determined every citizen was entitled to on a daily basis. The government was therefore responsible for ensuring that every citizen got its ration although it did not always succeed in this endeavor. During the war, the average Brit received ten percent fewer calories than the average American despite everything the British government could do to mitigate shortages (Wilcox 1947, 271). The government did its best to ensure equitable distribution, to prevent the unnecessary importation of luxury items, and to prevent hoarding. Britain, like most of the Europe experienced a

decline in its productive acreage during the war. Some nations fared much worse than the British but the decreases all tended to be for much the same reasons: enemy bombing, construction of airfields, construction of fortifications and obstacles, placement of landmines, and inundation of low-lying areas (Birchard 1948, 276).

Russia began receiving support from the United States in October 1941 after Hitler invaded Russia and Stalin declared for the Allies (Roll 1956, 27). In 1942, the Germans took some of the most agriculturally productive areas of Russia decreasing Russian food production capacity across the board. Russia lost 38 percent of its grain capacity, 84 percent of its sugar capacity, 60 percent of its vegetable oil capacity, 38 percent of its cattle, and 60 percent of its pigs (Munting 1984, 500). Food was so crucial to the Russian war effort that, at times, Stalin opted to take food rather than additional armaments. Especially significant was the fact that, despite the relative densities of armaments and butter, one quarter of all US deliveries by weight were food. What the Russians requested most from America was canned meat, fats, and sugar. Logically, this list corresponded closely to the commodities that Russia lost significant amounts of to the Germans and also represented very calorie dense foods.

Most of what America sent to Russia was reserved for military use and, in 1943, 17 percent of the Red Army's calories came from American shipments. This policy prevented the Russian government from having to collect and move as much of its domestic food supply and left more available for its own citizens. Since civilians received far less food than Red Army soldiers, a 17 percent contribution to the Red Army actually served to avert a 38 percent reduction in civilian food supplies. The United States provided enough food for 12 million men to receive one half pound of food daily for the

duration of the war. Khrushchev said in his memoirs that, without Spam, Russia could not have fed its army.

Russian agriculture was suffering some of the same problems of countries throughout the conflict. The loss of its draft animals to the military and to consumption by the populace inhibited food production and made the maintenance of stock levels impossible since fewer animals were available for normal breeding patterns. For every 100 horses in use before the war, only 80 were still alive by 1945 (Birchard 1948, 277). This meant that agricultural production had to rely more heavily on manual labor. Of course, the conscription of a large portion of its farmers made the supply of manual labor problematic just as it was in most countries. Russian tractor production fell steeply as factories shifted to producing military equipment and one of the most important pre-war producers of tractors, Germany, was understandably unwilling to assist with the shortfall (Munting 1984, 500). Russians did not have enough fuel or repair parts to keep their tractors running and even if they had had enough, the conscription of their mechanics made maintenance difficult.

From 1940 to 1942, Russian production of grain fell from 95.6 million tons to 29.6 million tons, potatoes from 76.1 million tons to 23.5 million tons, and meat from 4.7 million to 1.8 million tons. The displacement of 10 million civilians in Russia and another 8 million civilians in Eastern Europe created a large population that was eating but not producing (Birchard 1948, 279). Civilian rationing was informally begun in October 1940 and finally formally instituted in July 1941 (Munting 1984, 500). Russian rationing was graduated according to the individual's expected level of physical exertion and was often not met. Shortfalls occurred with fats and sugar for which there were no

good substitutes and in meat and bread for which eggs and fish and potatoes were substituted respectively. Even with civilian rationing and Allied aid, by 1943 there were reports of people in Vladivostok eating grass, roots and leaves.

The major bottleneck in food distribution was, of course, the lack of shipping and the limitations on what shipping was available. Submarine warfare, in particular, took its toll on civilian food shipments (DeHart and Smith 1947, 42). Not only did it decrease the number of shipments attempted, every time it successfully eliminated a laden transport it decreased the total available food and the means of executing future movements. Russia's ability to receive shipments was further restricted by the shortage of port capacity (Roll 1956, 35). The diversion of commercial vessels for military purposes led to improvements in and greater use of dehydration and compression techniques as the Allies tried to move more supplies with less space (Munting 1984, 501). The military did make use of its backhaul capacity by bringing sugar from Fiji and Australia back to the United States in the ships taking troops and equipment to the Pacific theater (Roll 1956, 38). The Far East was the source of a number of important imports including rubber, sugar, hemp, fiber flax, tea, and fats and oils (Wilcox 1947, 39). When Japan entered the war on the Axis side and interrupted trade in the Pacific, the United States lost ready access to fats and oils originating in the Philippines and Sumatra, which represented 20 percent of the normal national supply and were used in manufacturing and industrial processes (Roll 1956, 30).

The United States' failure to take stockpiling for post-war needs seriously served to decrease international wartime requirements but created incredible suffering after the war. What the United States and other nations should have been doing was to stockpile

food for emergencies during the war, for likely post-war turbulence as agriculture struggled to resume production, for the post-war relief of friendly nations greatly damaged by the war, and for the post-war relief of the conquered peoples whose agriculture was likely to be in even worse shape than the victors'. Had the United States taken these preventive measures, agricultural production and the manpower needed would have been much greater. Instead, the United States made some poor assumptions about the level of available stockpiles in other nations, the likely level of post-war requirements, and the likely level of post-war American domestic surplus and decided that stockpiling was unnecessary (Wilcox 1947, 278).

This error in judgment meant that, in 1946, as Europe suffered famine, America was unable to effectively intercede. In Austria, Germany and Romania, people were eating 80 percent or less of their pre-war diet and only in Denmark, Czechoslovakia, Ireland and Sweden were people eating 95 percent or more of their pre-war diet (Birchard 1948, 274). Mortality rates across Europe increased and output per capita decreased at a time when Europe needed as many people producing as much food as possible. With a drought in Europe and Asia, a bad corn crop in the United States, and several years of wartime soil neglect, the 1947 harvest fell short of needs (Wilcox 1947, 283). An estimated 50 million tons of grain were required for Europe but only 32 tons were available. By 1948, Europe was still experiencing bread rationing (Birchard 1948, 274).

Britain and the United States took steps to coordinate management of food supplies. Essentially, the two countries agreed to split up the world supply to prevent competition for scarce resources that might drive up prices. As an example, the countries agreed that the United States would buy the entire Cuban sugar crop while Britain would

buy the Dominican and Haitian sugar crops (Roll 1956, 39). The same system was worked out for fats and oils with Britain buying all Argentine and Uruguayan supplies and the United States buying from North America, the Caribbean and the rest of South America (Roll 1956, 47). Surprising as it may seem today, during WWII, most of the world's lesser developed nations were exporters of grain. In fact, between 1934 and 1938, while Europe was importing 24 million tons of grain per year, Latin America was exporting nine million tons and Asia was exporting two million tons (Hathaway 1974, 94). Even Africa was exporting a million tons of grain each year. This meant that, during the war, the third world was adding to the world food supply rather than putting requirements against it as might be assumed based on modern aid and consumption patterns.

What Americans Expected on Their Tables

While domestic food preferences might not seem terribly important during wartime when people in Vladivostok were eating grass, they had a tremendous impact on what America counted as available for exportation. The notion that pork was food for the lower classes meant that Americans continued to produce beef during the war even though production of beef takes more calories per pound than the production of pork (Elias 2009, 14). The USDA's lack of success in convincing Americans to include protein-rich soybeans in their diet was due to the American opinion that soy beans were only fit for livestock feed (Elias 2009, 21). The USDA also tried unsuccessfully to convince Americans to increase the amount of rice in their diet in order to save more wheat for Allied use in bread. What researchers observed in all-u-can eat restaurants during the Depression was that, in times of uncertainty, people craved comfort foods,

especially deserts high in sugar and fat (Elias 2009, 94). People in crisis were essentially uninterested in changing their foodways, and this pattern held true during WWII too.

Factors from America's experience in WWI affected domestic food requirements in the Second World War as well. The fact that soldiers in WWI had fresh meat, fresh vegetables, candy and cigarettes in their rations meant that a similar level of supply was expected in WWII (Elias 2009, 14). WWI introduced American soldiers to chocolate, which was so popular that, during the interwar period, 30,000 different kinds of candy bar were marketed (Smith 2009, 128). Americans, in fact, had a huge sweet tooth, and, by 1915, they were already consuming 86 pounds of sugar per person annually (Elias 2009, 32). As a sugar importing nation, this domestic requirement would place a huge burden on limited import capacity. WWI provided some positive influences on WWII as well. The USDA recognized in the first war, for instance, that it needed to disseminate material to the public concerning food preparation under conditions of diminished wartime food supply (Elias 2009, 5). The government also implemented rationing for things like beef in order to meet military requirements.

While inconvenient in times of food shortages, it is the result of a natural progression that affluent nations like the United States consume significant amounts of highly inefficient animal products. As a general rule, wealthier people eat more meat while poorer people eat more grains. As poor people acquire more wealth, they, in turn, increase their consumption first of grains and then of meat (Hathaway 1974, 72). The reason for this shift with increasing affluence and the problem it then presents in wartime when food is short is that it is far less efficient for humans to feed grain to animals to turn into eggs or steaks than it is to simply consume the grain. Producing one calorie of

poultry requires three to four calories of grain while producing one -calorie of grain-fed beef requires six to seven calories (Hathaway 1974, 91).

In wartime, it is much easier to rapidly increase the production of grain than of meat or milk. While grain production can be accelerated in a year or less, increase in milk and meat production lags further behind. Before livestock numbers can be increased without either decreasing other human food sources or raising production prices, the additional grain to feed them must be available. Then cycle of breeding, gestation and maturation to either slaughter or milk-production age must occur. Of course, countries accustomed to high levels of meat and milk production do possess the fortunate ability in wartime to shift their grains from livestock feed back to direct human use.

Rationing resurfaced for WWII and the government took some of the same measures as it had during WWI. Despite wartime rationing, Americans never had a real fear of hunger and were, in fact, consuming more food in 1944 than they had before the war started (DeHart and Smith 1947, 76). The higher calorie diet was attributed to factors like longer civilian working hours and more men in the military performing more physical labor than previously (Wilcox 1947, 280). While the government rationed things like meat, Americans were still permitted the equivalent of four ounces per meal and processed forms of meat were not limited at all (Elias 2009, 116). The USDA encouraged Americans to lower their beef consumption by publishing meatless recipes and by promoting fish and eggs as alternatives.

While essentially nutritionally empty foods like coffee did become harder to acquire, it is significant that the government never stopped importation of these nonessentials (Elias 2009, 35). Nor did the government ever prohibit the production of

alcohol or soda and it considered tobacco an essential crop for the war effort (Hurt 2002, 101). While allowing Americans to maintain an illusion of normalcy likely worked to improve morale and while it kept pre-war economic patterns functioning, the shipping and manpower used on production and shipping of these items was wasted from the perspective of useful calorie output (Wilcox 1947, 269). The sugar in the soda and the grain in the alcohol could have been more profitably consumed as actual food and the manpower used could have been diverted into more fruitful pursuits.

Rationing was critical to the war effort and essentially unavoidable. Provided it incorporates price control, rationing decreases the cost of war and decreases the danger of inflation (Holden 1940, 172). If left untreated, inflation will effectively impose rationing on its own, because, as prices rise, individuals' wages will buy them less (Holden 1940, 199). Of course, this process also devalues the excess money workers are making by virtue of their longer hours thereby preventing them from using that money to buy government debt. This, in turn, deprives the government of a valuable source of cash with which to fund the war effort and eliminates the possibility of a post-war civilian cash surplus. Intentional rationing is to be preferred to this inflationary outcome and it confers the additional benefits of freeing, for military use, shipping space, industrial capacity, and manpower previously devoted to production in excess of the ration (Holden 1940, 197). Further, with individuals unable to purchase their pre-war luxury items, extra money is made available for lending to the government for the war effort.

While the cover of *Vogue* might seem like an odd place to look to understand agricultural requirements, the fact is that the fashionable image of beauty had a large effect on American eating habits and, therefore, their consumption requirements. Prior to

1910, the American image of beauty was one of pleasant plumpness for both men and women (Elias 2009, 119). Plumpness was a sign of economic success while visible muscular definition implied low social status. After 1910, this mindset reversed itself with fat becoming a sign of lack of self-control and slenderness being associated with modernity. This new taste for streamlined physiques was paralleled in the design of everything from buildings to cars to clothes and was particularly influenced by the stars of Hollywood motion pictures.

Also in 1910, scientists discovered vitamins and came to realize that diseases like scurvy, pellagra and beriberi were actually the result of vitamin deficiencies (Elias 2009, 5). Analysis of the American population showed evidence of the widespread malnutrition that military doctors would later encounter while assessing potential soldiers (Wilcox 1947, 59). The existence of vitamins led to the idea that there were right foods and wrong foods. Milk and whole grains were determined to be very healthy and the presence of vitamin C in orange juice, combined with its observed salutary effects during the influenza pandemic in 1918, caused sales to climb (Elias 2009, 36). In fact, a new, scientific approach to eating was promoted by researchers and cookbook authors like Fannie Farmer who published the most influential cookbook in American history (Elias 2009, 11). Of course, there was no clear agreement on what scientific eating should actually look like and this created confusion among consumers as to what they ought to be buying and putting in their bodies.

A byproduct of the changing images of beauty and changing ideas about healthy eating was the popularity of dieting (Elias 2009, 121). This phenomenon took hold of the nation beginning in the 1920s and never let it go. A plethora of scientific sounding fad

diets cropped up as dieting became fashionably modern. Many of these diets had little to no empirical or sound theoretical basis and the trend was so concerning that the USDA issued material warning Americans against the dangers of fad diets.

Vitamins and Hollywood were not the only contributors to the flux in which ideas about healthy eating then existed. Upton Sinclair's book, *The Jungle*, inspired the government, in 1906, to pass the Pure Food and Drug Act that standardized packaging information and mandated government inspection of processing plants (Elias 2009, 5). Americans became paranoid about food safety and spent much of the first half of the twentieth century with a distrust of fresh vegetables. Paranoia and government regulations led to the mandatory milk pasteurization that helped make Americans more comfortable with consuming the milk now deemed so critical by scientists. Industrialization brought with it a mania for efficiency, which extended to food consumption. Meal sizes shrank and faster food became popular as society dictated that modern professionals had no time for big breakfasts and long business lunches (Elias 2009, 78). This love of efficiency combined with fear about food cleanliness combined in the extreme to produce the automat where workers could quickly purchase pre-made, safely pre-packaged foods with the press of a button. As speed and efficiency became more desirable, the availability of pre-made, store-bought food like bread increased.

Some Theory and Reality about How Manpower Works

From the employer's perspective a labor pool should always contain excess manpower; one laborer for one job is not sufficient for employer peace of mind (Kiser 1973, 92). Since the employer cannot control the cost of means of production like equipment, fuel, seed, and fertilizer, his only hope is to control labor costs. The more

labor there is available, the lower the wages the employer can successfully offer and the higher his profits. The presence of excess in the pool also gives the employer the assurance that he will not run out at a critical moment. Employers always over-project their labor requirements because, if labor is not available when they need it, their entire years' investment may be lost (DeHart and Smith 1947, 43). Employers generally agree that the labor pool should be available to all of the businesses in an industry and that employers should be gentlemanly towards each other insofar as they refrain from poaching each other's labor and from undercutting each other at hiring time (Galarza 1964, 36). This civilized approach allows the employer to avoid any obligations towards labor not productively engaged. The employer is not responsible for the worker's living conditions nor is he responsible for the burden to society of unemployed laborers.

There was a time when American agricultural workers enjoyed much the same professional progression from apprentice to journeyman to master that is so familiar from manufacturing (Rasmussen 1951, 6). The young unskilled agricultural laborer had some hope that he would excel and be allowed to help manage a farm and eventually would amass the capital to purchase his own farm. Under this system, there was a sense of obligation between the laborer and his employer. With the growing commercialization of farming, this personal relationship dissolved and both the farmer and the laborer lost the protections inherent in this system (Gamboa 1990, 11). As the laborer lost the guarantee of remuneration even during times of low productivity, the farmer lost the guarantee that his worker would be available when needed.

One of the truths about the American agricultural labor pool is that it always needed fresh members. This was partially because the expansion of commercial farming

required a corresponding expansion of the labor force. It was also because, unless he was truly desperate, no experienced laborer would willingly enter or stay in the labor pool. Newly arrived immigrants who, almost by definition, were desperate had few choices but to enter it and then often found it difficult to leave. After a generation, however, laborers understood the system and started to demand more money and better working conditions (Galarza 1964, 35). When they failed to get what they wanted, discontented workers found better work and left the labor pool. The labor pool also lost members over time to racial antagonism sparked by the economic success of particular groups of laborers.

In 1886, 30,000 Chinese laborers worked in agriculture on the West Coast and proved to be a dependable labor source until it was interrupted by the racist Chinese Exclusion Act. Replacing the Chinese were the Japanese whose numbers in agriculture rose from 2000 in 1890 to 72,000 in 1910 (Galarza 1964, 34). As the Japanese acquired experience, they became dissatisfied with their role as laborers, became decreasingly malleable, and many shifted to growing their own crops. Their success as growers sparked racial hostility against Japanese farmers and laborers alike (Hurt 2002, 9). Filipinos joined the labor pool next, but riots against them in the 1930s demonstrated that they were no more popular than the Japanese they replaced (Galarza 1964, 35). Other workers, many of them recently arrived themselves, resented the competition and thought that the Filipinos were making them look bad by working too hard. Moving into the pool with the Filipinos were Mexican laborers who had been effectively barred from the labor market until then by the ample supply of Asian workers (Kiser 1973, 55). Hard working and unlikely to unionize, these latest additions to the pool became the favorites among employers.

Just as the nature of the laborers doing the work changed over time, the requirements for labor changed as well. Agriculture is not a static enterprise any more than industry is; it is always working to improve efficiency and increase output. This constant change makes determining requirements at any given time difficult. Agricultural changes are often regional and produce localized surpluses and shortages. A decrease in manpower required in one place may be masked by an increase in manpower required someplace else. The confusion is illustrated by several examples. Livestock requirements for manpower increased 12 percent from 1939 to 1944 but that increase was partly offset by a concurrent decrease in manpower required for care of draft animals (Wilcox 1947, 288). As increased labor was required for increased feed grain, wheat, and truck crop production, mechanization reduced the labor needed for cotton and tobacco in the South (Wilcox 1947, 288). The shift of grazing land to crop land increased man-hours requirements (Schlebecker 1975, 245). The decentralization of the meat packing industry closer to the source of supply increased manpower requirements in rural areas (Schlebecker 1975, 232). Keeping track of all of these changes while also accounting for normal seasonal variations and for the effects of unpredictable weather would have far exceeded the ability of a 1930s statistician even if he had had reliable data to work with.

Changes in the available agricultural population came particularly fast during WWII. At the end of the Great Depression, over 8 million men and women were unemployed (Fairchild and Grossman 1959, 155). Additionally, there were 44 million men and women who were neither employed nor actively seeking work. Of this total, 80 percent were women with the remainder being primarily the elderly and the physically impaired. The agricultural work force, in 1940, was 16 percent of the national total

(Wilcox 1947, 83). It had, for 35 years maintained a rough ratio of 75 percent family labor to 25 percent hired labor and 1940 found the labor force basically divided along those lines with 8 million family workers and 2.6 million hired workers. Each farmer at this point, fed 10.7 Americans but this number would grow dramatically until, by 1945, each farmer was feeding 12.9 Americans and 1.7 foreigners (Schlebecker 1975, 245). As the war progressed, the loss of each farmer was a progressively bigger burden on the remaining farmers and a greater blow to the food supply.

Farm losses over the course of the war were difficult to estimate and there were competing reports with widely divergent numbers issued by the USDA's Bureau of Agricultural Economics, the Farm Bureau, the WMC and members of Congress (Rasmussen 1951, 21). In November 1942, for example the Farm Bureau reported that farming had lost 1.5 million workers. Four months later, in March 1943, a farm state Congressman reported the loss as being 3.6 million. According to the Bureau of Agricultural Economics, the farm population decreased by 1.36 million in 1941, by 2.78 million in 1942, and by 1.5 million in 1943 (DeHart and Smith 1947, 39, 43, 53). By 1944 the farm population had lost 15 percent of its members when compared to 1940. The loss of male members of the farm population, however, was at 18 percent. As the farm population was decreasing, so was the number of unemployed from 8 million in 1940 to 4 million in December 1942 to 1.7 million in December 1942 (Nanney 1982, 37). By 1943, the unemployed population had reached roughly one million and economists believed that this was lowest the number could go when allowances were made for job turnover and other factors. Of the one million unemployed, half were women.

Where Have All the Good Men Gone and Where Are All the Farmers?

At a time when agriculture could least afford to lose workers, there were a number of factors either actively decreasing the number of available workers or inhibiting the utilization of alternate manpower sources.

Despite disdain from farmers, the migratory agricultural population was critical in fields around the country. This population, however, was especially susceptible to the siren song of industry. Farmers watching the roads in the spring of 1941 for the arrival of the migratory work force often found themselves watching in vain (Gamboa 1990, 23). Able to get better paying jobs with more likelihood of respect from employers and peers, while performing almost certainly easier work than the stoop-labor to which many of them were accustomed, they left the roads with alacrity. The stationary nature of industrial jobs offered migratory families the chance to buy a home and send their children to school. Even families that wanted to maintain their nomadic lifestyle would have found it difficult since tire and fuel shortages made their peregrinations far more challenging (Rasmussen 1951, 84). Additionally, young men in migratory families were not necessarily safe from the draft and their removal from the family enterprise would have adversely affected the family's aggregate earning potential.

Loss of Japanese American workers from West Coast agriculture was a wound inflicted on agriculture by its own government but one that would prove to be a blessing to farmers further east. In February 1942, concerns about security induced the government to order the evacuation of all Japanese Americans from the western seaboard (Rasmussen 1951, 101). Japanese Americans had long been involved in West Coast agriculture where some of them worked as laborers and some of them owned their own

farming operations (Galarza 1964, 42). Although local growers fought against their removal, the government order displaced entire families to relocation camps further inland (Gamboa 1990, 28). West Coast agriculture lost a critical labor force but, by October that same year, their loss would prove to be other farmers' gain.

While many inland communities strongly opposed the presence of Japanese Americans in their area and some even went so far as to pass resolutions barring Japanese Americans from owning or leasing land, by harvest time, many of the farmers among them had changed their minds (Gamboa 1990, 30). In response to requests from agriculture for assistance with the 1942 harvest, 10,000 Japanese Americans were allowed leave from relocation centers to help and, in fact, were instrumental in saving entire crops that would have been lost for lack of labor at harvest (Rasmussen 1951, 102). Shameful as the American government's treatment of its Japanese American citizens was, it had the salutary effect of turning a sessile agricultural population into a relatively mobile labor force capable of coping with increasing agricultural manpower shortages.

While not as dramatically abrupt as the treatment of Japanese Americans, employment of African Americans was inhibited by the same racist attitudes. Although only ten percent of the American population in 1940 was African-American, 12.5 percent of the unemployed population was African-American (Fairchild and Grossman 1959, 156). Estimates in 1940 suggested that 6.5 million African-Americans were available for work in defense industries, but industry was uninterested in hiring them. In fact, many of the places where African-Americans were most plentiful were the same places where they were least likely to be hired. A look at the female half of the population shows that, in 1940, only 6.5 percent were working in industry with 16 percent in agricultural work,

and 60 percent employed as domestic servants (Fairchild and Grossman 1959, 173). Another issue with African-American women that was representative of the degree to which racist attitudes interfered with full employment of manpower was the fact that, in many states, the Women's Land Army was never organized because society was unwilling to admit white and African-American women as members in the same organization (Wilcox 1947, 135).

President Roosevelt recognized that discriminatory hiring practices were deleterious to the war effort and so issued an executive order in 1941 banning hiring discrimination in federal hiring on the basis of race, creed, color, religion, and national origin (Fairchild and Grossman 1959, 130). Between 1942 and 1945, the percentage of the war industry labor pool that was African-American rose from 4.2 percent to 8.6 percent (Fairchild and Grossman 1959, 160). Salubrious as this may have been for the advancement of the African-American population, it was harmful to agriculture. Workers who previously had little option but to labor in the fields now had better options in industry and took advantage of them. This produced a surge three million strong in the outmigration of African-Americans from agriculture especially in the South that had largely begun with the First World War (Wilcox 1947, 137).

Another example of agricultural and government shortsightedness and parochialism was the issue of interstate movement of goods and labor. By WWII, the United States had developed a norm of restricting interstate trade. This norm began during the Depression as producers attempted to secure their local markets by eliminating out of state competition (Wilcox 1947, 75). States lowered some of these restrictions during the war but the underlying parochial mentality remained. During the war, the FSA

was charged with recruiting labor for farmers and the interstate transport of those workers was a federal responsibility (Gamboa 1990, 35). The FSA understood that, in order to encourage laborers to move, it needed to offer them guarantees about their wages and working and living conditions. While truly migrant populations may be willing to move with little provocation, the rest of the agricultural labor population is far less fluid. Before a laborer, or anyone not desperate, would be willing to move, they needed, at least, transportation to their destination, room and board at their destination, some way to assure the care of family left behind, and some assurance that they could get home again.

It was not in the interests of farmers to have to pay any more to obtain labor than absolutely necessary. They certainly did not want to have to guarantee a minimum wage or a particular housing standard. In 1943, they influenced their congressmen to include an amendment in Public Law 45 prohibiting the use of government funds for mandating minimum wages, mandating housing standards, regulating work hours, or facilitating unionization and collective bargaining (Gamboa 1990, 35). A further amendment to the law, known as the Page Amendment, mandated that workers be officially released in writing by their losing county's extension agent (Rasmussen 1951, 45). Without release, no government funds were available to move the individual. This was intended to prohibit poaching from other states but it resulted in hoarding since few counties wanted to lose labor.

These two amendments essentially gutted the FSA's efforts. In 1943, the FSA relocated only 11,920 workers with 9,308 relocated in 1944 and 10,477 relocated in 1945 (Rasmussen 1951, 94). What could have been a powerful program moving agricultural laborers from locations of surplus to locations of shortage was legislatively sidelined.

This was particularly unfortunate since, in 1942, estimates showed two million farmers underemployed with especially large concentration on subsistence and submarginal farms in the Ozarks, Appalachia, and the Upper Peninsula (Rasmussen 1951, 22).

One of the most significant drains on agricultural labor was the expansion of industry especially in the areas of aircraft construction, ship building, arms manufacturing, and ammunition production (Fairchild and Grossman 1959, 155). Estimates indicate that roughly 60 percent of the agricultural laborers lost in 1942, for example, went to industry (Rasmussen 1951, 21). Where the Boeing plant in Seattle employed only 4000 workers 1939, it employed 50,000 by 1944 (Gamboa 1990, 38). Typically the agricultural areas with the largest localized labor shortages were the areas with the most war industry (DeHart and Smith 1947, 42). The American Car and Foundry, in Berwick, Pennsylvania, absorbed so much labor that the surrounding farming area decreased in productivity (Fairchild and Grossman 1959, 121).

Not only was there conflict between the needs of agriculture and industry, but within industry there were repeated instances of one industrial sector preying on the labor of another. Shortages of skilled labor were clearly evidenced by West Coast aircraft companies and Detroit automotive companies actively stealing labor from each other and, thereby, adding to overall manpower shortage in the nation as companies felt the need to begin hoarding excess labor (Pate 1943, 154). At least when industry stole from agriculture, there was little chance of agriculture being able to return the favor unaided. Finding that the grass in industry was greener, once workers had switched to industry from agricultural, many often did not want to go back. They would rather move to another city and remain unemployed.

Even with labor in such demand across the country, there were still pockets of unemployment like New York City (Fairchild and Grossman 1959, 101). Recognizing that it needed to move work to the workers, the government issued legislation in June 1940 that changed the criteria for awarding contracts from being limited solely to price and reliability to include considerations about the available capacity of prospective contractors and the available manpower in the vicinity of the contractor (Fairchild and Grossman 1959, 109). This was somewhat effective, but by then much of the pattern of industrial expansion was already set. As the single largest wartime consumer the War Department had the greatest ability to manipulate the labor market through its contract placement. By 1943, proposed plant expansions tended to be contingent on manpower availability.

The War Department was concerned by other aspects of industrial labor than simple availability. It was concerned about the possible adverse effects on wartime production of provisions of certain labor laws. Of particular concern were the National Labor Relations Act, the Davis-Bacon Act, the Walsh-Healey Act, and the Fair Labor Standards Act (Fairchild and Grossman 1959, 35). These pieces of legislation guaranteed things like minimum wages, maximum hours, and the right to unionize and strike. The War Department had reason to be concerned. Between 1942 and 1945, strikes cost the nation 39.5 million man-days or the work of roughly 150,000 men for an entire year (Fairchild and Grossman 1959, 83).

In 1943, President Roosevelt adjusted the maximum hours provisions upwards by 4 hours per week to a total of 48 hours for defense industry and thereby produced the manpower equivalent of 5.5 million additional workers (Haber 1952, 388). Since industry

had to pay overtime, companies had an incentive to hire more workers if they could rather than accept the decrease in profits. By comparison, farmers during WWII increased their working time by 5.6 hours per week to 72 hours per week (Wilcox 1947, 100). With increased hours on both sides and assuming companies were paying the overtime that farmers, of course, did not pay themselves, it would have taken fifteen industrial workers to do the work of ten farmers. Looked at another way, assuming companies were paying overtime, the loss of a farmer to industry meant the loss of 24 man-hours per week.

I Want YOU For U.S. Army

The other major drain on agricultural labor was the military. Provisions for exemption from military service on the grounds of occupation were included in military service legislation during both the Civil War and WWI. Civil War legislation made no special provision for agricultural deferment since, at that time, the population was still roughly half farmers (DeHart and Smith 1947, 7). During WWI, the United States had the advantage of entering late and, therefore, having been able to observe the mobilization procedures used by other nations. The British precedent in WWI was a voluntary system that was seen as drawing disproportionately from skilled workers and allowing slackers to opt out (Keith 2001, 1339). The system was perceived as unfair and as evidence of the need for compulsory service legislation. Another example came from the French and Germans who each thought that the war would be over quickly and withdrew far too many men from industry and agriculture at the beginning of the war (Blum and Smyth 1970, 379). Their overconfidence led them also to ignore the possession of critical skills by their prospective soldiers. Learning their lesson, they then had to put soldiers back into industry and agriculture to sustain required output levels.

The Selective Service Act passed by Congress in 1917 provided for individual selection of men between the ages of 18 and 30 who were all required to register for the draft. The Act contained provisions for occupational deferments based on the essentiality and irreplaceability of the worker (DeHart and Smith 1947, 14). The authority to grant these deferments was held at the district rather than the local level and deferments thus granted were not permanent. They could be revoked if the status of the worker changed or the needs of the war effort changed. Although rare, there were instances of group deferments during the war such as that of shipyard workers in 1917-1918 (Gough 1982, 98). Group deferments were exceptionally unpopular among WWI veterans. The entire Act was unpopular with certain segments of the population including many Southerners and Midwesterners. Southern Democrats saw the Act as an attempt to shield industrial labor and push the burden onto the mostly rural south (Keith 2001, 1342). Once President Wilson promised them that farmers would be eligible for occupational deferments they were somewhat pacified, but there were still 109 nays when it was put to the vote in the House.

The Act, as finally passed, included agricultural deferments but did not give consideration to their being in any way different from other occupational deferments. The Act measured essentiality and irreplaceability based on an agricultural worker's role and placed him in one of four categories: sole managing head, assistant manager, skilled farm laborer, and excess or underemployed (DeHart and Smith 1947, 20). The goods an agricultural worker produced had to be needed for the war effort and had to be produced in enough surplus for commercial sale. This essentially prevented subsistence farmers from being eligible for occupational deferment from the draft. In total, 1.6 million

occupational deferments were granted and one million of them were for agriculture (DeHart and Smith 1947, 21).

It was not, however, occupation, but dependency, that saw most registrants deferred and, by the end of WWI, two-fifths of those deferred were by reason of dependency (Gough 1982, 103). This presented a different problem particularly applicable to small farmers, subsistence farmers, day laborers, and sharecroppers. If a prospective draftee's civilian earnings were less than what the military was going to pay him, he was not eligible for a dependency deferment (Keith 2001, 1345). This meant that poor farmers and laborers likely could not qualify for deferment under either occupational or dependency provisions. Evidence of the draft's unpopularity with the American populace can be found in the estimated 2.4 to 3.6 million men who dodged the draft by refusing to register and in the 340,000 men who deserted by failing to appear for induction and by running away from their training camps (Keith 2001, 1336). Based on a population of 2.8 million men drafted, this represents a 12 percent desertion rate.

Despite having observed French and German mobilization mistakes and enjoying the luxury of a slow industrial conversion to a wartime footing, the Selective Service still cut too deeply into the nation's industrial base. The overall need for occupational deferments was decreased by the slow industrial expansion, the fact that the Allies were largely equipping American forces, and the short duration of American involvement in the war (Blum and Smyth 1970, 380). Even so, between 1917 and 1918 the percentage of deferment requests granted increased from 42.8 percent to 53.6 percent (Blum and Smyth 1970, 400). In March 1918, Congress had to pass the "Furlough Act" to put skilled soldiers back in shortage industries and, in May 1918, had to pass the "Work or Fight"

amendment to make those not in essential war work liable for immediate induction (Blum and Smyth 1970, 400).

The first WWII increases in the size of the Army came in May 1940 in response to Hitler's attacks into Western Europe in April through June (Nanney 1982, 16). By July 1940, General Marshall admitted to Congress that this increase to 242,000 had not been enough. He said the military had been hoping for another "miracle of the Marne" (Nanney 1982, 19). He was concerned, however, about the Army's ability to handle a massive influx of conscripts and so advocated a peacetime selective service and training system to slowly build capacity. In August 1940, Congress and the President agreed to call the National Guard and Organized Reserves to active duty for 12 months but there were still many dissenters as evidenced by the fact that the vote passed each chamber of Congress a ratio of 2 to 1 (Nanney 1982, 26).

The Selective Training and Service Act, passed the next month in September 1940, was reasonably popular based on Gallup polls that measured public support at 71 percent (Nanney 1982, 20). The Act was modeled after the WWI legislation in that it called for service based on individual circumstances and war needs, allowed for occupational deferments, and had no special provisions for farmers (DeHart and Smith 1947, 23). It intentionally prohibited the blanket deferment of groups of registrants. The Act required all men 21-35 to execute one year of military training and service followed by ten years of liability for recall to active duty. Many young agricultural workers thought it in their best interests to get the obligation out of the way early (DeHart and Smith 1947, 39).

In keeping with national democratic traditions, the Selective Service System was intentionally decentralized with the national level maintaining a laissez-faire attitude towards actions at the local level. It proved to be a relatively popular system with the American public (Gough 1982, 96). Actions at the local level were handled by 6443 local draft boards (Gough 1982, 89). These boards were empowered to make decisions about the essentiality of an individual and, a change from WWI, to grant occupational deferments (DeHart and Smith 1947, 22). Local boards had considerable autonomy in their decisions. This was largely because decisions had to be based on individual and war circumstances prevailing at the time of the decision. There was no effective way to craft rules at the national level to cover every situation that might occur at the local level (DeHart and Smith 1947, 4). In the main, the national level simply provided general guidance for local boards to interpret and implement but, as the head of the Selective Service System testified to Congress, the local boards could not be effectively compelled to follow the guidance (Pate 1943, 158).

The national level realized that local boards knew the most about conditions in their area and were the most familiar with individual registrants. Local board, however, sometimes overlooked essentiality when a man volunteered because they had to fill quotas and would rather take the willing than the unwilling (Gough 1982, 143). They were influenced by the patriotism demonstrated by those volunteering to serve and ignored whether the man was needed more on the homefront. In addition, local boards were more influenced by circumstances of dependency than by an individual's essentiality to the war effort (Pate 1943, 154). It was not unusual for less essential registrants with dependents to be deferred while more essential registrants without

dependents were inducted. Local boards were occasionally directed by the national level to use the draft as an antistrike weapon (Fairchild and Grossman 1959, 197). It did not happen often, but, in special circumstances, previously deferred strike leaders would find their deferments revoked and be subject to immediate induction.

American mobilization efforts got some breathing room in June 1941 when Hitler attacked Russia (Nanney 1982, 26). This created problems, however, because the less imminent threat made Congress reluctant to agree to the extension of the National Guard and Reserves past their 12 month commitment. Although an 18 month extension was finally approved, the vote in the House was 203-202 (Nanney 1982, 26). By November 1941, 922,000 men had been inducted under the Selective Service and Training Act (Nanney 1982, 24). The next month, with the attack on Pearl Harbor, the Act was amended to allow inductees to serve outside of the United States and to increase the service obligation to the duration of the war plus six months (Nanney 1982, 29). The amendment also expanded the registration requirement to all 18- to 65-year-old men with 20- to 45-year-old men eligible for military service. It permitted 18- to 19- year-old men to volunteer. Volunteering had significant benefits since a volunteer could pick his service and less than five percent of volunteers chose the infantry or armored service (Nanney 1982, 24). Roughly a year later, in November 1942, based on the military's desire for younger soldiers, the draft age decreased to 18, but 18 year olds were restricted from certain types of service (Blum 1954, 81). Pre-war legislation prevented those 18 and under from doing dangerous work so the War Department dictated that infantry and armor trainees had to be at least 18.5 years old (Nanney 1982, 51).

Until December of 1942, men could still volunteer to serve but this complicated the flow of manpower. There was a great deal of reluctance to eliminate volunteering because it might send the wrong message to the American public. Neither the Army nor the Navy like the side effects of volunteering, but neither wanted to be the first to put a stop to it (Gough 1982, 97). Each service was afraid that, if it forbade volunteers first, it would lose good men to other service. The Navy Department and War Department tried to cooperate on restrictions by requiring that volunteers obtain written proof from their local draft board that they were not essential to industry and from their employers that they were willing to release them. These measures were not effective enough, so President Roosevelt finally put an end to it by executive order.

During 1942, there was struggle within government for manpower control. In January, there were 1.7 million soldiers under arms and by December of that same year there would be 5.4 million soldiers under arms (Nanney 1982, 36). The chief bone of contention was the 1943 Troop Basis that the War Department's drafted in the summer of 1942. The Troop Basis, which President Roosevelt was convinced to sign, called for an Army of 8.2 million soldiers by the end of 1943 (Nanney 1982, 33). The War Department's position was that military troop strength was something that only the military could determine and that it must be done solely on the basis of military need (Gough 1982, 143). By summer 1942, however, the pool of unemployed generated by the Depression almost gone and shortages were becoming apparent. The WMC and the WPB both criticized the Troop Basis as requiring too many men (Nanney 1982, 33). They argued that the plan would wreck industry and agriculture and there were complaints that military planners had not consulted with civilian agencies as they prepared it.

The struggle, then, was between the War Department, which had control of the Selective Service System, the WMC, which wanted control of Selective Service, and the WPB, which wanted control of manpower to complement its control of production (Gough 1982, 92). Adding to the struggle were a Congressional desire to limit military autonomy in manpower planning and an American public critical of high military manpower demands. In the end, General Marshall reduced the Troop Basis (Nanney 1982, 40). He did this not because he thought the reductions militarily advisable but because the War Department was finally forced to concede that industrial and agricultural manpower shortages were forces that had to be accounted for in military plans.

It was not so much that the military ignored industrial needs; it was simply that the War Department did not believe that the size of the military could seriously impact the nation's industrial or agricultural efforts (Gough 1982, 143). What planners may not have considered closely enough was that estimates of the day suggested that eight to ten civilian workers were required to keep one soldier in the fight (Pate 1943, 154). Occupational deferment was the mechanism that was designed to protect industry and agriculture from the voracious appetite of the military machine. When the Selective Service Act was originally drafted for WWII, all occupational deferees were to be placed in the same class and all deferments were to last six months with additional six months extensions authorized (DeHart and Smith 1947, 27). To distinguish those most critical for home defense and war production, a separate class was subsequently added that had no time limit but that was still revocable. Registrants had ten days to notify their local board of any change in their circumstances that might alter their deferment eligibility.

Occupational deferments did not, however, keep enough agricultural workers on the farms. By the summer of 1941, sugar beet fields were being plowed under for lack of labor to harvest them and, in some areas, farmers were cutting their crop acreage by up to 50 percent (Gamboa 1990, 28). In response to these early manpower shortages, some state boards recommended the blanket deferment of farmers. This recommendation was echoed, in fall 1942, by governors and congressmen in the farm belt (Gough 1982, 99). Some of the loss was essentially voluntary and was the product of agricultural workers who were reluctant to seek deferments due to patriotism and fear of adverse public opinion (Rasmussen 1951, 31). There was a general sense that being deferred for agriculture was equivalent to draft-dodging while military service was accorded respect and prestige (Reynolds 1950, 228). Some of the loss was due to farmers getting jobs in industry and some to military inductions.

In an attempt to prevent the latter two causes, Congress passed the Tydings Amendment in November 1942 (DeHart and Smith 1947, 25). This was the only change ever made to the Selective Service Act that applied specifically to one group. It created two new classes for essential agricultural workers and for essential agricultural workers already deferred by reason of dependency (DeHart and Smith 1947, 30). Neither class had a deferment time limit. The amendment also stipulated that farm workers needed their local draft board's permission to leave agricultural work and, if they acted without this permission, they would be immediately inducted. Supporters hoped that protection from the draft would compensate for lower agricultural wages and induce agricultural workers to stay where they were poor but safe. That promised safety proved to be a reality since, before passage, 60,000 farmers were being inducted monthly while, after

passage, this number dropped to 20,000 per month (DeHart and Smith 1947, 53). The amendment successfully slowed the migration of labor from agriculture to industry and some men actually returned to agriculture (Wilcox 1947, 89). The amendment left a gap, however, in that it only applied to men liable for the draft. Those too old or already deemed unfit for service could still leave agriculture with impunity.

Although perceived as favorable for farmers, the Tydings amendment was essentially coercive in nature as, indeed, was the entire Selective Service System. Additional measures were taken to coerce farmers in early 1943. Local draft boards were presented with a new system to determine farmer essentiality known as the “war unit” system (Gough 1982, 100). Under this system, all farm output was classified as either essential or non-essential. Essential farm output was measured and only farmers producing above certain thresholds were to be deferred. This rule was an attempt to force farmers to switch to producing essential crops if they were not already doing so and to force low output farmers to work to increase output.

In February 1944, Planning for the invasion of Europe revealed the need for more men in the military. The War Department was also beginning to realize the need to rotate units or individuals but lacked the manpower to do it (Nanney 1982, 49). At this point, there were five million occupational deferments in effect. With 550,000 farmers without dependents under age 26 deferred and 380,000 industrial workers without dependents under age 26 deferred, Roosevelt ordered that all deferments be reexamined by local boards (Blum 1954, 84). This was to include all farmers. Local draft boards in agricultural areas largely ignored this injunction and the rate of farmer induction did not

rise (Gough 1982, 101). Local draft boards in nonagricultural areas, however, almost emptied the pool of non-agricultural registrants under 26 (DeHart and Smith 1947, 34).

In an attempt to close the gap in the Tydings Amendment that allowed nondraftable men to leave agriculture, broader provisions were implemented. If nondraftable men could be convinced to return to agriculture, it would free up the draftable men who could not otherwise be spared for military service. The fact that the dairy industry, in particular, was shorthanded was of concern since dairy products were a shortage item worldwide (DeHart and Smith 1947, 67). The expanded amendment added all agricultural registrants between 30 and 44 years old to the Tydings class (DeHart and Smith 1947, 34). Also added were 18- to 30-year-old agricultural registrants who were either completely unfit for military service or fit for only limited military service. If they did not return to agricultural work immediately, the military would induct them and find them something to do.

By the end of the war, the Selective Service System with all its changes was largely responsible for putting 15 million men into military service (DeHart and Smith 1947, 37). At their peak the Army and Navy had 12.3 million soldiers under arms. This was achieved despite the fact that the Selective Service met its quarterly quotas only twice during the war (Nanney 1982, 40).

Why Not National Service?

In light of the broadly coercive legislation that the government was willing to enact against specific categories of people throughout the war, it is somewhat surprising that the nation never implemented national service legislation. In an ideal situation, national service would have allowed the government to dictate who worked where in

wartime and thereby ensure that each citizen was contributing his labor to the war effort in the most effective way possible. This sort of legislation would have gone far to solve problems in all sectors including agriculture. There were certainly precedents that supported the concept. New Deal work programs like the Tennessee Valley Authority and the Works Progress Administration were both examples of government controlling civilian labor (Carpenter 2003, 15). Another example, the Civilian Conservation Corps, established in 1933, recruited unemployed single, 18- to 25-year-old men for one year at a time (Schlebecker 1975, 260). At its peak, the Corps had 600,000 workers living in government built camps who were variously used by the USDA, the Department of Interior, and the War Department. Foreign precedents during WWII included Britain and Canada, which each implemented national service legislation to manage manpower requirements (Reynolds 1950, 227).

Public sentiment shortly after WWI was favorable to the idea. The American Legion and the War Department both supported national service during the 1920s and tried to influence Congress to enact peacetime legislation authorizing it for wartime (Gough 1982, 129). By WWII, however, the Depression had endowed organized labor with significant power and labor groups like the AFL were adamantly opposed. Supporters during WWII pointed out that national service was morally important for the nation and that it would provide a psychological boost for soldiers and civilians alike (Fairchild and Grossman 1959, 221; Gough 1982, 130). They argued that it was the only equitable way of ensuring equality of sacrifice and that it was no different from the universal requirement to pay taxes (Fairchild and Grossman 1959, 226). They insisted that voluntary measures were not working and pointed to other democratic nations

practicing national service as evidence that it was democratically acceptable and practically workable (Reynolds 1950, 226).

The other side countered that national service subjugated labor by removing the workers' right to strike and right to quit. Employers objected that it restricted their control by denying their right to fire workers. African American organizations were concerned that it would be a de facto return to slavery while women's groups objected to women being forced to work outside the home (Gough 1982, 130). Opponents argued that fighting for one's country was not the same as helping an employer make a profit (Pate 1943, 160). They said it was undemocratic and a breach of American traditions (Gough 1982, 147). The AFL and the Congress of Industrial Organizations denied the claim that national service legislation would in any way increase production. Although some labor groups supported the idea, they were typically ones that had Communist leanings.

Some polls in 1942 showed popular support for compulsory assignment of workers, but President Roosevelt was still unconvinced of the necessity at that time (Fairchild and Grossman 1959, 222). He supported the general theory and thought that it would likely be unavoidable in the long run, but wanted to save it as a last resort. There was also concern about the difficulty of implementation. Local draft boards were not technically competent to handle selection and placement of workers in industry (Pate 1943, 158). If it were to be done, the implementing agency would have to have had the total confidence and trust of the populace.

In 1943, the War Department had to send soldiers to work in mining, canning, agricultural equipment industries, and to harvest crops because of labor shortages

(Nanney 1982, 38). This was one of the factors that instigated the submission of the Austin-Wadsworth Bill to Congress. The bill proposed that all 18- to 65-year-old men and all 18- to 50-year-old women be compelled to register for possible employment (Fairchild and Grossman 1959, 225). Volunteer workers would be taken first but, if, for a given job, no volunteers presented themselves, a worker would be assigned the job. Proponents argued that the bill would do openly what was already developing indirectly and labor and industry were being coerced piecemeal. The War Department supported the bill and General Marshal testified to Congress that the military needed 900,000 more men in the next 6 months and that industry needed 700,000 (Nanney 1982, 46). Congress was unconvinced and buried the bill in committee.

In November and December 1943, President Roosevelt visited troops in North Africa and met with Stalin and Churchill at Tehran where they agreed to open a second front (Fairchild and Grossman 1959, 231). After these events, he changed his mind about the necessity for national service. In his State of the Union address in January 1944, President Roosevelt publicly supported national service legislation for the first time also stated that Congress would need to pass accompanying legislation to ensure equitable implementation (Fairchild and Grossman 1959, 233). The improved war situation during much of 1944 relegated considerations of national service to limbo until the German offensive in the Ardennes in December 1944 sufficiently worried the nation to reanimate it (Fairchild and Grossman 1959, 238). The War Department claimed it had shortages of manpower and materiel and that there were not enough workers in industry to make up the shortages. In his 1945 State of the Union address, President Roosevelt again advocated enactment of national service legislation but, knowing that it might be a long,

hard fight, proposed the immediate enactment of a law compelling the four million men in IV-F category to work as the government so directed (Fairchild and Grossman 1959, 239). Before the House and Senate could even finish wrangling over this limited measure, the war in Europe ended and the idea died on the Senate floor.

Agriculture Gets Reinforcements

A plethora of national and more localized attempts were made across the country to remediate the manpower shortage. On the national level, the government implemented legislation allowing the elderly to return to work without losing their retirement benefits (Rasmussen 1951, 45). The War Food Administration suggested that states consider using their domestic prisoners as agricultural labor. Seattle followed this advice and released some of its prisoners to work on the apple harvest (Gamboa 1990, 28). The government imposed employment freezes like the one in 1943 that froze 27 million workers essential to the defense industry (Nanney 1982, 39). The people remaining on the Works Project Administration's rolls were removed, works projects were terminated, and relief rolls were emptied (Gamboa 1990, 23).

More localized attempts included imposing "brownouts" in which business window displays were turned off after a certain hour to encourage people to go home and decrease absenteeism (Fairchild and Grossman 1959, 82). Cities also set curfews to discourage absenteeism. Some places closed entertainment venues like taverns, pool halls, dance halls, and race tracks to eliminate places for the able bodied but unemployed to loiter. Some businesses limited work hours so that employees could spend their newly freed hours working in the fields. Some places declared "Farm Labor" weeks where all citizens were encouraged to register for farm work (Gamboa 1990, 28). In extreme cases,

some places even recruited the mentally ill to work in the fields. It is difficult to gauge the effectiveness of some of these measures and some of them likely had more psychological effect than actual productive effect.

It is important to note that replacing one draft eligible farmer or agricultural laborer generally required more than one person both because of physical aptitude and general skill. While basic agricultural labor may not have required great intellectual prowess, it was an occupation in which speed and dexterity were gained through practice and in which stamina was built over time. Running an entire farm operation, even a small family farm, required skills, knowledge, and above all experience that took years to obtain.

One of government's attempts at finding replacements was the Crops Corps, which encouraged young people to volunteer to work in agriculture especially during their summer and holiday breaks. In 1943, 835,000 youths were placed on farms either as live-in help or were trucked in as day labor (Rasmussen 1951, 126). The number dropped to 562,000 in 1944 and rose again to 741,000 in 1945. Interestingly, 35 to 40 percent of those involved each year were girls. In addition to this organized governmental program, there were more localized efforts like the teachers in Marion County, Oregon who organized 10,000 students to work in the fields (Gamboa 1990, 29). In Washington State, the school year was shifted to a six day week so that it would finish earlier and release students for critical summer work (Gamboa 1990, 27). Washington also registered all schoolchildren eligible for agricultural work. In many places, schools closed temporarily to release students for peak fieldwork times. These methods were not without opponents.

Some thought that education was suffering and that agricultural work was too dangerous for children.

In some ways the use of women in agricultural work was even more complicated than the use of children. With women making up 80 percent of the population of those unemployed and not actively seeking work, it was only logical that the government would attempt to target them as potential wartime workers (Fairchild and Grossman 1959, 155). The fact that it had to make this attempt at all and that it had to work so hard was in large part its own fault. The government's recruiting campaign during WWII was a significant departure from its previous messages.

The Country Life Movement and its 1907 governmental precursor both believed that women were a key to stemming the tide of rural to urban migration. They believed that women, dissatisfied with the conditions of rural life, were encouraging their husbands to get out of farming and, if that was unsuccessful, were convincing their sons and daughters to do it instead. In 1913, the Secretary of Agriculture agreed with this position and felt that the government had an obligation to help improve rural conditions in order to make farm women happy enough to want to remain in agriculture (Jellison 1993, 10). There was a sense that women were inherently responsible for the moral development of future generations and the government wanted the country's collective morality to have a rural rather than an urban base.

In order to make women happy, the government believed it needed to provide better rural roads, better rural communications, and rural electrification (Jellison 1993, 3). If women could talk and visit each other more easily and had electric devices to lessen their work, that would be enough to keep them down on the farm. While seemingly

reasonable, all of these judgments were predicated on a core belief that men and women had and ought to have separate spheres. While men might need tractors, what women really needed were electric kitchen appliances and telephones. This ignored the reality that rural men's and women's roles were not nearly so clearly demarcated.

The reality of farm women was far more complex than the government's policies and propaganda acknowledged. In 1919, Midwestern farm women worked 13 hours per day during summer months and 10.5 during winter months (Jellison 1993, 34). They took care of their own family and, in addition, cared for the needs of all of the hired help on the farm. Their work did not stop at the kitchen door, however, since they also raised small livestock and grew fruits and vegetables for family consumption and commercial sale. On many farms, these sales were the only things providing cash for the family between harvests. During peak seasons, it was not unusual to find farm women in the fields working with the men performing either hand labor or using machinery.

The Smith-Lever Act, passed in 1914, created the Agricultural and Home Economics Extension Service that was designed to provide a nationwide program of educational extension programs (Jellison 1993, 16). While combined in one service, there was a clear separation between the agricultural extension work directed at men and the home economics extension work intended only for women. The extension service, which would become the single most important source of information for most farm families, reflected the government's program gender separation.

During WWI, private groups organized the Women's Land Army of America to encourage women to participate in agriculture. It attempted to appeal to factory workers who, it was believed, needed fresh air and would benefit socially and physically from

work outdoors. The organization was somewhat tied to the Department of Labor but operated for the most part without direct government interference (Carpenter 2003, 15). By the end of WWI, there were 15,000 women in the organization spread across 20 states. These women had to be physically fit, available for eight to nine hours per day, and able to afford to live on poor farm wages. The average net income for women in the Land Army was \$15 for 5 weeks of work as compared to women in the railroad industry who made \$60 to \$100 per week (Carpenter 2003, 16).

Clearly these women were inspired not by money but by a patriotic desire to help with the war effort. The organizers of the Women's Land Army also wanted to spearhead the expansion of women's role in agriculture and assumed that they would have a place of influence after the war. The government, however, had other ideas about what women should be doing. In 1919, the Department of Labor announced that women were no longer needed as agricultural laborers and essentially fired the organization (Carpenter 2003, 20). Their concern was more for men returning from the war who needed jobs than with what might be good for women.

The Better Homes Movement in 1922, of which President Harding, Vice President Coolidge and Commerce Secretary Hoover were all honorary leaders, also advocated gender division (Jellison 1993, 38). Men should be homeowners while women should be homemakers. During the Depression, the New Deals programs reinforced the government position on the role of women (Carpenter 2003, 21). New Deal programs like the Civilian Conservation Corps were aimed at unemployed men, not women. Employed women were seen as unacceptable competition to men looking for work. While it is understandable in a time of high unemployment, that the government would want to

ensure every family had one member with a job before any family got a second job, the end result was that the government discouraged women from working. Through Extension Service messages aimed at farmers, the government went so far as to say that only primitive cultures made their women and children work (Elbert 1988, 250). The Extension Service's message to farm women was that they should aspire to be more like their urban counterparts (Jellison 1993, 61). While this message was mostly in reference to the notion that urban women had electric conveniences that rural women ought to want, it could not help but imply at the same time that women ought to minimize the amount they worked because hard work was inappropriate for women.

To be fair, it must be pointed out that the government was not the only organization promoting rural gender separation. Farming organizations like the Farm Bureau and the Farmer's Union in more and less official ways respectively limited women's involvement in agricultural decision making. The Farm Bureau admitted women primarily as social participants and its structure made clear that women ought to be interested in social issues while the men were concerning themselves with serious agricultural business (Neth 1988, 344). The Farmer's Union was more egalitarian and gave women the right to vote in organizational decisions, but all of its political officers were de facto controlled by men (Neth 1988, 349).

With all of these organizations and programs reinforcing societal stereotypes, it is small wonder that, there were 36 million women in America not actively seeking work in 1940 (Fairchild and Grossman 1959, 169). It is difficult to measure how much work the six million farm women in America were contributing to agricultural output (DeHart and Smith 1947, 71). Some statistics claims that the farm labor force only included 14 percent

women, but this likely failed to include some farm women who worked on their own farms with no wages (Carpenter 2003, 26). Other statistics suggest that a quarter of farm women spent some portion of their time performing field work. By 1941, reports from Iowa stated that only nine percent of farm labor expended could be traced to women and children (Jellison 1993, 140).

In the industrial sector, there was reluctance to hiring women. Women were expected to marry and then stay home to cook and raise children (Elias 2009, 89). Men objected to the idea of women entering “their” fields while psychologists of the time actually said that married women were unsuited to having careers. Women were expected to set the moral example for their families and create a domestic refuge for their husbands (Brownlee 1979, 203). In an increasingly heterogeneous society, it was also the role of women to preserve traditional family and national values (Brownlee 1979, 205). Moreover, the presence of supposedly idle women in the home was perceived as a sign of wealth and social status (Brownlee 1979, 201). In addition to these social mores, there were official restrictions. The length of women’s working hours was limited by legislation and many unions refused to allow women to become members (Fairchild and Grossman 1959, 170). It is not surprising that women might have been reluctant to want to fight against discrimination in order to gain work.

In 1941 and 1942, there was little serious attempt to recruit women for the defense industry. In fact, after Pearl Harbor women and girls opted to join the labor force, they were turned away (Fairchild and Grossman 1959, 170). In April of 1942, the WMC announced that there were too many interested women and not enough work and President Roosevelt announced that there was no need for more women in industry.

Having turned them away when their patriotic fever was fresh, it must have been somewhat embarrassing for the WMC to have to report in the fall of 1942 that the defense industry would need five million women by the end of 1943 (Fairchild and Grossman 1959, 170).

As requirements for women in industry increased in 1943, so too did requirements in agriculture. The government's solution was to dust off the concept of the Women's Land Army of America from WWI. It took some pointers from women's farm labor programs in Australia, Canada, New Zealand and Britain (Carpenter 2003, 15). By 1941, the British had 40,000 women working year round on farms and had proved that such a program could be socially acceptable and successful (Carpenter 2003, 29). America launched its Women's Land Army in 1943. Like its WWI predecessor, the Women's Land Army attempted to recruit nonfarm workers to become agricultural laborers and appealed to farm women to expand their role. Initial estimates suggested that the government could get 10,000 nonfarm women to work year-round, 50,000 to perform seasonal work, and 300,000 for short term work and emergencies (Rasmussen 1951, 138). Women had to be at least 18, willing to perform at least one full month of labor, and present a doctor's certificate proving they were physically fit (Jellison 1993, 132). They would be assigned to areas of labor shortage where they could live with farm family, commute from an urban area, or live in women's camps. They would earn the prevailing wage rate for the location they worked. Amazingly and unexpectedly by the government, two million women volunteered and were placed between 1943 and 1945 (Rasmussen 1951, 153). Women's ability to participate on this scale was facilitated by increasingly widespread mechanization, which reduced the requirement for physical

strength. In fact, the percentage of farm women using field machinery quintupled between 1941 and 1942 (Jellison 1993, 139).

As in industry, there was resistance to the idea of women working. According to a 1943 Gallup poll, only 28 percent of Midwestern farmers supported the idea of women as hired workers (Jellison 1993, 134). They viewed city women as corrupt, immoral and incompetent. They did not believe that nonfarm women could handle difficult machinery or handle an honest day's labor (Rasmussen 1951, 147). Opinions were more favorable in other regions, but nowhere was the percentage in support even at 50 percent.

Employer resistance was not the only problem besetting farm and nonfarm women who wanted to work. There were no provisions for the care of young children to free up mothers for employment. With wartime regimentation and material shortages, building and staffing childcare facilities was quite challenging (Fairchild and Grossman 1959, 131). There were simply too many agencies to please to make construction and operation simple. For this reason, farm women over 35 were more likely to be in the fields since they were less likely to have young children to worry about (Jellison 1993, 143). The drop in birth rate during the war was probably partially responsible for freeing young women for the labor force. This was one area where nonfarm women's patriotic desire to help with food production reached its limit. While nonfarm women saw worth in being out in the fields directly affecting agricultural production despite their own limited knowledge and experience, the notion of caring for farm women's children to free them up for farm work was unpalatable (Rasmussen 1951, 144).

Women responded to the war with impressive contributions to both agriculture and industry. Since every woman in industry represented a man who was not needed

from agriculture, women's contributions in both areas impacted the agricultural manpower problem. The percentage of farm women working in the fields nationwide doubled by 1942 while Iowa's percentage of farm labor performed by women and children quadrupled by the end of 1943 (Jellison 1993, 140). From 1941 to 1949, the number of women in the total labor force increased from 14.6 million to 19.4 million (Fairchild and Grossman 1959, 172). These contributions, however, were not always assisted by government wartime propaganda, which seemed to suffer from a split personality. Out of one side of its mouth, the government exhorted women to help with food production, which was painted as critical to the national war strategy. They were cajoled to get involved with the motto that "Food will win the war and write the peace" (Jellison 1993, 131). The government worked to convince women that they should take up men's work and use agricultural machinery previously touted as masculine. Out of the other side of its mouth, the government emphasized that the "tractorette" was only a temporary role and continued to advertise agricultural work as essentially men's work (Jellison 1993, 135).

Another significant contribution to agricultural manpower came from the importation of Mexican laborers under the Bracero Program. Like the use of women, this labor source had an unfortunate history with the American government. When the Treaty of Guadalupe-Hidalgo closed the border with Mexico in 1848 and left the pool of impoverished labor on one side and the capital on the other side, it was inevitable that the two would find ways to interact (Galarza 1964, 14). Between 1900 and 1910, 49,000 Mexicans immigrated legally to the United States (Galarza 1964, 28). They came to fill the labor gap left by the Chinese Exclusion Act of 1882 and the end of Japanese

immigration in 1907 (Kiser 1973, 57). They came, some having been recruited, to work in agriculture and on the railroads and because the industrializing and modernizing United States presented opportunities that, at a currency exchange rate of 2 pesos to the dollar, Mexico could not (Galarza 1964, 28). The Alien Contract Labor Law in 1885 criminalized the practice of importing foreign labor via contract but the provisions were not well enforced against Mexican labor (Kiser 1973, 59).

Until 1910, Mexico was essentially a feudal society ruled by the military and its primarily agricultural economy was largely unmechanized, and fueled by large quantities of cheap labor (Kiser 1973, 54). Rural workers were tied by multigenerational debt to the haciendas on which they lived (Galarza 1964, 18). The haciendas controlled essentially all of the land and had a monopoly on basic necessities like water and firewood. The Mexican Revolution in 1910 was supposed make life in Mexico better for the peasants and it did succeed in breaking the feudal system (Kiser 1973, 62). It also brought a decade of civil war. Many Mexicans moved north to escape the haciendas, to escape violence and to escape their growing poverty (Gamboa 1990, 6). The Revolution did not bring the good life it promised. By 1920, promises of land redistribution were still largely unfulfilled and the average Mexican was still landless. In fact, Mexicans in the states of Jalisco and Veracruz were 96 and 99 percent landless, respectively (Galarza 1964, 18). Less than one percent of the population still owned 99.8 percent of the land. Internecine strife between the church and the state and an economy that was in shambles contributed to the terrible living conditions in Mexico (Gamboa 1990, 6). Between 1911 and 1921, there were 250,000 legal Mexican entrants to the United States, but estimates put the

illegal entrants during the same time at roughly one million (Galarza 1964, 28). American labor leaders now considered the growing Mexican population in America a threat.

Immigration during WWI decreased greatly from all countries but especially from previously bountiful labor sources in Europe. This was in part caused by the war itself and in part by the 1917 Immigration Act. Agriculture began to feel the pinch quickly after the legislation was passed so the Secretary of Labor asked that the \$8 head tax and the literacy requirements be waived for Mexican agricultural laborers in support of the war effort (Kiser 1973, 65). Workers admitted during the war were expected to return to Mexico afterwards. The Mexican government supported the effort and, starting in July 1918, provided trains to take workers to the border (Kiser 1973, 67). During the course of the war 73,000 laborers entered legally and, again, estimates place the illegal entries far higher than that (Kiser 1973, 74). The program was largely successful except that less than half of the entrants ever went home. In 1921, the waiver on the head tax and literacy requirements was rescinded as the need for Mexican laborers had been decreased by the return of American soldiers and the resumption of more normal immigration patterns (Kiser 1973, 73). Between 1921 and 1930, there were 459,000 legal entries (Galarza 1964, 28).

During the Depression, however, the government began strictly applying immigration laws on the southern border and legal entries between 1931 and 1940 dropped to 22,000 (Galarza 1964, 28). The United States made the unilateral decision to begin deporting thousands of Mexican workers (Kiser 1973, 83). The Mexican government was forced to spend significant amounts getting their citizens from the border back to their communities. Beyond the unwelcome climate, Mexicans, like

everyone during the Depression, had difficulty finding employment and 70,000 went home voluntarily (Kiser 1973, 82) .

With this long history of exploiting the Mexican labor force when it was convenient and denying it when it was less so, it is amazing that Americans were able to tap the reservoir again. On the American side, war-sparked xenophobia had its extreme expression in anti-Mexican riots in Texas and California (Gamboa 1990, 40). Farmers, however, needed Mexicans to bring in the harvest and keep agricultural products flowing. The USDA resisted requests for a renewal of the Bracero Program in 1941 (Gamboa 1990, 39). It thought that the real problem was not a labor shortage but that wages were too low to induce Americans to do the work. It was concerned that importing Mexicans would undermine the FSA's efforts to improve conditions for poor farmers and American migrant workers and might at least prevent agricultural wages from rising any higher or even cause them to fall.

Farmers claimed that American workers were shiftless, inept, and unwilling to do stoop-labor (Kiser 1973, 91). Arguably what they really wanted was a supply of cheap, docile workers. Pressure mounted on the USDA as, in 1942, the California Citrus Growers Association said it would lose half of the citrus crop due to lack of labor at harvest (Hurt 2002, 102). Opponents claimed that the program was unnecessary because there was already too much surplus American labor, which Mexican labor would serve to displace (Kiser 1973, 101). There were also fears, based on Mexican revolutionary sentiments, that any Mexican laborers admitted would likely be radicals who might stir up trouble in the United States.

Conveniently for agriculture, Mexico declared war on the Axis in June 1942 (Galarza 1964, 47). The Mexican and American governments almost immediately initiated negotiations to revive the WWI Bracero Program. Mexico insisted that this time employers would have to pay the repatriation costs after the war and refused to send any of its citizens to areas of historic discrimination like Texas. Mexican workers could not be used to displace American workers or to lower the prevailing wage in an area (Hurt 2002, 102). Farmers and workers would both have to sign a contract brokered through the FSA.

The Mexican government saw the program as an adventure for Mexican youth and a way for Mexicans to make high wages (Galarza 1964, 48). It was a way to help with the war effort and to avoid annoying the United States whose import market the Mexican government wanted to retain access to (Kiser 1973, 108). In addition, the Mexican government thought it likely that its citizens would go whether they were officially sanctioned or not and this program might provide the government a modicum of leverage on their behalf. Only 4000 workers came in 1942, but the program hit its stride in 1943 and 1944 with 53,000 and 62,000 workers participating respectively (Hurt 2002, 102). While these numbers may seem low compared to the size of the American agricultural labor force, the mobile nature of this population gave it worth greatly disproportionate to its size.

With such a successful program functioning with Mexico, the United States turned to other proximate sources of foreign labor. The Caribbean was especially attractive because, with British lineage, these islands' residents tended to speak English (Rasmussen 1951, 249). One of the shortfalls of the program with Mexico had proven to

be the language gap inhibiting production and producing instances of confusion or outright exploitation. In 1943, the United States recruited 26,000 workers from the Bahamas, 8700 from Barbados and additional workers from Jamaica (Fairchild and Grossman 1959, 179). These countries' economies were depressed due to the hiatus in tourist trade and their inability to export luxury tropical products like bananas (Rasmussen 1951, 249). Suffering from high unemployment, there were plenty of workers willing to participate in the program.

The United States' habitual friendly relations with its northern neighbor also proved beneficial to agriculture. With agricultural equipment in short production and with crews to man them also in shortage, Canada and American signed an agreement in 1942 that allowed used farm machinery and crews to cross the border freely (Rasmussen 1951, 91). By the end of the war, almost 200 combines were transiting the border and helping with American harvests. Canadian workers were employed primarily in northern border states working on the potato and grain harvests in Maine and the Midwest.

Another significant international source provided labor was far less voluntary than that of Bahamian dairy workers. There was really no precedent from WWI to provide guidance on how to utilize prisoners of war since only a few thousand German sailors were interned in the United States during that conflict (Mason 1945, 198). Prisoners of war interned in America during WWII were primarily German with only 12 percent Italians and less than one percent Japanese (Krammer 1976, 68). Between 1943 and 1946, 155 prisoner of war camps were constructed across the country about half of which were collocated with Army bases (Hurt 2002, 103). Most prisoner of war labor was used directly by the War Department on the maintenance and operation of prisoner of war

camps, in facilities on military bases like laundries and bakeries, and to execute vertical and horizontal construction projects (Mason 1945, 205). Using prisoners of war for these jobs freed up Army Service and Support troops for employment elsewhere (Levie 1963, 323). Labor excess to the War Department's needs was used primarily for agriculture, a Geneva Convention sanctioned activity. While food was unarguably critical to the war effort, it was not deemed to be inherently military because it was just as likely that civilians or prisoners of war themselves would consume what the prisoners produced (Levie 1963, 332).

Prisoners of war and agriculture were quite good fits for each other. Under the Geneva Convention, prisoners of war could not be exposed to the discrimination that was common in more populous areas (Fairchild and Grossman 1959, 192). The armed guards required while they worked for security reasons, limited their utilization in urban settings where it was harder to observe them. Farms were conveniently isolated and largely unpopulated. The wide dispersion of prisoner of war camps put prisoners of war in proximity to agricultural areas without undue transportation burdens on the military. Prisoners of war could be moved from one farm to another without problem and were a valuable mobile resource. In the main, prisoners of war were unskilled at farm labor and were used for relatively simple jobs that could be executed by guarded groups. Like Mexican workers, prisoners of war could not be used to lower prevailing wages or to displace American laborers (Fairchild and Grossman 1959, 192). They enjoyed the same working conditions as American workers, and farmers were required to pay the prevailing wage for their labor. The War Department kept all but 80 cents of their pay to defray the costs of their internment (Rasmussen 1951, 80). In June 1943, 41,000 of the

53,000 prisoners of war in the United States were employed outside of the camps (Rasmussen 1951, 99). This ratio dropped in 1944 to 197,000 interned with 102,000 performing external work and in 1945 to 426,000 interned with 140,000 performing external work.

The War Department assisted agricultural manpower in several other direct and indirect ways. For example, while there were never very many of them, conscientious objectors were routinely placed in agricultural work and were expected to work as directed for the duration of the war (Flynn 1983, 3). They made valuable contributions to dairying, which was continually being pushed to increase production. The Army also provided direct augmentation to the canning, mining and farm equipment industries through a 1941 policy designed to allow specially skilled soldiers to return to industry (Fairchild and Grossman 1959, 180). The War Department recognized that local draft boards were not always careful about whom they inducted and that conditions occasionally made it necessary to assist industry. This policy was not intended to solve seasonal shortages or to make soldiers widely available to agriculture or industry. Between 1942 and 1944, only 17,000 soldiers participated in the program (Fairchild and Grossman 1959, 189).

The War Department briefly allowed direct augmentation to agriculture in 1943, but determined that it had set a bad precedent and put a stop to it (Rasmussen 1951, 96). For example, pressing agricultural shortages convinced leaders at Fort Dix to use soldiers to save the New Jersey tomato crop and at Fort Meade to save the Maryland pea crop (Gough 1982, 134). Additionally, a group of 5000 soldiers in the Midwest helped with

the North Dakota grain harvest. When even more requests for help were sent to the War Department in 1944, they were denied (Fairchild and Grossman 1959, 184).

Less directly, the military's refusal to take men who did not meet their minimum physical and mental fitness standards meant that more manpower was left for agriculture. This policy benefited agriculture disproportionately since the military rejection rate for agricultural workers was higher than the national average. While, nationally, 42.6 percent of registrants were rejected, the rate for agricultural workers was 53.4 percent (DeHart and Smith 1947, 104). This rate was exceeded only by domestic servants and the unemployed. Among farmers, the most common reason for rejection was mental retardation or educational deficiency; 133 out of every 1000 farmers were rejected on these grounds. Malnutrition related conditions were also common reasons for rejection of farmers. It is somewhat ironic that the nation's inability to provide its rural citizens with the same standards of education and medical care was what kept many farmers out of harm's way and able to continue farming. Also of indirect benefit was the Army's decision in 1944 to cut the Army Specialized Training Program (Nanney 1982, 45). This program allowed 150,000 active duty soldiers to be full-time college students. General Marshall ordered the program cut to 30,000 with all others being inducted as infantry privates. By emptying its own pockets, the War Department prevented agriculture from having to dig quite so deep in its own pockets.

There Are No Simple Answers to Complex Problems

The foregoing narrative described the major factors and the interactions between those factors that caused the agricultural manpower shortage during WWII. It offered an understanding of how land distribution practices, the natural environment, and

international and intranational population movements contributed to the shortage. It explained some of the causes and effects of the Great Depression and outlined changing agricultural patterns between the late 1800s and WWII. It surveyed federal interventions in agriculture between 1900 and WWII and federal war planning between the World Wars. It presented farm organization efforts and technological changes which impacted agriculture. It addressed international and domestic requirements for food and fiber. It offered theories about labor pools and explained the contestation regarding national service. It illustrated ways that agriculture both lost and, eventually, gained manpower. Each of these factors was partially responsible for the agricultural manpower shortage and yet, none of them was the sole critical factor. Instead, each major factor was comprised of and interacted with sub-factors, which each, in turn, were comprised of and interacted with sub-sub-factors.

While we must understand who did what to whom and when, it is never enough to have a simple chronological account of actions. These facts are important but insufficient without an accompanying understanding of why the participants took the actions they did. To reach this understanding, the practitioner must both grasp the historical narrative and be able to analyze the institutional or individual interactions. Because interactions are rarely ever solely products of the present, understanding the history that precedes them is imperative. Whether the interaction was a result of a pre-existing tendency or represents the realization of a potential for change, it is a product of what went before. It is equally true, however, that present choices, while likely bounded by the past, need not be determined by it. It is, therefore, important to understand the components of the present interaction. It is possible for the outcome of a given interaction to be apparently illogical

from the perspective of history and yet completely rational based on the incentives of the interaction. An understanding of both the historical narrative and the institutional interactions offers a multitude of possible interventions.

Although I began, in chapter 1, by asking “What was the origin of this wartime agricultural manpower shortage?” it is important to understand that there are no simple answers when dealing with complex problems. A graphic depiction of the problem clearly illustrates the impossibility of isolating a single point of intervention from which to solve the entire problem. A map of the major factors listed above might look something like figure 1. It would be easy for the practitioner to argue that the source of the problem must have been Manpower Availability. After all, if there had simply been more manpower available, there would not have been a problem.

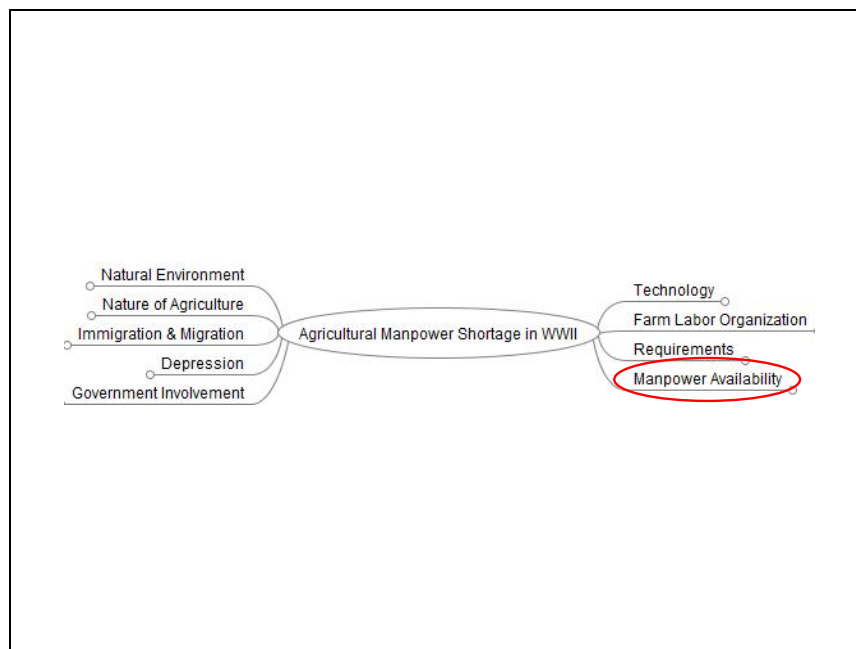


Figure 1. Mind Map: Agricultural Manpower Shortage

Source: Created by author.

This explanation, however, is facile and incomplete. A closer look at Manpower Availability reveals that there were sub-factors including changing agricultural practices, increases in manpower and decreases in manpower. Within the subfactors of Decrease, we find Wartime Service. It might be convincing to stop here and say that the problem was that the military was placing too great a demand on the population. If the military had accepted that the labor pool was inadequate relative to its strategies and shifted its strategies to account for that fact, there would not have been a problem.

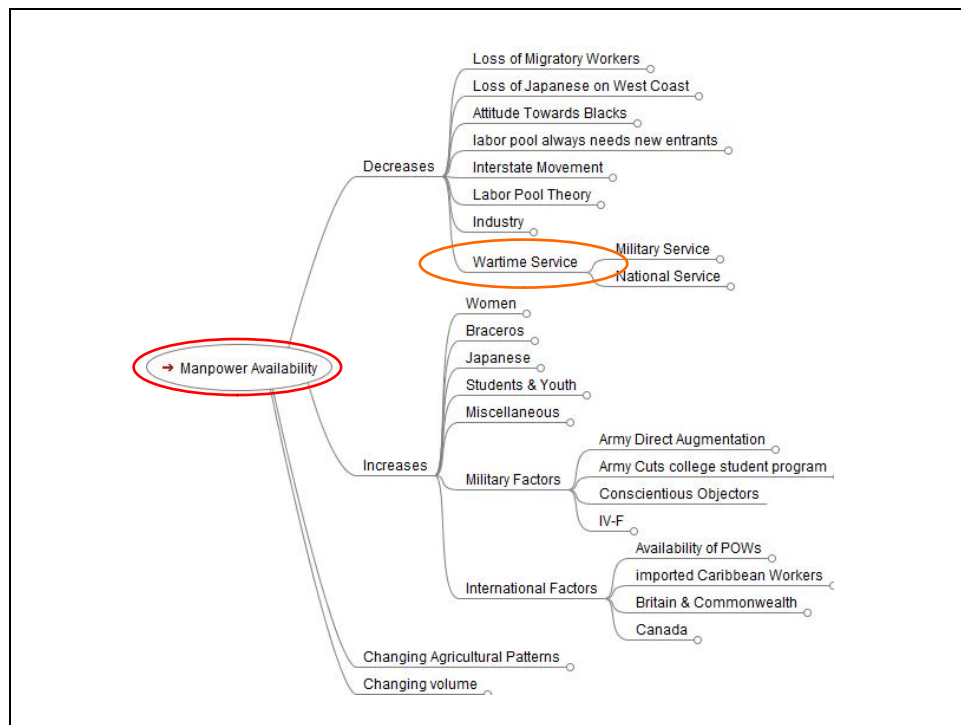


Figure 2. Mind Map: Manpower Availability

Source: Created by author.

Stopping here would also be insufficient, however, because we know that there were significant portions of the population that could have been mobilized through

National Service legislation. Blaming the military's appetite does not explain why the nation never enacted civilian labor conscription policies. Additionally, it fails to explain why similar manpower problems were not as much in evidence during previous, large-scale, military conflicts like the Civil War and WWI. The practitioner might then be tempted to argue that factors unique to WWII such as the provisions of the Selective Service Act and its amendments were the root of the problem.

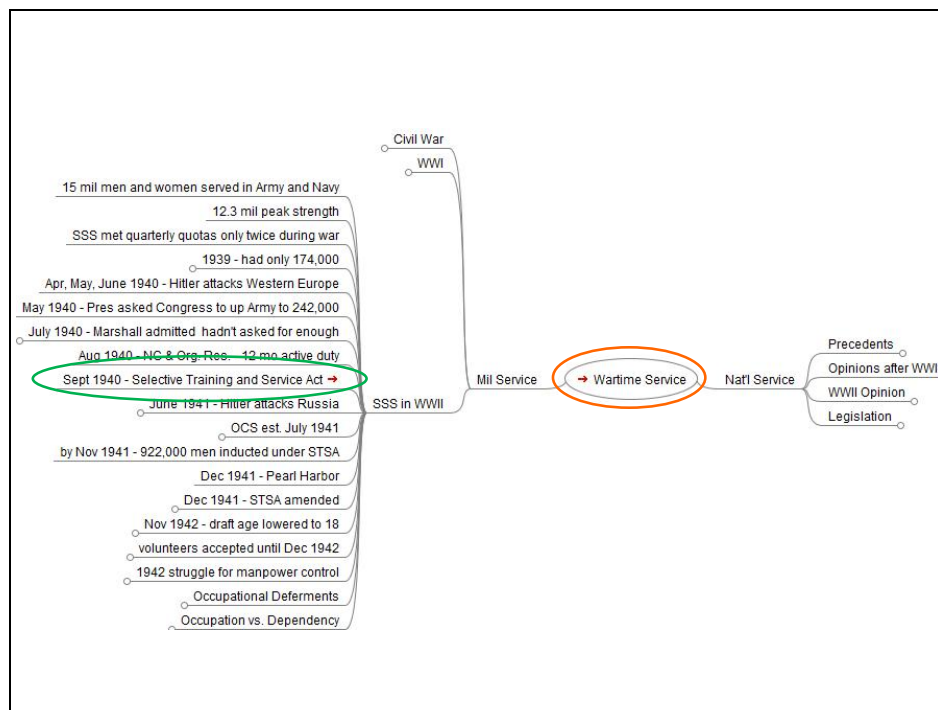


Figure 3. Mind Map: Wartime Service

Source: Created by author.

It was the Selective Service Act, after all, that decided whether men should stay in agriculture or industry or be inducted into the military. If the Selective Service System had simply been better designed or functioned properly, there would not have been a

problem. Within the Selective Service System, however, there are a number of significant factors that could be nominated as the real problem. Perhaps the problem was that it was too decentralized or perhaps the problem was that it was unpopular or perhaps we should point the finger at the local draft boards whose responsibility it was to interpret and enforce the rules of the Selective Service System. If local draft boards had been more effective at putting the right men in the right places, all would have been well. If they had simply done their job properly, there would not have been a problem.

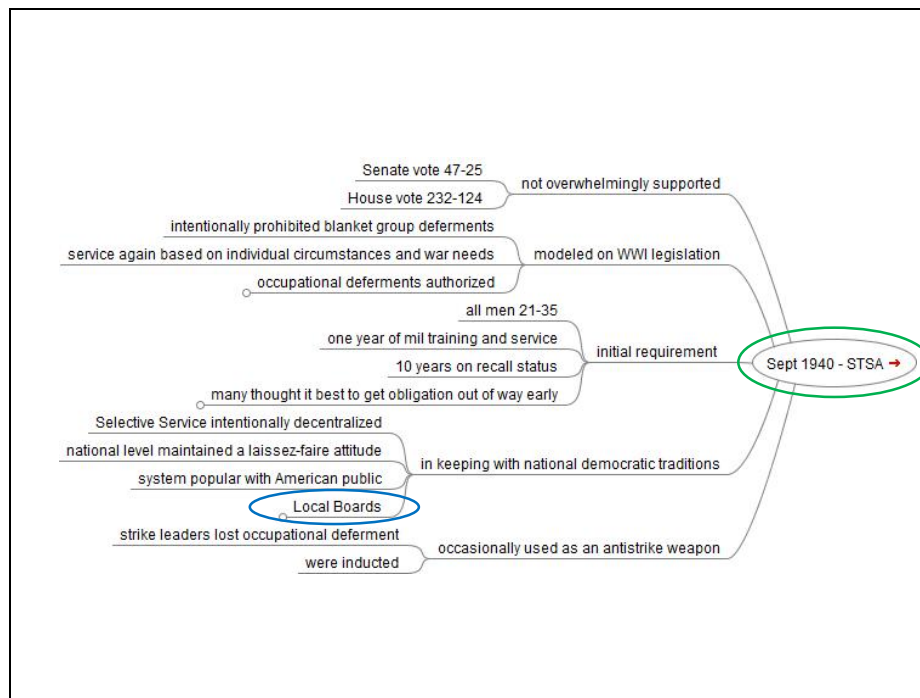


Figure 4. Mind Map: Selective Service and Training Act

Source: Created by author.

Here again, however, we find that we have not dug far enough. The local draft boards may not have implemented the rules as well as they could have, but, behind

everything they did, there was an idea or a belief. To understand why the boards were directed to act as they were or, if acting outside of their guidance, acted as they did, we have to account for ideas like democracy, patriotism, and family. The reason why local boards had the latitude and autonomy they did was the American belief in democracy. American citizens needed to believe that the suffering and death produced by the war were fairly and democratically distributed. The reason why local boards allowed registrants who were essential in industry or agriculture to volunteer for induction into the military was the value Americans place on patriotism. The reason boards inducted childless essential workers rather than nonessential workers with dependents was the devotion Americans feel to the concept of the nuclear family. Because of ideas, local boards made suboptimal decisions for the overall war effort and, thereby, helped to cause the manpower shortage.

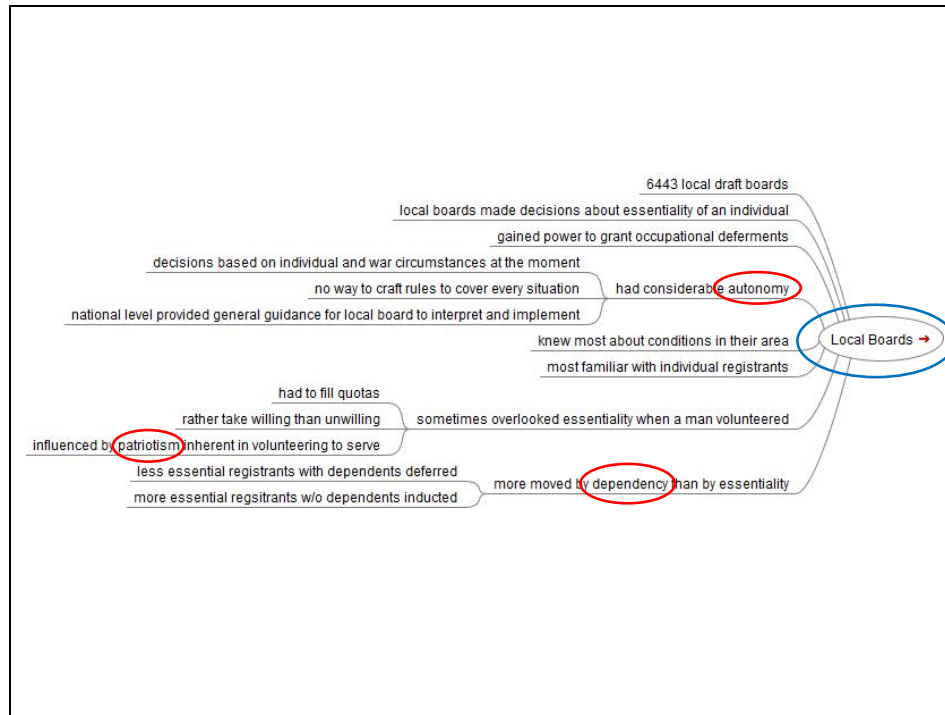


Figure 5. Mind Map: Local Draft Boards

Source: Created by author.

This progression from causal factor to causal factor reveals how easy it would be for the practitioner to latch on to what seems like a single reasonable intervention point when, in fact, the problem is far more complex. An expansion of figure 1 appears below and serves to remind us that the path just described could be followed for any of the major factors. Instead of Manpower Availability, we could have travelled down the paths of the Depression or Technology and found equally compelling causal factors.

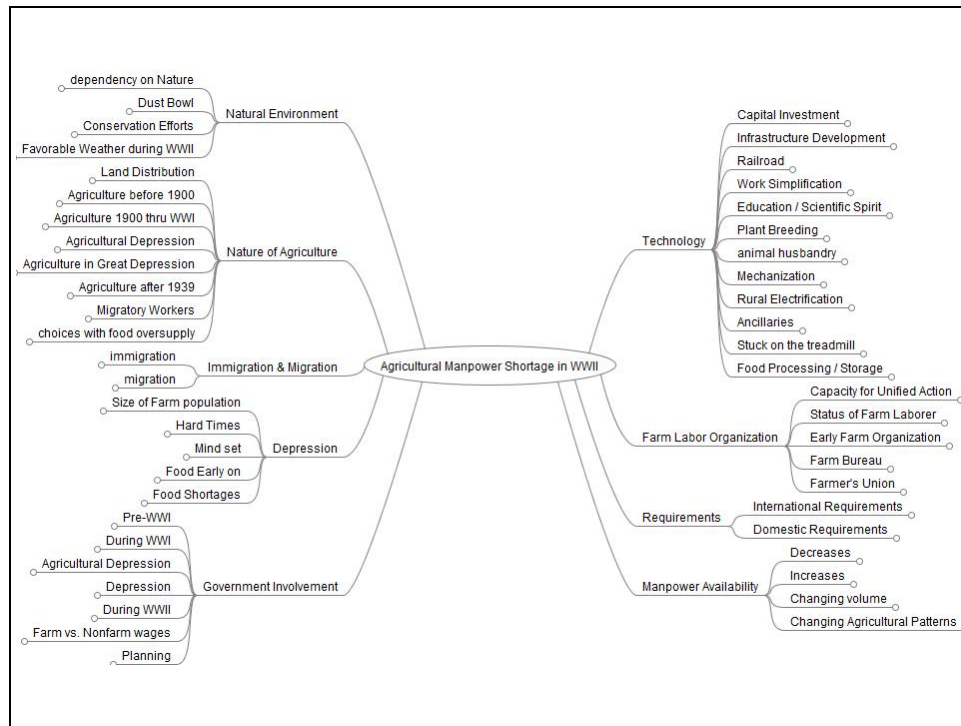


Figure 6. Mind Map: Agricultural Manpower Shortage Expanded One Level

Source: Created by author.

Following the paths of causal logic, we find a multitude of possible intervention points to improve the manpower situation. Possible interventions might have included things like reducing the national consumption of nonnutritive food products like soda, candy, alcohol, and tobacco. This would have allowed some of the factories making these products to be repurposed to more essential uses. The raw materials could also have been repurposed or their production levels reduced and the freed agricultural capacity turned to other crops. Tobacco fields, for example, could have been resown with hemp, which is a far more industrially useful crop.

Another intervention might have been the more aggressive recruitment and transportation of underemployed labor in places like the Upper Peninsula, Appalachia,

and the Ozarks. The independent nature of the residents of these regions would have required government programs to employ great diplomacy, but some success might have been enjoyed by advertising the improved quality of life in cities. The government might also have helped establish suburbs where the displaced could cluster together with others like themselves; a Uppertown rather than a China town.

Looking further back, the government could have instituted programs to reeducate farmers in marginal areas and offer them monetary incentives to engage in nonagricultural pursuits. Instead of just giving them money not to farm, the government could have required that they also do something productive. A farmer who was not farming or was farming fewer hours would have been able to use that free time on education or cottage industries or public works. The government might also have more aggressively pursued alternate uses for agricultural products. Use of corn for ethanol, for instance, is roughly as old as the automobile and would have been a way to use up excess agricultural products in a market with far more elastic demand.

Another possible government intervention would have been a campaign aimed at changing American thinking about the proportion of monthly income that ought to be spent on food. Today, Americans spend a far smaller portion of their income on food than Europeans. If the government had slowly convinced Americans that they were not entitled to cheap food, agricultural wages could have risen and made agricultural labor a more competitive occupation. Recent leaps in the price of gas illustrate that people may not be happy about rising prices, but they become inured to it and adjust their budgets accordingly.

The government could also have devoted more resources to and taken more seriously the interwar planning efforts. A more inclusive approach involving more government departments and non-governmental actors would likely have generated greater feelings of ownership and acceptance. It might have prevented or at least limited the fears of conspiracy and military coercion. It might also have brought more perspectives, more mental tools, and more expertise to the subject than were available in the limited pool of military planners.

Additional interventions might have included government support for gender and racial equality in employment. The government clearly had the capacity to influence this through its federal hiring practices and its contracting legislation. It could have given greater support to the Women's Land Army of America after WWI. It could have targeted agricultural extension programs at women rather than limiting woman-focused programs to home economics. It could have done more to help poor African-Americans leave the sharecropping system in the South and move to industrial areas. If industrial areas had had the manpower glut that agricultural areas had, industry might not have needed to raise its wages so high and agricultural wages might have been more competitive.

Rather than subsidizing their continued operation, the government could have offered to buy farms to reduce the amount of cultivated land in circulation, reduce agricultural surpluses, and raise food prices. This would have had a higher start-up cost since the government would have had to pay a lump sum for the land, but it might have saved money over time by eliminating monthly payments. Instead of extending FSA loans, the government could have given failing farmers the option of selling out and

receiving government assistance with reeducation and resettlement. Simply allowing the banks to foreclose on debt-ridden farmland would not have been effective at reducing the volume of cultivated land because the banks had every interest in reselling it, thereby putting it back under cultivation.

The practitioner who hopes for a grand strategy that will allow him to fix an entire faulty system with one bold stroke is likely to find the multitude of causal factors in a problem like this dismaying. In a complex situation like this one, the practitioner must aim for the death of a thousand cuts rather than a single decapitating blow. This is especially true since the magnitude of the effects of wrong action increase in direct relation to the magnitude of the intervention. The practitioner must always remember that he is intervening in the lives of other human beings and is liable for the results of his actions in those lives. With smaller, more numerous interventions, the practitioner has a greater likelihood of intervening successfully than if he has chosen fewer, larger interventions. The results of the unsuccessful small interventions are likely to be less disastrous or disastrous for less people.

Planning multiple simultaneous interventions is likely to be quite daunting however. Not only is the sheer number of factors daunting, the fact that each factor is related to others makes isolating any particular factor almost impossible. This means that any intervention is likely to have untoward, unanticipated consequences. The practitioner must accept that he cannot see all of the outcomes of his intervention and so must be patient as the system reveals the effects of what he has done. Like dropping a pebble into a pond, he has to wait for the ripples to bounce back from the shore before he can see the

unintended consequences of his action as the rebounding ripples amplify and dampen each other.

CHAPTER 5

CONCLUSION

While I feel confident that readers noticed the influence of the theories presented in the methodology as they progressed through the narrative in chapter 4, I would, nonetheless, like to take time to point out a few applications of some of the theories.

As the analyst researches his operational environment, he should be cognizant of the theories that his experts either explicitly or implicitly declaim. The analyst is looking for facts to fill in his understanding of the operational environment but, as Shapiro points out, those facts are offered in the context of a causal claim. Each expert includes specific facts and omits others based on his belief in the way the world works. The analyst will, of course, end up doing the same thing, but it is critical that he not blindly adopt an expert's causal assumptions as his own without realizing it. For instance, the authors used in this study who addressed the role of braceros offered competing stories. Galarza portrays braceros as helpless victims of an exploitative system while Kiser, largely concurring, focuses on the political conflict inherent in the system. Gamboa, on the other hand, portrays braceros as oppressed but argues that they possessed sufficient agency to struggle effectively against their situation. These authors are discussing the same issue using largely the same facts but drawing different conclusions about what the causal mechanisms were. It is entirely possible for multiple authors to reach different but complementary conclusions with the same data as with Kiser and Galarza. It is also possible for authors to reach diametrically opposed conclusions from the same data. As the analyst practices abductive reasoning, he should seek out not only what the dominant school of thought is, but also authors who offer sufficient contestation of ideas that he is

forced to consider which argument or arguments seem most credible given the environment as he understands it.

As Connolly himself would likely admit the notion of emergent causation is contested and contestable. I argue, however, that the Dust Bowl is an example of emergent causation. To use Connolly's terms, the interaction of multiple open systems resulted in a condition of disequilibrium in many of the systems. While not comprehensive, an inventory of the open systems involved includes the following. First, there was the system of human farmers using poor farming techniques, facilitated by technology, and operating on farms that were too small. The size of the farms was influenced by the legislative system, which was influenced by the education and research system, which also influenced the technology system. The legislative system was also touched by the belief system that generated the patterns of land distribution. There was a war system, which increased the demand for agricultural products and a market economy system in which supply systems and demand systems affected prices. Additionally, there were the climate and locust systems. These two systems were particularly unpredictable and, even today, are not fully understood. Finally, there was the soil system, which was increasingly infertile and degraded by evaporation, wind and water run-off.

While some of the interactions between these systems is attributable to efficient causation in which we can clearly and reasonably establish that x caused y, there are other elements that I argue are emergent. There was no way to predict, before it happened, that there would be a long and severe drought in the 1930s. There was no way to predict that the locusts would swarm and devastate the crops and vegetation holding down the topsoil. In fact, even now, knowing what happened, there would be no way to

predict with certainty that events would play out the same way a second time. The locusts or rather whatever the mechanisms are in the locusts that cause them to swarm are an example of Connolly's litter or preadaptation. They were in the system before the Dust Storm but were harmless and effectively inert. Something in the interaction of systems, however, triggered them to become a significant and devastating force of disequilibrium.

To demonstrate Loode's theories about complex social systems, we next examine the bracero program. Loode would likely point out that the fact that no one completely understands how complex social systems function should constrain us from believing that we can design better ones. The government, however, chose to intervene in the agricultural labor system hoping to address the plight of farmers who claimed that they did not have sufficient agricultural labor. Farmers argued that there were not enough American workers and that the ones who were available were either lazy and shiftless or unwilling to do the stoop-labor required.

Basic economic theory would suggest that market forces would have rectified the problem without government interference. If farmers could not find a supply of labor willing to fill their demand for cheap manpower, then farmers would simply have had to raise wages and either raise food prices or accept lower profits. If consumer demand at higher prices was too small, then the farmer would have had to try growing something consumers were willing to pay for instead. The farmer could have tried changing other conditions of employment, like benefits and hours, but for him, those would still have been expenditures and resulted in higher food prices or lower profits. Being a complex social system, however, the situation was not this tidy.

A number of factors made the system much more complex. The government was unwilling to accept higher food prices during wartime because it was concerned about inflation. It needed to keep farmers producing for the war effort but was not prepared to countenance de facto slavery or human rights violations. It also wanted to avoid lowering domestic agricultural wages earned by American citizens and wanted to avoid displacing those citizens from their agricultural jobs. Although it was concerned that the real problem was that the wages were too low for such unpleasant work, the government chose to create a plan to import Mexican workers into the system.

At this point, Loode would probably caution that complex social systems are always connected to other complex social systems. Other systems affected by this included the system of American beliefs about how much of their income ought to be spent on what, how expensive food ought to be and what food they expect to find on their table. It also affected the system of Mexican labor. Mexican laborers were desperate for employment and income because of both long term conditions in Mexico and worldwide conditions of the Great Depression.

Loode would also remind us that the government's intervention in a complex social system was bound to produce unintended and possibly emergent consequences. One unintended consequence was that the contract the American and Mexican governments generated for the braceros and the farmers to sign was de facto unequally binding. There were not enough Mexican consuls to monitor contract fulfillment and this allowed abuses of the system. Rather than try to create a new system, which was unlikely to work in the absence of clearly understood causal mechanisms, the government should have focused on what Loode's positive and negative feedback loops. Positive loops might

have included instituting minimum agricultural wages to parallel industrial standards. Negative loops might have included enforcement of immigration laws and border control in order to deprive agriculture of the illegal labor it was exploiting.

Moving from a discussion of emergent causation to a discussion of efficient causation, I will again use Craig Parsons's four causal logics as my map and will begin with structural logics. The reader will recall that structural logics are exogenously given factors that compel a rational individual's behaviors and that the individual cannot affect during the given time. The dust storms of the 1930s, for instance, were a structural factor that compelled many farmers in Oklahoma, Arkansas, and Texas to quit farming and move to California. Unable to produce crops in economically viable levels and with their top soil rapidly eroding away on the wind, they were unable to pay off their loans or to secure additional loans to plant new crops. They had no rational choice but to give up on farming and find a new place to live.

The Hawley-Smoot Tariff represents an example of a manmade structural factor. The Tariff raised financial barriers that effectively excluded foreign commodities from entering American markets. From the perspective of foreign merchants, the Tariff was imposed on them by external forces and was nonmanipulable. The continued flow of American goods into foreign markets left them with little choice but to lower their own prices to remain competitive. Foreign governments eventually responded to the Tariff by raising their own tariffs and barring American goods from foreign markets.

Next, we will examine structural logics through the lens of Jeff Isaac's faces of power. The reader will remember that the first face is one of actor A compelling actor B to do something not in actor B's interest. In cases where actor A is an armed group with

lethal force at its disposal, compulsion is very easy to observe. Compulsion, however, need not be at gun point; it need only be the case that the rational individual sees no other reasonable alternative. It is insufficient to deny the existence of compulsion to simply claim that the victim could have chosen to perform an illegal act to avoid it or suffered punishment for not obeying.

Compulsion was most in evidence after the start of the war when the American government shifted from its indirect manpower control tactics to blunter weapons. Farmers were legally compelled by the federal government to register for Selective Service because the military needed servicemen. Understanding that it was not in the farmers' interest to risk being killed in battle, the government used the threat of imprisonment to achieve its interests. Later in the war, faced with the prospect of insufficient agricultural labor to produce food and fiber for the war effort, the government used the Tydings Amendment to compel farmers to remain in agriculture or risk being drafted into the military. Given the income and quality of life disparity between agricultural and industrial workers, it clearly was not in many farmers' best interest to stay in agriculture. In addition, the government, through the WMC's war unit plan, compelled farmers to grow specific crops essential to the war effort in quantities acceptable to the government. If they failed to produce the right amounts of the right items, which likely were not the most lucrative items they could have grown, they were eligible to be drafted.

Interaction interference and conflict suppression is the second face of power. Here, actor A prevents actor B from taking actions in actor B's interest but adverse to actor A's interest. This is demonstrated by American citrus growers who chose to employ

non-English speaking foreign nationals. They intentionally put the workers in a position where they could not effectively participate in social or political action to improve their position. The workers were forced to continue accepting inadequate wages and poor working and living conditions. Another example is the way that railroads interfered with farmers' ability to be democratically represented by their senators in Congress. Railroads had enough money and influence in the statehouses that they could engineer the selection of the senatorial candidate most amenable to their views and least amenable to the views of their customers, the farmers. Farmers wanted cheaper transportation fees and regulation of the railroad monopolies, but this was not in the railroad companies' interests, so they prevented farmers from effectively putting the issue on the political agenda.

Preference formation, the third face of power, occurs when actor A influences actor B's beliefs and desires so that actor B never wants to act in a way contrary to actor A's interests, even when it is in actor B's interests to do so. This face is evident in the way that the government worked to prevent rural to urban migration. The government wanted to keep farmers out of the cities where they would have contributed to overcrowding and taxed the government's ability to provide services. The government wanted farmers to stay on their farms producing cheap food to fuel the growing American industrial sector. The government's Extension Agents, therefore, encouraged farmers to want to stay on their farms. They were successful in influencing farmers' preferences in ways consistent with government interests but not necessarily in the farmers' interests. Farmers would likely have been more financially successful in the cities than they were on their farms. Additionally, the result of cheap food for industry was actually that

farmers were helping their political rivals in industry expand their power base at the expense of the agricultural power base.

Another example of preference formation is apparent in the Farm Bureau and, arguably, in all political groups. Farm Bureau leaders did not want farmers to join a competing organization, like the Farmer's Union, and, thereby, decrease the Farm Bureau's relative political power. Leaders of the Farm Bureau, therefore, encouraged members to believe that only it could and would meet the desires of farmers. It is entirely possible that other organizations could and would have addressed the farmers' issues better than the Farm Bureau, but the devotion the Farm Bureau cultivated in farmers' prevented them from switching to a different organization.

A final example of this face of power is President Harding's call for a return to "normalcy" after WWI. In making this call, he deprived might-have-been reformers of the desire to express social criticism or engage in rural and urban social engineering (Jellison 1993, 25). While social reform was in the interest of erstwhile reformers, it was not in the interests of a government that was attempting to forge a partnership with the very business interests whose activities were a likely target of reform.

The last face of power is that power inherent in a given social role within a social structure. For instance, the roles of farmers and banks during the Great Depression led to widespread farm foreclosures. It was the bank's duty to make money for its investors and, in order to do that, it had to remain solvent, to be repaid in a timely fashion, to make sound investments, and to maintain its customers' trust in its stability. It was a farmer's duty to produce and sell agricultural products and, in order to do that, he needed cheap, short-term loans with generous terms to get him from one harvest to the next. When

banks foreclosed on farmers during the Great Depression, it was not because of any attempt by the bank to assert its power over farmers or to control farmers. The foreclosure happened simply because that was what banks were supposed to do when debtors failed to repay on schedule.

Another illustration is the relationship between draft registrants and local draft boards. When a draft registrant and a local draft board interacted, their relationship and their respective powers were established not by any particular emotion on either side, but by the roles they fulfilled. Every draft registrant (as differentiated from a volunteer) had an interest in avoiding danger, whereas every draft board had an interest in meeting its quota. When the local draft board inducted a registrant or deferred him, it was simply because that was what the board was supposed to do.

To sketch out Isaac's three types of interest, I will present the subjective, objective and real interests of a farmer. Using the narrative, the same analysis could be done regarding any participant including the farmer's wife, an industrial worker, or a military planner in the interwar period. Starting with subjective interest, the farmer would say that it was in his interest to continue farming and produce as much as possible to secure the greatest possible share of the market. He would say he wanted government intervention to protect him from failure through mechanisms like protective tariffs, price floors, and subsidies. He wanted his off-farm inputs to be as cheap as possible and so would have advocated railroad regulation to lower his shipping costs, importation of cheap, foreign labor, and continued government funding of capital improvements like electrification, road building, and irrigation projects. To further reduce the flow of money to off-farm requirements, he also wanted universal income tax to spread the burden of

taxation beyond the property tax that he felt was penalizing him disproportionately. He wanted government assistance with things like research into improved farming techniques, work simplification, and chemicals, but did not want the government to interfere with how he ran his farm or sold his products.

To an impartial observer, the farmer's objective interest was potentially quite different. Unless he was quite successful, with sufficiently large tracts of land to spread the cost of technological and other inputs over a large farm output, it was probably in the farmer's best interest to sell his farm to another farmer and find a different line of work. If his operation was already fairly large, it was likely in his interests to buy out his smaller neighbors and consolidate their holdings. Small family farms were not cost effective and, discounting the enjoyment derived from pursuing a chosen, familiar way of life, were a poor option from a risk/benefit perspective. What the farmer really needed to do was ask for government programs that would train him for a different profession and help him resettle his family somewhere else. He needed to take advantage of better schools and medical care in urban areas and jobs in industry with better pay, overtime, and the potential for upward mobility. He needed to find an occupation that would allow him to qualify for the benefits that his property taxes were funding like Social Security.

Commensurate with his role as a farmer, his real interest was to be the best farmer he could be and to produce food in an economically sustainable fashion. This meant that the prices had to be low enough to be affordable for the buyer but high enough to keep him in business. He had to know enough about the market and consumer preferences to grow what was in demand in the quantities needed. He could not afford to abuse the soil to realize short term gains but had to invest in soil emoluments to maintain its fertility.

He had to continue to purchase technological improvements to keep his output increasing at the same rate as other farmers. He had to adopt all of the best business practices that the Land Grant Colleges and the extension agents proffered. He had to participate in any government programs that would make him more efficient even if it meant losing some of his freedom of action. He had to maintain a high enough standard of living that his family would want to remain in farming with him.

Moving to Parsons's psychological logics, the reader is reminded that the individual's behavior is influenced by endogenous factors over which they have no control during the given time period. To illustrate, Americans, repeatedly exposed to the hideous caricatures of the Japanese in wartime propaganda posters, became irrationally intolerant towards Japanese Americans who had, themselves, never exhibited any inappropriate behavior. The intolerant Americans were likely operating under the influence of a retrievability bias. When they encountered an individual who was of Japanese ancestry, whether they wanted it to or not, their minds would bring up the propaganda posters as the most immediately available associated image. This is, of course, one of the effects that posters displaying smiling, attractive Russian soldiers as friends and deformed, evil-looking Japanese soldiers as enemies were intended to achieve. Another example of retrievability bias was the actions of farmers attempting to regain the "Golden Age" of farming. Although though history has shown pre-WWI economic conditions during the "Golden Age" of agriculture to be aberrant, farmers of the time continually claimed that those conditions were normal. Their reiteration of this position increased their belief that those economic conditions would actually recur and induced them to take actions accordingly (Cochrane 1979, 286).

Other psychological biases in evidence include the “status-quo trap” and the “sunk-cost trap”. Their innate tendency to make decisions that maintained the current order of things was at least partially responsible for the resistance farmers had to the suggestions of Extension Agents. Even though they knew that the Extension Agent’s job was to pass on the latest and best research produced by the Land Grant Colleges and the USDA’s researchers, farmers were not always willing to adopt new techniques (Rasmussen 1951, 166). Even though the techniques had been tested on demonstration farms and proven effective, the farmer worried, perhaps justifiably, that they would not produce improved results for him and might even cause him to lose his crops. This fear of failure caused farmers to make decisions maintaining the safe status quo. Their unwillingness to admit that they had made a mistake when they bought small farms in the Great Plains and adopted dryfarming techniques led farmers to make decisions that justified their earlier poor choices. Even after dryfarming techniques proved unable to overcome drought conditions in 1917, farmers continued using the same techniques. They had sunk too much into their farms and spent years reading about, talking about, and perhaps even attending conferences about the benefits of dryfarming. They were likely unable to admit, even to themselves, that their previous choices were the cause of their current failures, so they decided that, if they simply worked harder, they could succeed using the same techniques.

Two other examples of psychological logics at work are farmers’ aversion to risk and loss and the “illusory correlations” they formed about cities. In the 1920s and 1930s, concerned that they would lose their farms to foreclosure if they spent their ready cash on technology, many farmers continued using draft animals and manual labor. Even though

they would have been more productive and made more money in the long run using tractors as opposed to draft animals, farmers were too worried about what they might lose to give the proper weight in their decision to what they might gain. An example of “illusory correlation” at work was farmers and scientists who believed that the rain would follow the plow. Concurrent with the westward movement of settlers into the Great Plains, there was a period of unusually wet years. In their minds, settlers correlated their movement and rainfall patterns such that they came to believe their movement was causing the increased rainfall.

Shifting to Parsons’s ideational logics, we look for situations in which an actor does something, rational or irrational, because of a norm, a belief, an idea, or an identity so deeply held that he is almost unable to change it during the given time period. For instance, if a farmer, who always bought Ford tractors, bought a Fordson, rather than International Harvester’s newer and better Farmall tractor, most likely the farmer did so because he believed in brand loyalty. It is important to remember that proving the idea was more important than any other factor can be difficult if the decision is also affected by another logic. In this example, if the Fordson was actually cheaper and better than the Farmall, the farmer might still have bought it out of brand loyalty, but it would be very difficult to prove that the structural logic of his own income and of the cost and features of the tractor did not also play a part.

Turning to the ideational theory about language presented by Murray Edelman, we can examine the effects of language on behavior and belief. Edelman argues that the words we use to describe ourselves and our world not only shape us in the eyes of others but also in our own minds. Similarly, the descriptions of ourselves that we accept from

others have a constructive force. Turning again to wartime propaganda posters, we find a range of language aimed at women to encourage their participation in the war effort.

The government used posters to exhort women to get a job with phrases like “Find Your War Job in Industry–Agriculture–Business,” “Make Nursing Your War Job,” and “Do the job HE left behind.” The implicit subtext behind these phrases, however, was that these jobs were only for the duration of the war. When “HE” came back from war, women would be expected to give up their “war job” and return to their homes. The gender separation, which was the social norm of the time, was expressed quite clearly by posters proclaiming “She serves so that men may fly,” “‘The Girl He Left Behind’ is Still Behind Him - She’s a WOW (Woman Ordnance Worker),” and “Soldiers without guns.” Other posters were likely aimed at men as much as at women with phrases like “Women in the war–We Can’t Win Without Them,” “The more WOMEN at work the sooner we WIN!” and “Good Work, Sister. We never figured you could do a man-sized job! America’s Women have met the test!” The government had to overcome the resistance of workers, unions, and employers to women working in traditionally male fields. There were also posters designed to build patriotism in women readers in order to convince them to join the military services with phrases like “For your country’s sake today - For your sake tomorrow,” “Share the Deeds of Victory - Join the WAVES,” and “Are you a girl with a start-spangled heart? Join the WAC now!” Using phrases like “For a healthy, happy job - Join the Women’s Land Army,” “Pitch in and Help,” and “Come and help with the Victory Harvest,” posters for the Women’s Land Army, took a very different linguistic tactic using informal speech to emphasize the relaxed enjoyment more than the serious duty involved.

The idea of a woman working in an ordnance plant, working in the fields, or serving in uniform, was largely foreign to the American public, both male and female. The fact that women did all of these things is at least partly indicative of the success that the government had using language to shape the public mind. By mentally accepting and then verbally adopting these phrases, men and women constructed their understanding of a woman's role during the war. Political messages, radio broadcasts, newspaper articles and other forms of speech could be evaluated in a similar manner to discover both how people see themselves and the world but also to watch how their use of language changes them over time.

Describing the way that concrete practices form and transform over time is the objective of Jason Glynos's three logics of critical explanation: social, political, and fantasmatic. The use of these three logics can be illustrated by applying them to the concrete practice of technology use on farms. The social logic explains the characteristics of the practice. In this case, the characteristic was that while the farmer, likely used technology and labor saving devices fairly extensively, the farmer's wife likely did not. It was not unusual for farm women to haul water for use in the kitchen while farm men had pumps in the farm yard. Similarly, farm women might not have had electric refrigerators in their kitchens even though their husbands had electric milking machines in their barns.

We use political logics now to explain how this came about. The farm was unlikely to have highline electricity and was, therefore, dependent on either an unreliable and maintenance and fuel intensive generator or an equally unreliable windmill for power. Although women might want to use the available electricity to light their kitchens and pump their water, their husbands, who typically controlled the farm and its income,

decided, albeit often with their concurrence, that first priority on available power had to go to activities directly related to making the farm money. The cost of purchasing technology was another factor. Like electricity, disposable income on the farm went to money making activities, which were more likely to be on the male-dominated business side of the farm than the female-dominated domestic side of the farm. The farm woman was, therefore, far less likely to use labor-saving, electric equipment than the farm man. While there was likely some contestation about the division of assets between the farmyard and the farmhouse and while this conflict likely recurred through time, it was settled repeatedly in favor of the farmyard at the expense of the farmhouse.

The last logic, fantasmatic logic, assists us with understanding why this practice was so widespread and continued for so long. The reason that, by WWII, there were still so many farmhouses without electricity and running water was the fantasy shared by so many farm families that if they simply worked hard enough, lived frugally enough and spent their money wisely enough, they would enjoy the good life in agriculture. In this fantasy, quality of life was sacrificed in the name of solvency. Since the work that women did was perceived as contributing to quality of life but not materially to the success of the farm, it was in the woman's sphere that frugality was exercised. The man's sphere was where all wisely spent money should be spent. In this fantasy, failure to be hardworking, frugal and wise would result in bankruptcy and loss of everything that the family had worked for.

To someone not absorbed by this fantasy, several counter-logics are apparent. First is the notion that labor saving electric devices in the farm house could have freed time for the farm woman to contribute on the business side of the farm and increased

farm revenue. Next is the idea that no amount of technology applied in farmyard or farmhouse was ever going to improve the economic feasibility of the farm so they ought to have found a more productive occupation. Another might be that, if the family could not maintain a decent standard of living, then they might as well cut their losses and get out of farming because the next generation was unlikely to want to keep the farm going under those conditions.

Another illustration of Glynos's logics is the concrete practice of land distribution. The characteristics of the practice were that public land was sold by the government to fund the government's operating costs. Public land was divided in a grid-like fashion into townships, ranges, and sections and, other than section 16 or an equivalent piece of land, was sold to the public in small parcels. This generated a landscape of small, scattered, independently-operated, family-owned homesteads (Nelson 1949, 229).

When this practice first emerged, it was the result of conflict between men like Thomas Jefferson and his opponents. Opponents to the practice pointed to the land distribution practices in Europe, where land was owned in large swaths by wealthy, probably aristocratic families and suggested that this was the model to follow. This conflict took the form of legislative wrangling, which was finally resolved by a government ordinance. The practice was not static, however. Over the course of roughly a century, legislative contestation reduced the cost of land and increased the size of the parcel sold.

The reason why land distribution occurred as it did for as long as it did, can be explained by the dual fantasies of Jeffersonian agrarianism and minimal government.

Americans believed that small farmers were the moral and economic foundation of the country. Implicit in this belief was the fantasy that, if the country sold land in small parcels to families, it would be able to retain its moral character. By extension, failure to remain agrarian would result in corruption of the American soul. The fantasy that a primarily agrarian nation would require only minimal central government, implied that there was no significant need to revenue to fund the operations of the government. The early thought was that the funds accruing from the sale of public lands would sustain the central government for decades if not longer. There was no need to sell the land in a rapid manner or to rely on the tax value of the land.

There were multiple counter-logics that led to change in this process over time. As settlers moved west and encountered more arid regions, the government came to realize that the small parcels it had been selling would not support a family or be commercially viable. Parcel sizes in places double or more than doubled. The government also came to realize that its expanding settled terrain and population required more money. It realized that settled, taxed land was more valuable in terms of governmental revenue than unused land in the public domain awaiting sale. It opted to lower prices to induce more rapid privatization in order to generate a greater tax base.

Like Glynos's logics of critical explanation, Rogers Smith's account of how and why stories of peoplehood form and transform is also a powerful tool to assess participants and their actions. Since they are, to an extent, the central figure in the historical narrative, I will use draft-eligible farmers to illustrate Smith's theory. Farmers, born between 1915 and 1924, were likely to be the ones most in demand during WWII. They were between 20 and 26 years old during the war and at the peak of their energy

and strength. Differentiated by factors like geographic location, crop produced, race, ethnicity, wealth, and time elapsed since familial immigration, they were not a homogenous group. Bearing that in mind, I will draw out of the narrative the elements of the ethically constitutive, economic, and political power stories that a farmer in the Great Plains might have told about himself at the start of WWII.

His ethically constitutive story begins with the fact that he was, with only 13 African-Americans in South Dakota in 1940, according to the 1940 Census, almost certainly white. To be more specific, he was likely northern European and, therefore, Protestant. As a landowner, he felt himself superior to migrant workers, and likely admitted to racial prejudices against non-whites, who he was relatively unlikely to encounter first-hand. He was likely somewhat intolerant of recent immigrants, especially if they were not also Northern European, and saw himself as an American, not as the child or grandchild of immigrants. Born during WWI or the Agricultural Depression and coming of age during the worst of the Great Depression, he was indelibly marked as a survivor.

He saw himself as hardworking, competent, self-sufficient, and honest. While confident of his own abilities, he also understood his vulnerability to outside forces including consumer preferences, industry, banks, loans, debt, and nature. He believed in his ability to succeed through application of technology but was likely opposed to the notion of technology-facilitated, company-owned mega-farms. He was also likely skeptical about the honesty of those, like banks, wholesale buyers, and retail salesmen of off-farm inputs, at whose mercy he found himself.

In addition to being confident, he was likely to be independent-minded. He was resistant to government interference while simultaneously and possibly contradictorily felt himself entitled to government assistance against his “oppressors”. He likely felt disempowered politically and, as he watched the percentage of farmers in the population shrink, increasingly marginalized. He still believed in the Jeffersonian ideal, which put him at the moral heart of America and labeled him the real foundation of the country’s economy and values. Although he self-identified as a farmers, he also saw himself as a businessmen or at least as a commercial producer and as a not subsistence farmer. He felt himself disdained by but not necessarily inferior to townies. He likely considered himself to have suffered far more than and be disadvantaged compared to most urbanites since the Agricultural Depression started long before the Great Depression.

Just as he was politically conservative, he was also likely to be socially conservative. He either was or expected to become the heads of a household and to provide for his wife and children. He was respectful and protective towards women but did not see them as entirely equal. Despite, or perhaps because of, the distances between homes, he was very family oriented and neighborly. Every farmer knew that he would need help some time and so gave it when others needed it. As regards the outbreak of WWII, he considered himself a patriot, but, until the attack on Pearl Harbor, was likely to be an isolationist who saw the war as an essentially European problem.

Assuming he came from a relatively prosperous, large-scale farming family, our farmer was likely to be a member of the Farm Bureau. The economic story he wanted to hear was that the Farm Bureau would increase his income and help protect him from the bankruptcy that he had witnessed his entire life. He wanted assurances that, as he started

out on his own farm, he would be able to succeed financially. As a young member, rather than a leader of the Bureau, he was simply interested in his individual financial security rather than in amassing any great wealth. Having likely heard from his parents and grandparents about the failures of the People's Party's attempts at gaining the White House, he likely believed the Farm Bureau's story that lobbying Congress was the only way to get the policies necessary to ensure the success of farmers like him.

As popular as President Roosevelt was nationally, there was a growing suspicion in agricultural areas that he was pro-labor and anti-farmer. While our farmer's father likely voted for Roosevelt at least once, our farmer was increasingly likely to look to the Republicans rather than Roosevelt's Democrats for his political power story. As with his economic story, he was not interested in having great power but simply in maintaining his personal security. For a farmer in the middle of the country with Canada as his nearest foreign neighbor, personal security was more an issue of security of his right to own, buy, and sell property than of his physical safety or safety from foreign invasion. Being generally isolationist and of draftable age, our farmer was also concerned with keeping out of the war. The Republican Party tended to be more isolationist than the Democratic, although neither was chomping at the bit to go to Europe prior to the attack on Pearl Harbor. The farmer would likely have felt comfortable with the Republicans on this issue of personal security as well.

Parsons's final causal logic is institutional logic, which begins with an individual or group creating rules and concrete practices and the institutions that will enforce or facilitate the rules and practices. After creating the institutions, the environment changes such that the institutions generate unintended consequences. An example of this is the

eviction of sharecroppers by Southern landowners. When the AAA was created, it was supposed to reduce the number of acres under cultivation by paying the individual doing the farming to leave his land fallow. What landowners with sharecroppers and tenant farmers came to realize was that, if they evicted their tenant farmers, they could claim the payments for themselves. This led to the widespread eviction of tenant farmers and sharecroppers (Kirby 1983, 591). This result was not intended by the framers of the Agricultural Adjustment Act that established the Agency but rather was an unintended consequence of the institution itself.

Employing Ostrom et al's discussion of collective action problems, we find numerous situations in which participants failed to make the optimal choices for the group. One of the most obvious collective action problems in the narrative is an example of Garret Hardin's classic "tragedy of the commons." Hardin argues that as each individual in a group tries to get the most he can out of a common-pool resource, the group will invariably overuse and destroy the resource (Gibson et al. 2005, 37). During WWII, the available American manpower was a common-pool resource, which agriculture, industry and the military all attempted to utilize to the greatest extent possible. Each of the three actors wanted to secure the best workers for itself and knew that, if it forbore to claim an individual worker for itself, one of the other two actors would. In industry, for example, there is evidence that some companies in industry were employing more manpower than they really needed just so that they would never face a shortage. None of the three actors could achieve victory without the other two actors, but they were each so focused on their own needs that they were unwilling or unable to effectively coordinate their actions. By failing to coordinate their requirements and

failing to realize that the available resource were less than their composite requirements, they collectively caused a manpower shortage that adversely affected all three of them. While Ostrom argues that participants are sometimes capable of preventing this sort of outcome without external intervention, this situation was not was of those cases.

The Hawley-Smoot Tariff is another example of the “tragedy of the commons”. The international market for food and fiber is a common-pool resource in that every country wants to secure, for itself, the largest share that it can of the profit from supplying the demand. After WWI, the United States experienced a short economic boom and then a short depression that almost eliminated the gains made during the boom. American policy makers became convinced that competition from foreign countries in American markets was adversely affecting American industry and agriculture. The optimal solution at this point likely would have been establishing multilateral or at least bilateral trade agreements so that all nations were restricted from engaging in economic practices deleterious to other nations. Instead, the United States chose to seek profit at the expense of other nations by raising tariffs to exclude foreign products from entering American markets while simultaneously flooding foreign markets with American products. Unsurprisingly, foreign governments retaliated with their own high tariffs. America’s lack of motivation to work towards the solution optimal for the international community arguably contributed substantially to the suffering of its own and other nations’ citizens during the Great Depression.

A situation of moral hazard was what President Coolidge feared would occur under the McNary-Haugen Bill if the government provided farmers with subsidies to allow them to stay solvent and continue farming but failed to impose production

limitations. Instead of fixing the fact that farmers' incomes were decreasing because farmers were producing too much food and driving down the prices, the government would have made the situation of oversupply worse. Farmers, freed from fear of bankruptcy by government subsidies, would have used the subsidies to purchase technology. That technology would have allowed them to expand their income through increased production. This would have driven prices even lower, but the farmer would have been protected from any ill effects by the subsidies. In fact, the government would have been compelled not only to keep providing the subsidies but actually increase them as supply continued to rise and prices continued to fall.

Another collective action problem, free-riding, occurred when Aaron Sapiro tried to encourage farmers to engage in collective marketing. Sapiro knew that each farmer operating alone was unable to set the price of the goods he sold. Only by forming collectives or associations could they hope to set prices. By becoming a member of a collective, each farmer sacrificed part of his freedom of action and, assuming he abided by the rules, was unable to improve his economic position at the expense of his fellow farmers. However, for this to work, each farmer had to trust that the other farmers in the collective would also abide by the rules. Each farmer knew that, if he broke the rules when everyone else obeyed them, he could profit substantially more than if he obeyed the rules and each farmer knew that all of the other farmers understood the same dynamic. Too many farmers refused to cooperate, either in hopes that they could free-ride off the higher prices gained through other farmers' efforts or for fear of other farmers' ability to free-ride off of the collectives efforts. Sapiro's collectives were never able to effectively gain market dominance.

Another instance of free-riding can be seen in the lack of equality of sacrifice towards the war effort. Since each American would enjoy the fruits of victory regardless of his or her individual contribution to it, some individuals lacked the motivation to do their share. One particular case was that of men who were deemed essential for the war effort in their capacity as agricultural workers. The nation, through the local draft board, had clearly indicated how these men could best contribute to the collective action of the war effort. As soon as they got old enough not to fear the draft, however, they departed agriculture for work elsewhere. Their new jobs benefitted them individually more than did the jobs that were optimal for the nation. They knew that their individual contributions in agriculture were so small that they would not significantly detract from the collective war effort; they knew they would share in the victory regardless of where they worked.

A principal-agent situation presents itself in the relationship between the local draft boards and the national level of the Selective Service System. The national level issued guidance to local draft boards regarding the prevailing war situation, military manpower requirements, and changes in draft legislation. With almost 6500 local draft boards operating in a decentralized system, there was no way for the national level to assess all of each local draft board's decisions and action. Even though local draft boards understood what the national level wanted, they often acted in ways inconsistent with their instructions because they were influenced by their own interests. For instance, local draft boards would allow their own respect for patriotism to interfere with guidance regarding essentiality by allowing an essential agricultural worker to volunteer for military service despite guidance from the national level, which should have caused the

board to defer the registrant. Additionally, when President Roosevelt directed the Selective Service System to reexamine all occupational deferments to increase the volume of draftees, local draft boards in agricultural areas largely ignored the directive and acted based on their own interest in maintaining agricultural production levels.

The government's distance from the actual interactions sometimes deprived it of the information it required to make optimal decisions. When government decision makers tried to determine whether there was actually a manpower shortage, they had no practical way to ask all of the farmers directly whether they needed more manpower. Instead, decision makers had only unreliable statistics gathered by the Bureau of Agricultural Economics to work with. These statistics revealed localized shortages but did not provide sufficient evidence of the aggregate manpower shortage that existed. Missing critical information, President Roosevelt entertained the notion that voluntary help from women and children could, without significant government intervention, solve any localized shortages that might exist (Gamboa 1990, 32).

While not necessarily more significant in terms of results, some collective action problems stemmed from far less pleasant sources than lack of information. Prior to 1913, when the Seventeenth Amendment was ratified, United States Senators were selected by the state legislatures. Railroads, by virtue of their power and money, were able to corrupt those in the statehouse selecting new senators and influence them to pick men who would act favorably towards the railroads at the expense of other constituent groups, like farmers. This clearly violated the intent of the laws regarding senatorial selection and, since money likely changed hands in the process, likely also violated the letter of the law (Hurt 2002, 21). The Seventeenth Amendment was the nation's decision that, in order to

ensure the optimal solution of fair and representative government and prevent special interest groups, like the railroads, from suborning the state legislatures, senators would be popularly elected.

Using Celestino Perez's modifications to Ostrom et al's framework for assessing collective action problems, we could analyze one of the above mentioned problems or any of the plethora of additional examples found in the narrative. Since it is so central to the issue of manpower shortage, we will examine the collective action problem of a farmer asking his local draft board for an agricultural deferment. The first step is to list all of the factors in the distal context that are influencing the interaction between the farmer and the draft board. The reader will recall that Perez separates his factors into four categories: material structures, organizations/rules, ideas, and psychological elements. Material structures affecting the interaction include the fertility of the farmer's soil, the climate his farm enjoys, the number of other farmers growing what he grows, the number and kind of machinery the farmer owns, the composition of the farmer's family, the size of the farmer's farm, the international demand for the crop he grows, how many workers the farmer supervises, and the status of the war. Pertinent organizations and rules include the Selective Service System, the Selective Service Act, the Tydings Amendment, the war unit plan, the War and Navy Departments, the USDA, farm labor organizations, and the manpower quota the board must fill. Relevant ideas include the Jeffersonian agrarian ideal, patriotism, democracy, the notion that younger soldiers are better, and the worth of fathers. Psychological elements include the farmer's desire to maintain the status quo, the farmer's aversion to risk, and the board's retrievability bias in terms of how many other farmers it has inducted in the past. These four lists are likely incomplete and the analyst

will likely realize that there are additional germane factors affecting the distal context as his research progresses.

Perez would now have us turn to an examination of the proximate context. He retained Ostrom et al's seven questions to array the components of the action situation and added the requirement to consider the participants' stories and narratives. The farmer's ethically constitutive, economic and political power stories have already been elaborated as have his subjective and objective interests. I will, therefore, focus on the stories and interests of the local draft board.

If asked to describe itself and tell its ethically constitutive story, the board would likely have said that it was drawn from the local area and had its finger on the pulse of both local conditions and the national situation was struggling valiantly to balance the needs of each side. Its members would likely identify themselves as prominent men who were too old for the draft and could afford to volunteer their time. As patriotic volunteers themselves and, given the generation gap, as probable WWI veterans, the board would have espoused the utmost respect for men who volunteered to serve in the military. Board members would likely have claimed a measure of impartiality since they were not selected via popular election but rather were appointed by the state governor. Even so, its members would likely have admitted that they had to live in the local community and were somewhat affected by the opinions of their friends and neighbors.

Although it received guidance from the national level of the Selective Service System and was likely advised by medical personnel, the county Extension Agent, and others, it likely claimed a large degree of autonomy in its decisions. Its members would likely have said that they followed the national level as well as they could but they knew

what was best for their local area. It could afford to say this because it derived a degree of immunity from the fact that the national level would find replacing the entire board difficult. Most likely composed of well-to-do, white men the board likely had decided opinions regarding the wealth and race of the registrants who came before it, but those opinions likely had a distinct regional flavor. Prejudices notwithstanding, using rough calculations, the average board, over the course of the war, inducted 2000-2500 men into uniform. This number is low enough that boards likely had the time to consider each applicant individually as the Selective Service Act intended. Board members would likely have described themselves as compassionate but fair-minded and just. They would have argued that someone had to make the tough decisions and they were willing to do it.

The board's economic and political power stories were likely intertwined closely but promised only indirect gains. Board members likely told themselves that, by supporting the board and the Selective Service System, they were helping to achieve victory for the nation while ensuring that agriculture and industry kept functioning. While they received little or no direct remuneration from membership, they could certainly see the economic benefits inherent in being on the winning side. In terms of political power, the members likely derived some power from membership, but their prominence in the community likely made the additional power of negligible importance. The improved political power their story promised accrued more from the general power of being on the winning side. In both economic and political power terms, the board members stood to benefit if America won and to suffer if she lost.

The board members' subjective, objective and real interests were largely in alignment. They wanted to put men where they were most needed while causing the least

damage to the nation as a result. Damage, in this sense, included harming agricultural production, harming industrial production, and hampering military campaigns but also damaging the American value system and making families dependent on the government purse. The members' subjective interest of not having their neighbors think poorly of them might seem out of alignment with the objective interest of being impartial, but the board also had an objective need to maintain the general popularity of the Selective Service System as a tool of the government. If the board made impartial decisions that were considered heartless and unfeeling by the local population, the board's ability to continue functioning would have been impaired. Board members likely had a subjective interest of not inducting their own friends and loved ones, but they also had a subjective and objective interest of winning the war and upholding democracy. In short, there was not a significant divergence between what the board members wanted to do, ought to have done, or had a duty to do.

Next we focus on the answers to Ostrom et al's seven questions about the components of the action situation, which Perez retained in his proximate context:

Question one asks who the participants in the interaction are. In this case, the participants are the farmer and the local draft board members. Hereafter, I will illustrate using only the local draft board members in the interaction.

Question two asks what positions each participant holds. The board members are citizens, members of the community, appointed officials, and, likely, businessmen in either industry or agriculture.

Question three asks what possible actions each participant could select. The board could grant the farmer's deferment request or could induct him into the military.

Question four asks what the outcome of each potential action would be for the farmer. If the board grants the farmer's request, the local agricultural labor force retains greater capability, there is more food available for the war effort, the military loses a prospective soldier, and someone else will have to go in his place. If the board inducts the farmer, the military gains greater capability and there is less food available for the war effort.

Question five asks what costs and benefits the participants assign to each possible action and outcome. The local board may improve the military's manpower strength but risks impairing its supply levels. It may keep agricultural production strong but risk impairing the military's force structure. While the answers to Questions four and five may seem very similar, the analyst must remember that the way the participant views costs and benefits may be very different from the analyst's own view. It is entirely possible for a participant to view as a benefit something that the analyst would view as a risk.

Question six asks what information each participant has about the interaction. The local draft board knows that it has to fill its quota and knows how many other possible registrants there are. The board does not know how many of those registrants are good candidates for induction, how many are likely to need deferment, or whether future military manpower requirements will increase or decrease, but it does know that occupational deferments are not permanent and can be revoked if necessary. The board knows that military service is inherently dangerous but does not know exactly where and in what capacity the farmer would end up serving. It knows what and how much the farmer produces and has likely been advised on the farmer's potential for improved

production, but it does not know whether future war effort food requirements will increase or decrease.

Question seven asks how much control each participant has over his choice. The board needs to remain impartial to an extent but also needs to consider public opinion towards its decisions. It must abide by national level guidance and legislation but has some latitude in the way that guidance is interpreted and applied. The board's decisions can be appealed, so it is not the final authority in the matter.

At this point, Perez would likely give us a reminder and a warning. The reminder is that the outcomes of collective action situations have the potential to feed back into both the proximate and distal contexts and alter future iterations of the collective action. For instance, if the board grants the farmer's deferment request and later finds that the farmer moved elsewhere to take a job in industry, it will likely affect the distal context. The next time a farmer comes before the board asking for a deferment, the board member's associative biases, which are a psychological element of the distal context, will tend to make them less accepting of the farmer's request.

Perez's warning echoes Connolly and brings up the possibility for emergence that exists within the distal and proximate contexts. For instance, weather patterns during WWII were largely favorable for agriculture and produced substantial harvests. Had a new weather pattern emerged with a decrease in rainfall, it would have altered factors in the distal context like the amount of food farmers were growing. This, in turn, would have affected the weight that the local board gave to the importance of agricultural labor versus military manpower. This occurrence could not have been predicted beforehand

and examination of subsequent events would not serve to explain why weather patterns shifted.

Whether the military practitioner relies on the tools the military keeps in its doctrinal toolbox or turns to the tools that I have presented here, she must keep in mind Connolly's injunction that durational time spent on research and study only has value if it is applied in mundane time. Just as the narrative in chapter 4 has multiple touching systems with multiple concrete practices and interactions, the practitioner's application ought to contain multiple experimental interventions. As Loode points out, lacking clear understanding of how complex systems work, we should hesitate to believe that we can fix a problem by designing a new system. Instead, the practitioner ought to examine the concrete practices and interactions, understand how they are affected by the distal and proximate context, and attempt to intervene in a limited fashion in several places. Since there are no closed systems, each of those attempts at altering practices and interactions will likely affect other practices and interactions. Then comes a period of observation as the practitioner waits to see what new patterns of interaction are caused or emerge.

It is important to remember that the practitioner must carefully select his tools to fit his problem. Analytical eclecticism reminds the practitioner that he must be willing to search in multiple toolboxes for the ones he needs. He must consider economic tools, political science tools, and historical tools at the same time as he considers the standard military tools with which he is likely to be most comfortable. At the same time, however, abductive reasoning should remind the practitioner that he need not apply every tool he finds or apply a tool exactly as it was designed or apply it continually. Just as an auto mechanic is unlikely to use every tool he owns while fixing a car, the practitioner should

be selective and not waste his time trying to force every tool at his disposal to fit his problem.

There may well be problems to which it is appropriate to apply Smith's theory of peoplehood but not Glynn's logics of critical explanation. There may be problems which benefit from Connolly's theory of emergent causation but not from Isaac's four faces of power. Each of these theories is valuable only insofar as it offers the practitioner a different way to look at the operational environment and the interactions occurring therein. If a tool fails to provide increased granularity or fails to gain a purchase on the subject, the practitioner should feel comfortable with ignoring it and turning to a tool that better fits the current, real world problem. The choice of tools should be determined not by military doctrine or expert opinion but by observation of the real world operational environment.

We should, perhaps, remember Robert Frost's discussion of paths when he says "Two roads diverged in a yellow wood, and sorry I could not travel both and be one traveler, long I stood and looked down one as far as I could to where it bent in the undergrowth; then took the other, as just as fair, and having perhaps the better claim" (Frost 1920). With limited resources, we cannot choose every available path at the same time; we must maintain unity of effort and conserve our strength. We must, therefore, look down the paths of causal logic as far as we can, using the best tools at our disposal, hoping that we have seen enough to be able to assess their relative values. We choose one factor over another when we decide to intervene in one place instead of another. Like Frost, we will likely never be able to revisit that decision point so we are compelled to make the best decision we can when the fork presents itself. We can only hope that, when

two choices seem equally fair, we have managed to select the right one. Choosing the right tools to help us as we survey paths of causal logic allows us to feel confidence in our choices and interventions.

ANNEX A

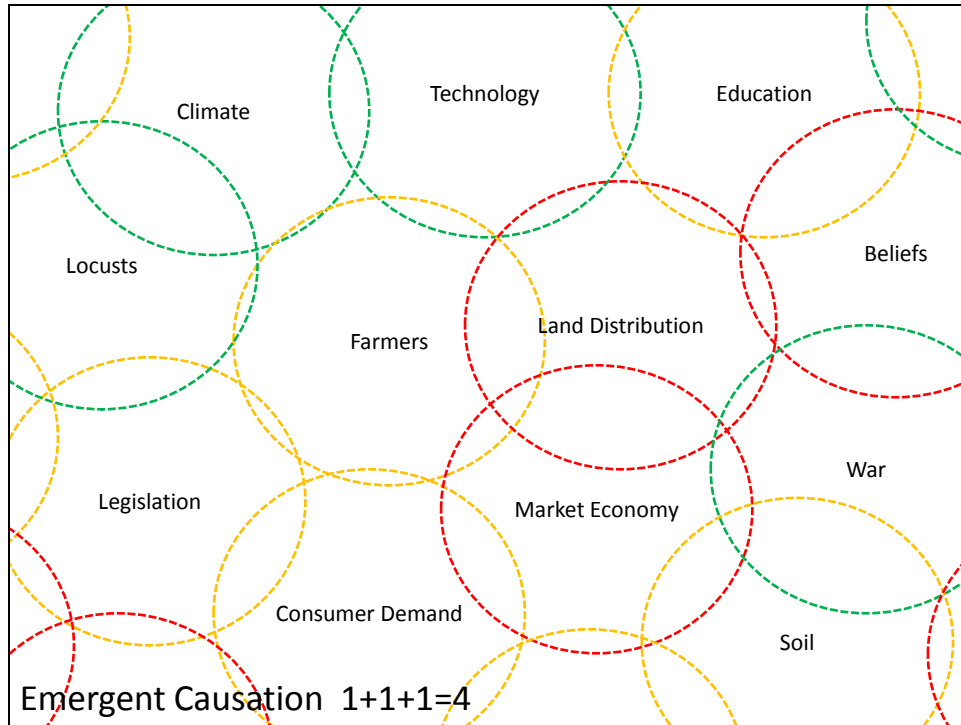


Figure 7. Connolly's Emergent Causation

Source: Created by author.

Figure 7 is a graphical depiction of Williams Connolly's theory of emergent causation as applied to the Dust Bowl. In this graphic, some systems, like Beliefs, are red, indicating that they are quite stable and change slowly, some, like Legislation, are yellow, indicating that they are only somewhat stable and change more quickly, and some, like Climate, are green, indicating that they change rapidly and are quite unstable. The lines are all dashed to represent the fact that all of these systems are open systems and interact with and influence each other. The outcome of those interactions and

influences is more than the sum of the parts such that locusts plus farmers plus land distribution produces the Dust Bowl or, to put it in mathematical terms, $1 + 1 + 1 = 4$.

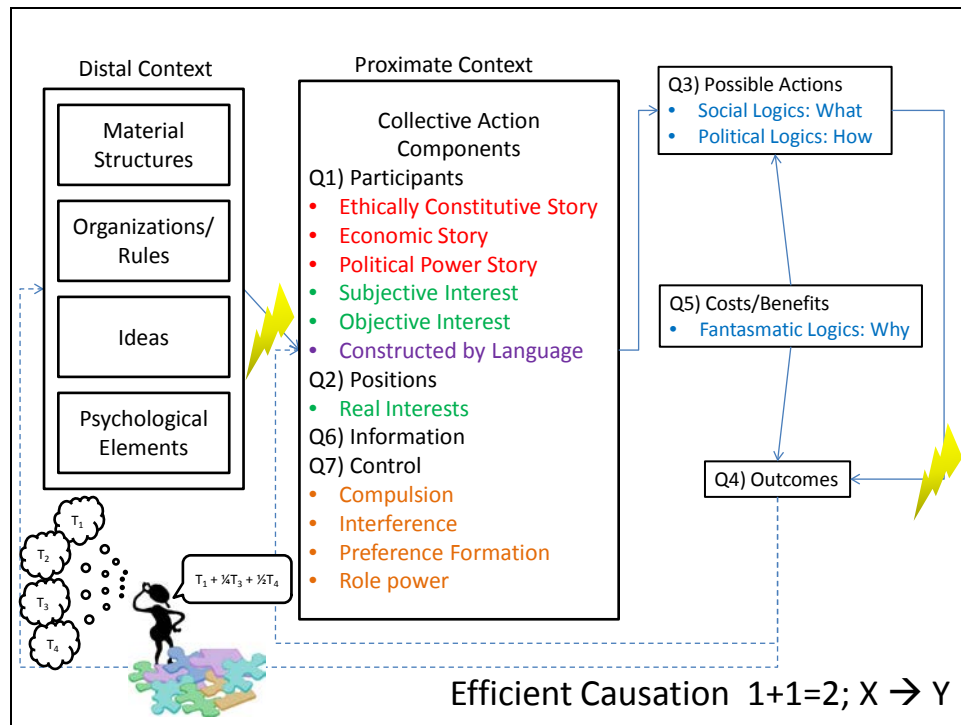


Figure 8. Modification of Perez's Modification of Ostrom's IAD Framework

Source: Created by author.

Figure 8 is a further modification of Perez's modification of Ostrom's Institutional Analysis and Development framework to more explicitly account for abductive reasoning and the theories of Glynn, Isaac, Edelman, and Smith. Although the yellow lightning bolts represent the potential for emergence between the distal and proximate contexts and between actions and outcomes, this framework relies primarily on the force of efficient causation. In efficient causation, we claim that some action X causes some outcome Y in a linear fashion or, in mathematical terms, $1 + 1 = 2$.

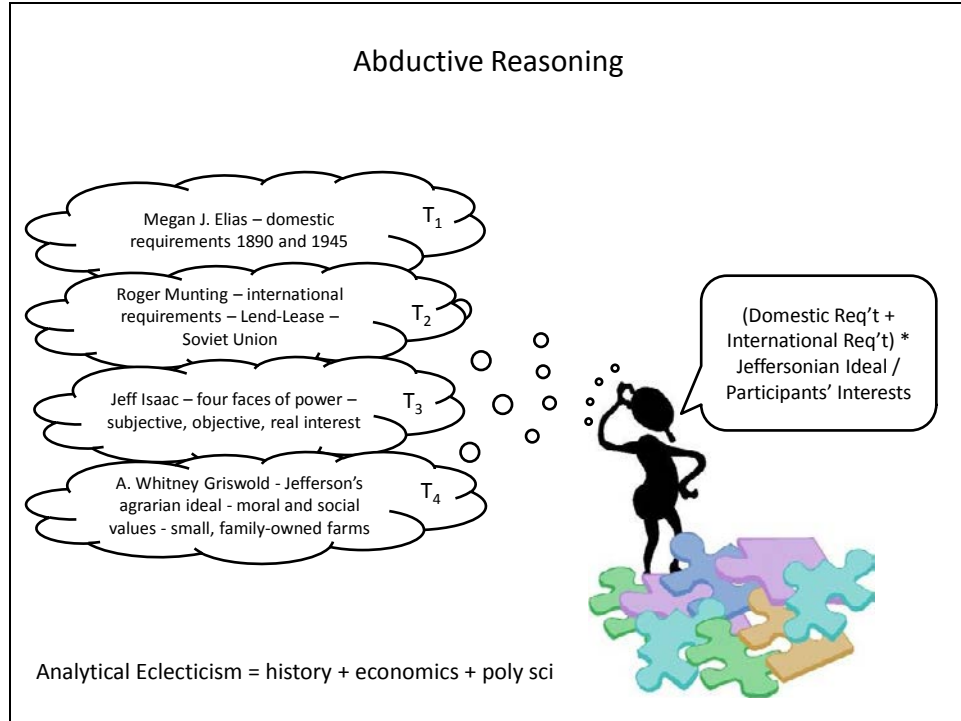


Figure 9. Abductive Reasoning

Source: Created by author.

Analytical eclecticism argues that the traditional separation of academic disciplines reduces interest in an examination of how the disciplines fit together. It is impossible, however, to explain every aspect of a given real world problem using a single academic discipline. Real world problems require that we look for the connections between ideas and find a pragmatic solution. Abductive reasoning allows the planner to bring analytically eclectic theories together and apply them to a real world problem. Abductive reasoning occurs when the planner surveys a wide selection of theories, compares these theories to the observed data about his real world problem, and determines which theory or combination of theories seems most reasonable. The initial

and final selection of theories should be driven by the environment. This methodology will almost always result in unique descriptions of the environment and problem and correspondingly unique solutions.

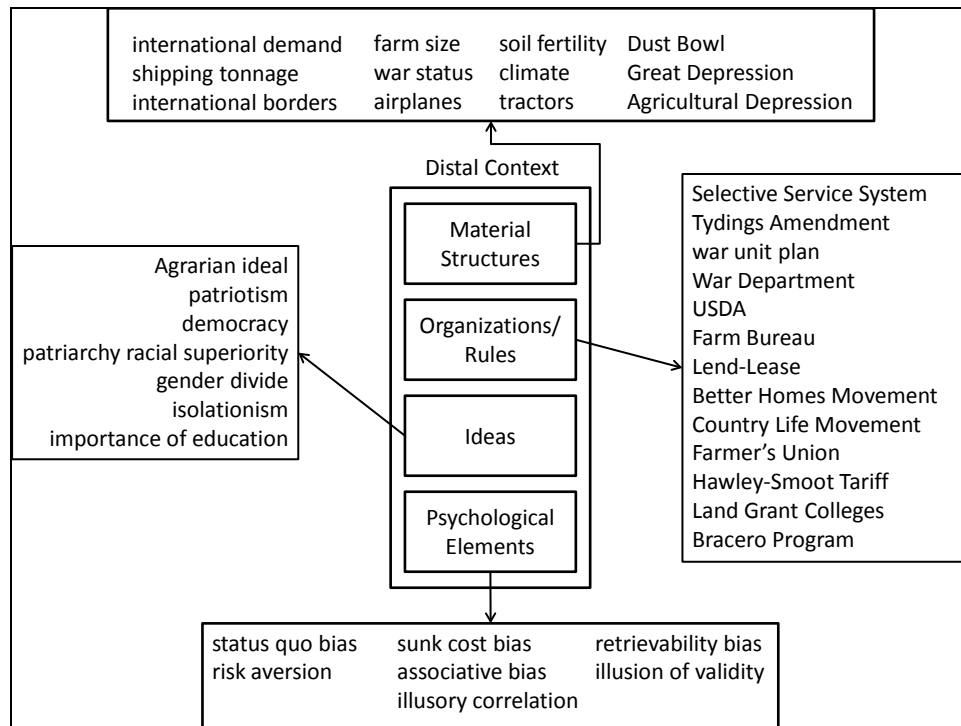


Figure 10. Proximate Context

Source: Created by author.

Figure 10 displays the four divisions of the distal context. The distal context includes those factors that affect but are not immediately part of the action situation or proximate context. These factors are at a remove from the interaction. The four divisions are loosely based on Parsons four causal logics but no attempt should be made to

demonstrate the causal linkage between a given factor and the interaction. Examples of each division are listed and were drawn from the narrative in chapter 4.

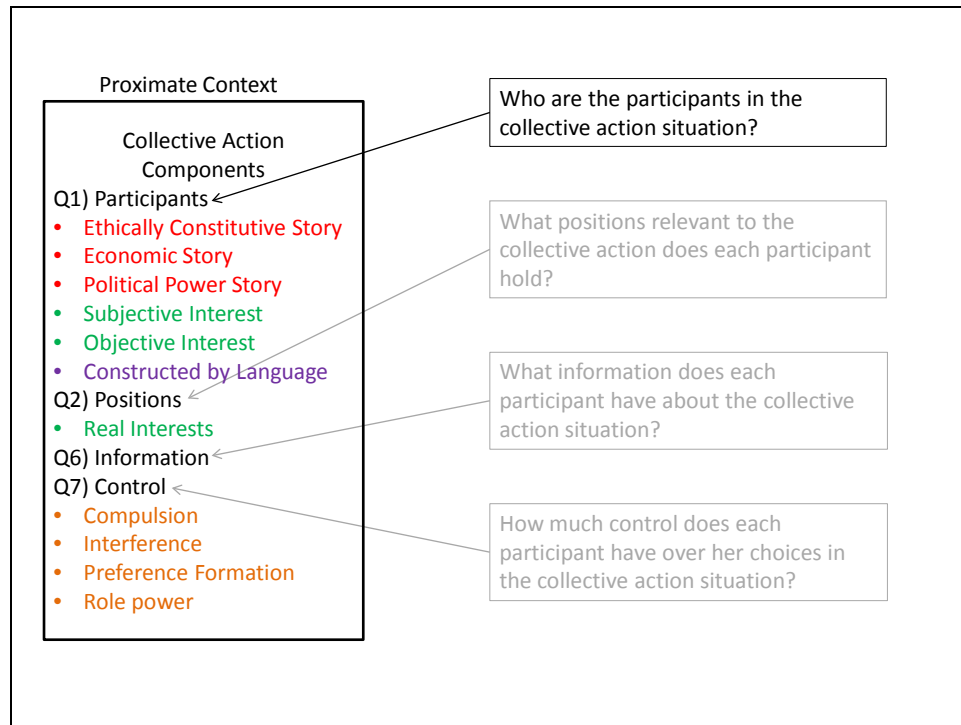


Figure 11. Ostrom's First Question: Participants

Source: Created by author.

The proximate context includes those factors directly related to the interaction or collective action situation. It involves a set of actors and their decision making process. Evaluating it relies on seven questions borrowed from Ostrom's Institutional Analysis and Development framework. The first question deals with who the participants or actors in the situation are.

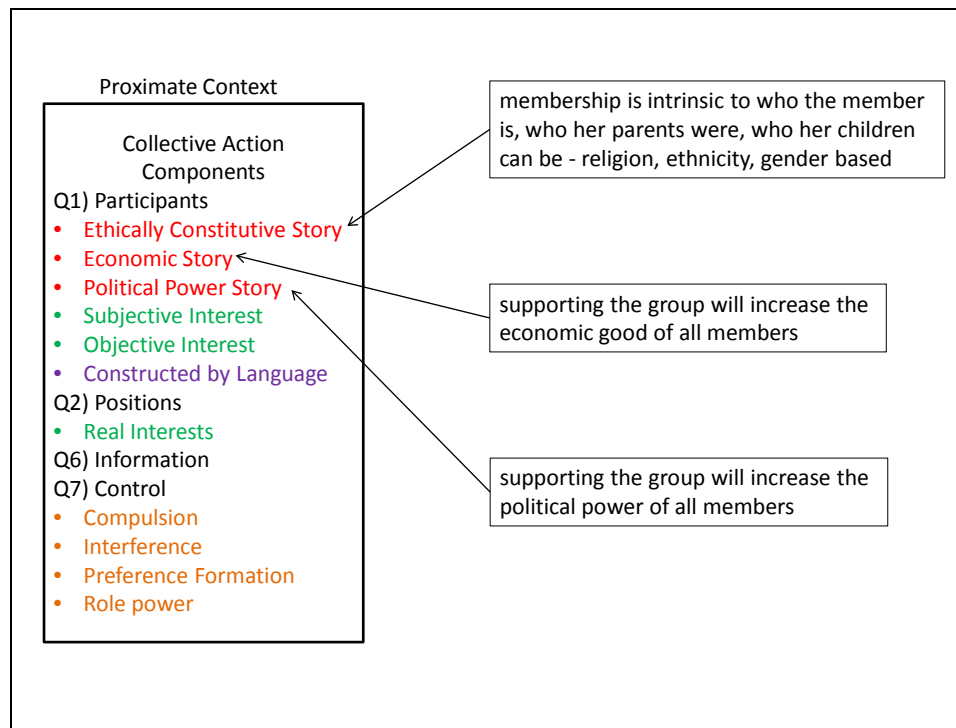


Figure 12. Smith's Stories

Source: Created by author.

Part of the answer to Ostrom's first question can be found using Smith's theory about stories of peoplehood. The practitioner must assess what the participant's ethically constitutive, economic and political power stories are. Ethically constitutive stories argue that membership is intrinsic to who the constituent is and, often, who the individual's parents were and who their children can be (R. Smith 2003, 64-65). These stories tend to rely on religious, ethnic and gender bases. Economic stories argue that supporting the group will increase the economic good of all members (R. Smith 2003, 60). Political power stories argue that supporting the group will increase the political power of all members (R. Smith 2003, 62).

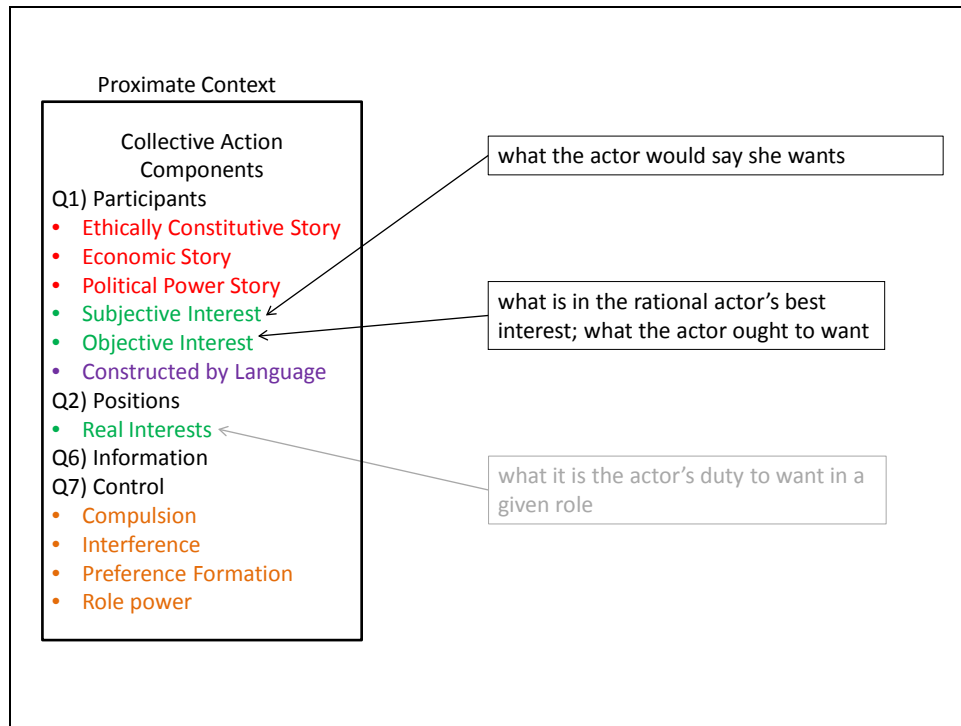


Figure 13. Isaac's First Two Interests

Source: Created by author.

A second part of the answer to Ostrom's first question can be found using two of Isaac's three forms of interest. Subjective interest is what the participant would say she wants if she was asked. Objective interest is what an omniscient and impartial observer would say is in the participant's best interest as a rational actor; this is what the participant ought to want.

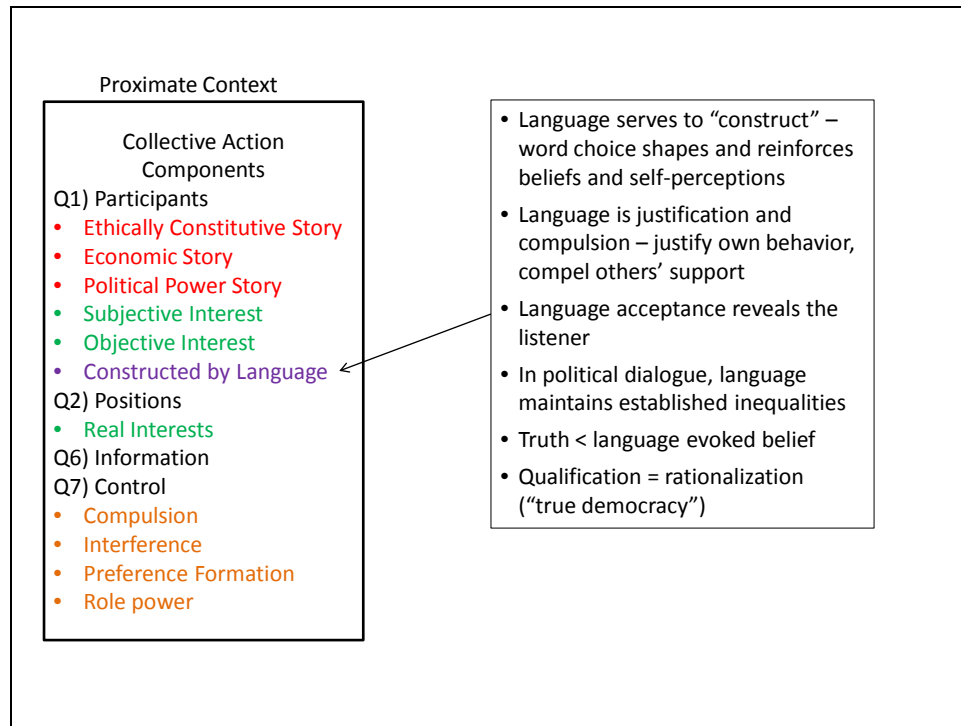


Figure 14. Edelman’s Constructive Language

Source: Created by author.

A third part of the answer to Ostrom’s first question can be found using Edelman’s theory about the role of language in constructing reality. Edelman argues that the words participants choose to describe themselves and the world around them not only reinforce their beliefs but can actually shape their beliefs. He points out that participants use language in order to justify their own behavior and desires to themselves and others and to compel others to support those behaviors and desires. He claims that the language the participant’s interlocutor accepts as reasonable reveals much about the character of the interlocutor. Edelman also argues that, in political dialogue, the truth in language is often less important than the belief that language can evoke and that language is often a tool used by those who wish to maintain status quo inequalities. There is a link here to

Glynos’s notion of dominant social logics and counter-logics. Edelman also warns that participants who speak in qualification like “true democracy” are likely attempting to rationalize their behavior.

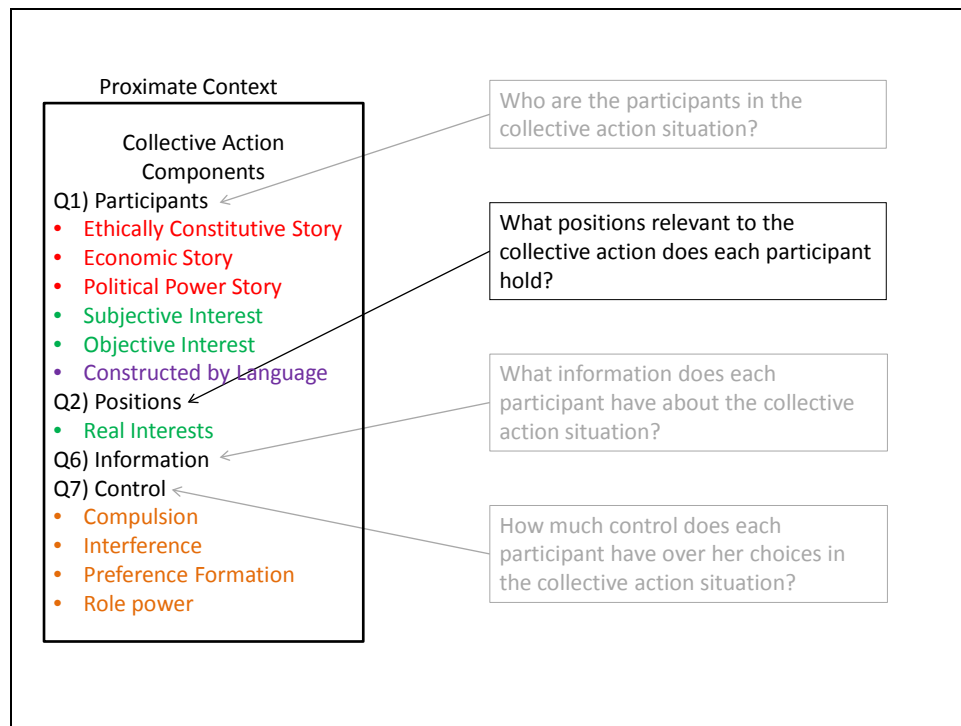


Figure 15. Ostrom’s Second Question: Positions

Source: Created by author.

Ostrom’s second question asks what positions each participant holds that are relevant to the collective action situation. The participant likely holds a large number of positions (e.g. husband, father, brother, son, uncle, friend, employee, employer, boss, etc.) but not all of them are important to the specific interaction. The practitioner should remember that the position that the participant holds may affect the stories of peoplehood

that they espouse and accept. Smith argues that leaders of groups and members of groups often espouse different variations on the group's theme based on their roles.

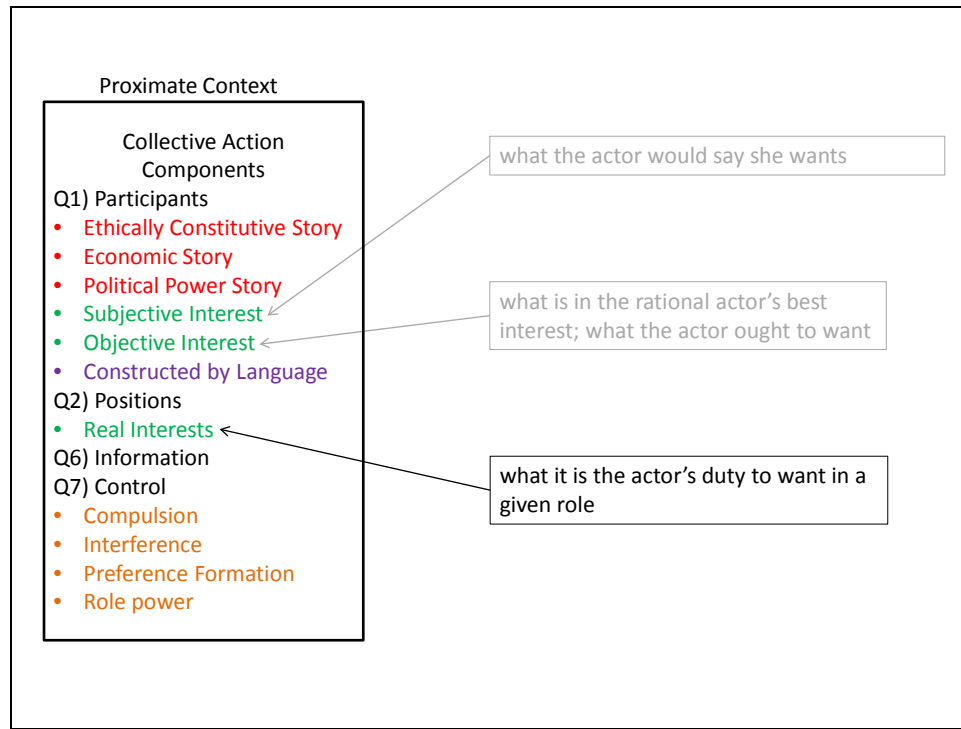


Figure 16. Isaac's Third Interest

Source: Created by author.

Isaac's third form of interest, real interest, helps to explain the significance of the position that the participant holds in terms of the collective action situation. The role within the social structure that the participant holds determines his real interest or what it is his duty to want. Put another way, we could say that "all farmers want . . ." or "all teachers want . . ." or "all soldiers want . . ." The practitioner should also remember that the position that the participant holds may affect the stories of peoplehood that they

espouse and accept. Smith argues that leaders of groups and members of groups often espouse different variations on the group's theme based on their roles.

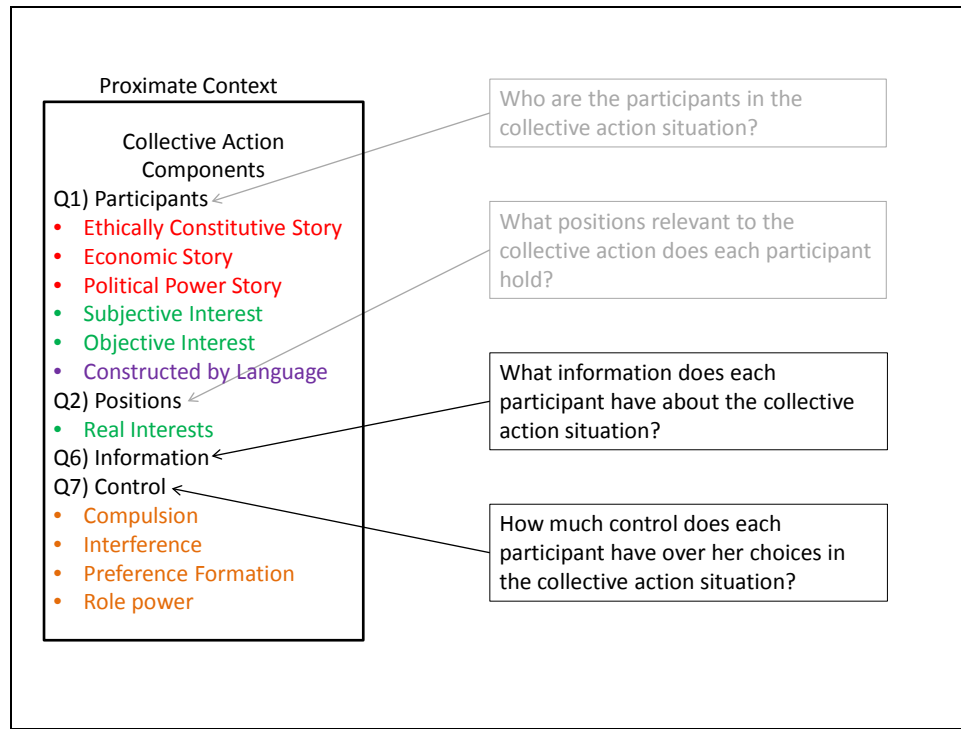


Figure 17. Ostrom's Sixth and Seventh Questions: Information and Control

Source: Created by author.

Ostrom's sixth question asks what information each participant has available about the collective action situation. There may be critical information that one participant possesses that he neglects to share with other participants. This information disparity may or may not be due to malicious intent on the part of the informed participant. There may also be a lack of critical information shared equally by all participants. It is also possible that the participants possess so much information that they are unable to make use of all of it. In this case, the overabundance of information might

prevent the participants from making the proper use of the information that they actually have.

Ostrom's seventh question asks how much control the participant has over his own choices. If the participant is the leader of a group, he may be bounded by the desires of his group. If the participant is a member of a group, he may be bounded by the rules of his group. The participant may be able to choose exactly as he thinks best or may be required to submit his decisions to others for review, which might influence his decisions and alter them.

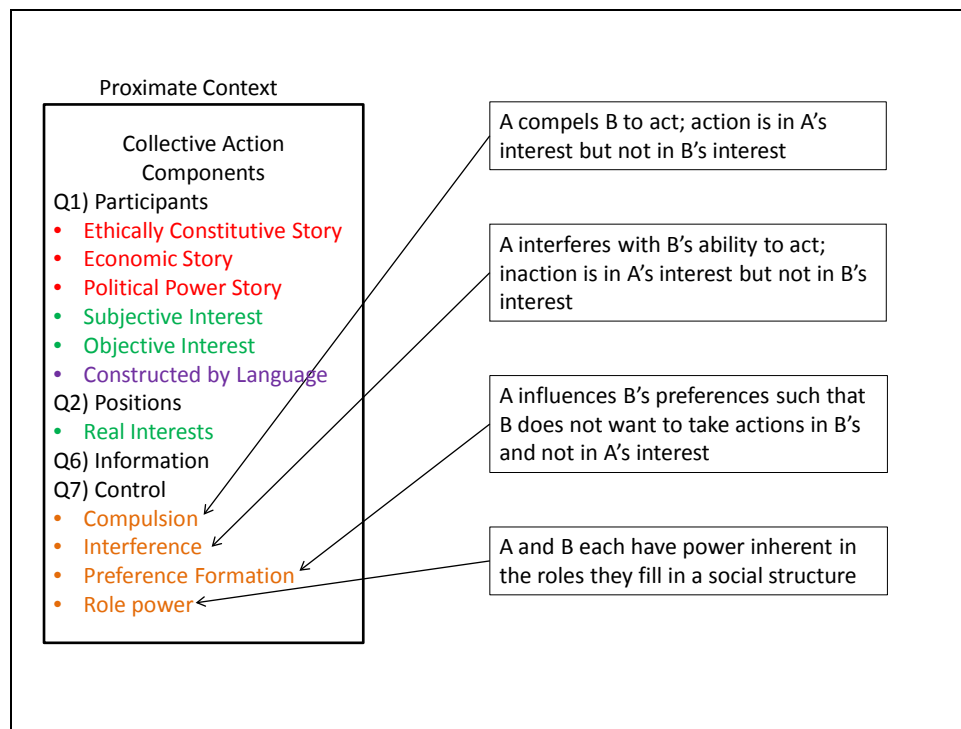


Figure 18. Isaac's Four Faces of Power

Source: Created by author.

Isaac's four faces of power offer a means of assessing the participant's control over his own choices. Isaac discusses four ways in which the participant's control may be limited by other actors' power over him. Other actors may compel the participant to act in ways favorable to them but not in his own best interest. Other actors may interfere with the participant's ability to act by preventing him from taking actions counter to the other actors' best interests even if they are in the participant's best interest. Other actors may be able to influence the participant's preferences to such an extent that the participant's actions are consonant with the actors' desires even though they are counter to the participant's best interests. Other actors may have power over the participant on the basis of the roles that the actors and the participant fill in a shared social structure. The participant should keep in mind that these power relationships are not necessarily malicious but may be the result of accepted social norms that the actors and the participant find mutually acceptable. For example, while we no longer have "join the Army or go to jail" policies to compel military service, arguably, the military practitioner's decision to accept such a potentially dangerous position in society is due to other actors' influence on the formation of his preferences.

Draft registration Tydings Amendment War unit plan	A compels B to act; action is in A's interest but not in B's interest
Citrus growers vs. laborers Railroads vs. customers	A interferes with B's ability to act; inaction is in A's interest but not in B's interest
Extension Agent vs. farmers Farm Bureau retains members Return to "normalcy"	A influences B's preferences such that B does not want to take actions in B's and not in A's interest
Debtor Farmer vs. Bank	A and B each have power inherent in the roles they fill in a social structure

Figure 19. Examples of the Four Faces of Power

Source: Created by author.

Examples of each of the four faces of power as narrated in chapter 4 and analyzed in chapter 5.

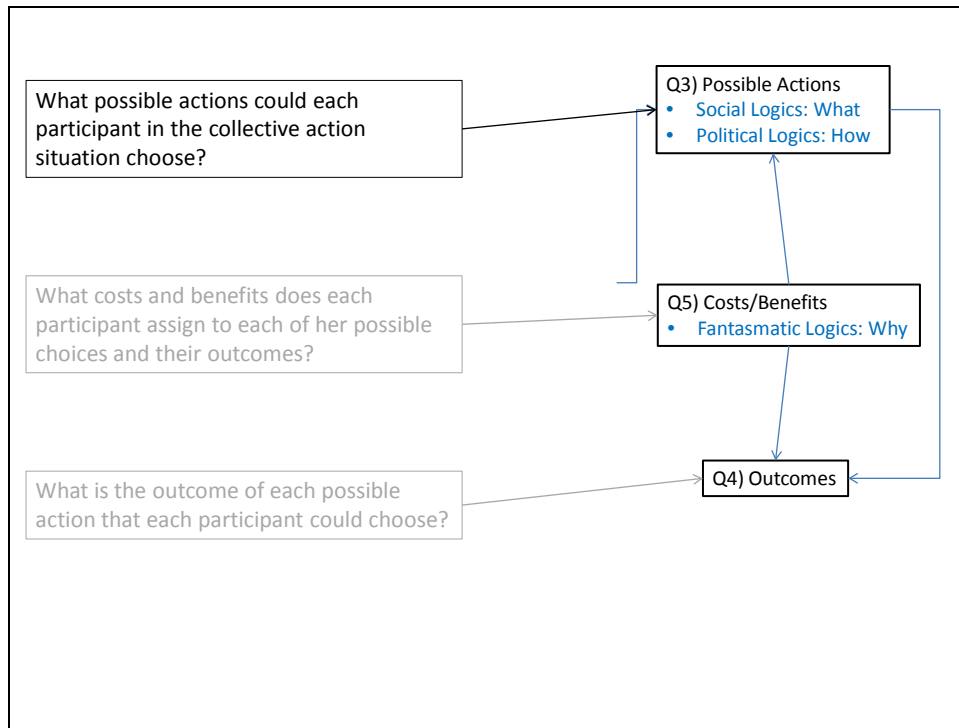


Figure 20. Ostrom's Third Question: Possible Actions

Source: Created by author.

Based on the factors in the distal and proximate contexts, each participant has potential choices that he can make as regards the collective action situation. His choices are influenced, bounded and possibly determined by who he is, what role he fills, the information he has available, and the degree of control he has over his choices. Ostrom's third question directs the practitioner to list all of the possible actions that the participant could choose to take.

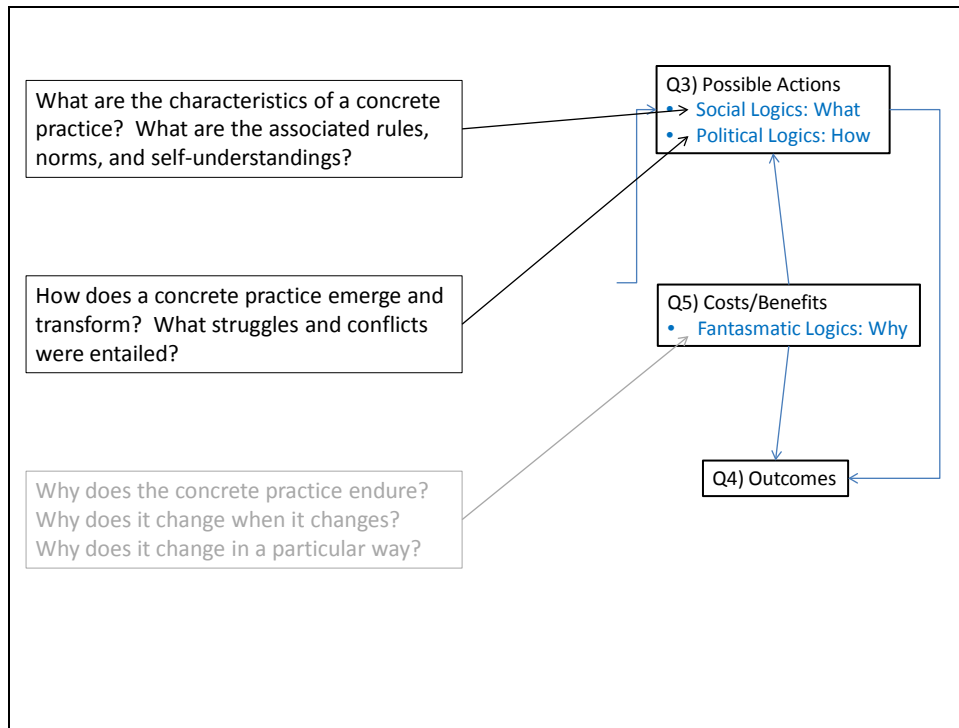


Figure 21. Glynos's Social and Political Logics

Source: Created by author.

To help assess the collective action situation and understand the participant's possible choices, we turn to two of Glynos's logics of critical explanation. Using social logics, we examine the characteristics of the concrete practice about which the participant is making a decision. The practitioner should understand the rules, norms and self-understandings that the participant associates with the concrete practice. It is important that the practitioner understand how the participant understands the concrete practice and does not focus on his own interpretation; concrete practices may seem illogical to the practitioner but be completely acceptable to the participant. Using Glynos's political logics, we examine how the concrete practice emerged and, if appropriate, transformed after emergence. The practitioner should focus on the conflicts and contestation

surrounding the emergence and any subsequent transformations. If the emergence and transformation were relative uncontested, then there is likely little room for the practitioner to intervene, but, if the practice was hotly contested, then the concrete practice may offer a lucrative intervention point. If the practice was hotly contested, then the practitioner may also need to be cautious about the possibility of unexpected shifts in practice due to apparently unconnected interventions.

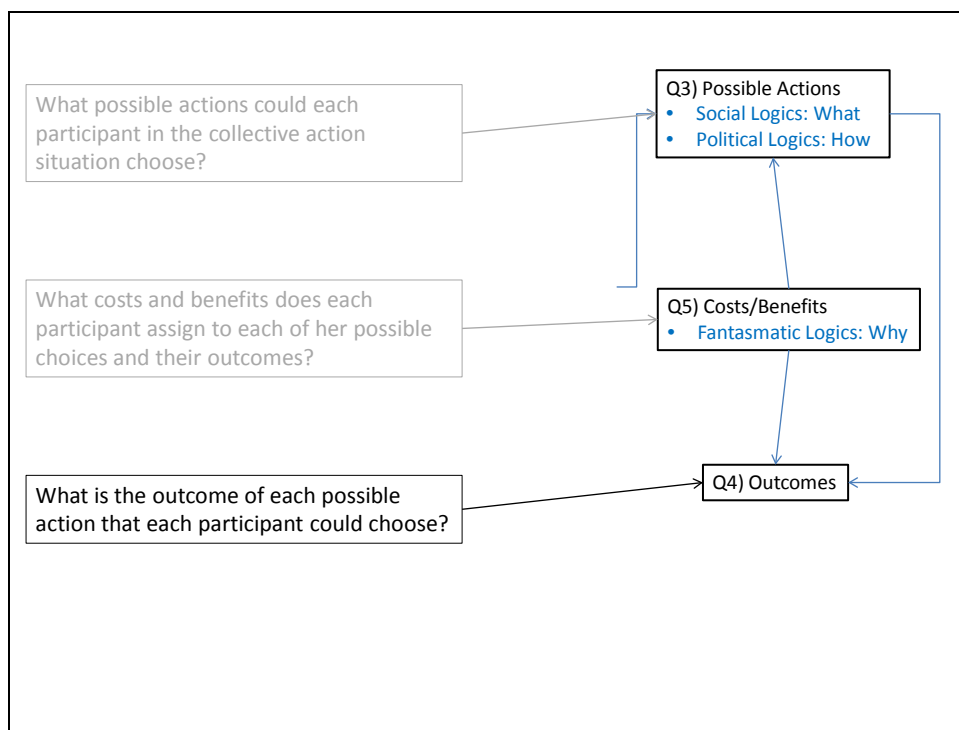


Figure 22. Ostrom's Fourth Question: Outcomes

Source: Created by author.

Ostrom's fourth question directs the practitioner to determine all of the possible outcomes of each possible choice. The practitioner should remember that, like Frost,

there is a limit to how far down the path of a given choice he can see and should not, therefore, be surprised if outcomes result that he was unable to predict.

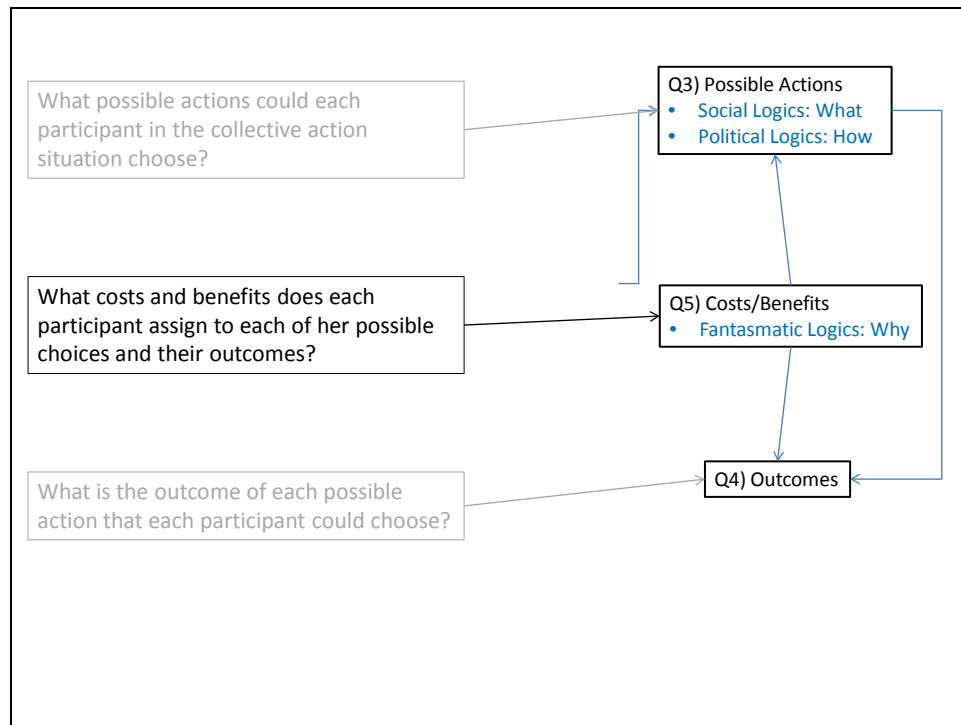


Figure 23. Ostrom's Fifth Question: Costs/Benefits

Source: Created by author.

Ostrom's fifth question asks the practitioner to assess the costs and benefits that the participant ascribes to each of her possible choices and their outcomes. While the practitioner needs not apply this logic, there is an echo here of the military concepts of most likely and most dangerous courses of action. This is not to suggest that the participant is in any way an enemy, but rather that, given a situation with a large number of possible choices and outcomes, the practitioner may need some means of determining to which option he ought pay most attention.

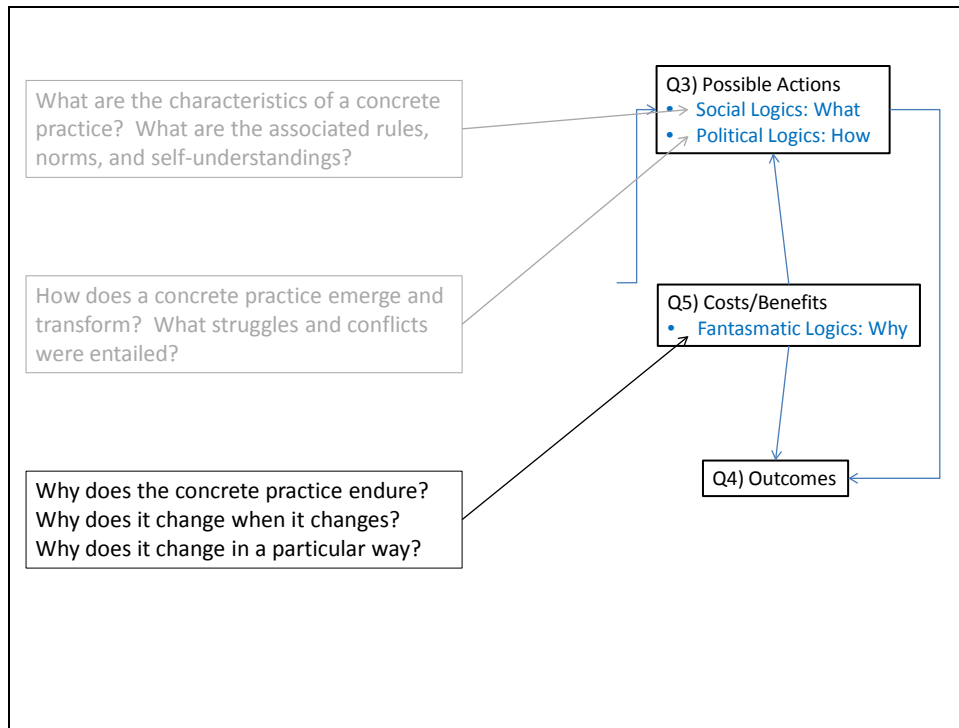


Figure 24. Glynos's Fantasmatic Logic

Source: Created by author.

Assigning costs and benefits to possible actions and their outcomes allows the participant to choose between alternatives. To the omniscient and impartial observer, the final choice may appear illogical. Glynos's fantasmatic logic helps to understand why the participant makes the choice he does. Framing the situation in terms of the fantasy that the participant associates with it can help explain why a given concrete practice continues even if it is not the optimal solution for the participant. An easy way to formulate this fantasy is to say that, if the participant simply takes X action, then wonderful, but actually unobtainable, result Y will happen and, if he fails to take action X, terrible outcome Z will occur. It also helps to explain why a practice changes when it does change and why it changes in the way it changes. The practitioner should bear in mind that, when a

participant accepts that their fantasy is a fantasy, the new path or counter-logic that the practitioner chooses quickly takes on the aspect of a new fantasy.

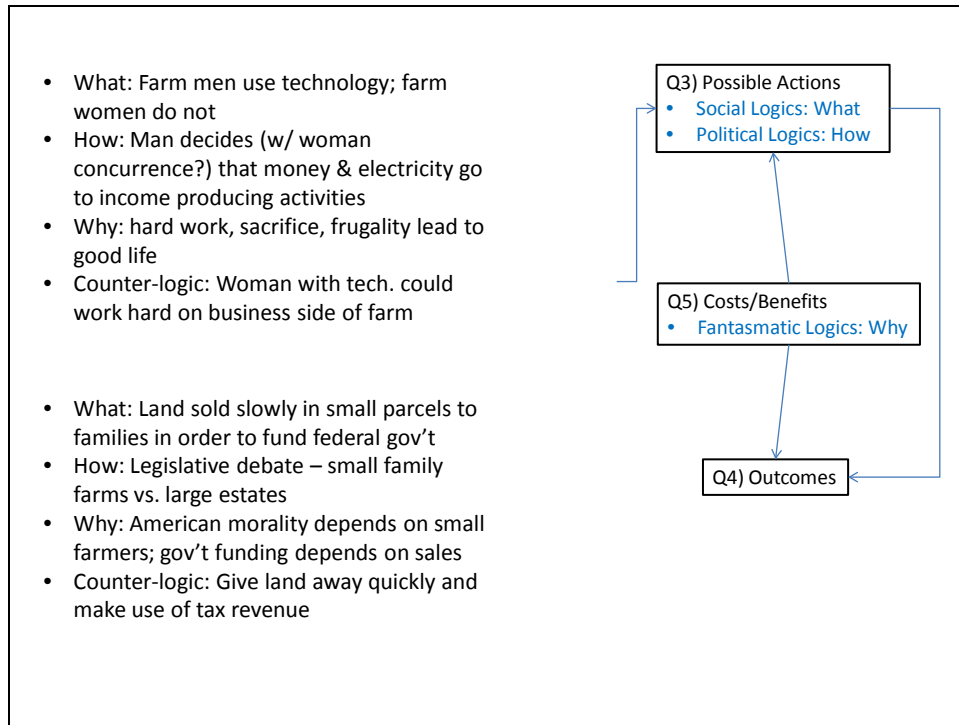


Figure 25. Examples of Glynos's Fantasmatic Logic

Source: Created by author.

Examples of social, political and fantasmatic logics as narrated in chapter 4 and analyzed in chapter 5.

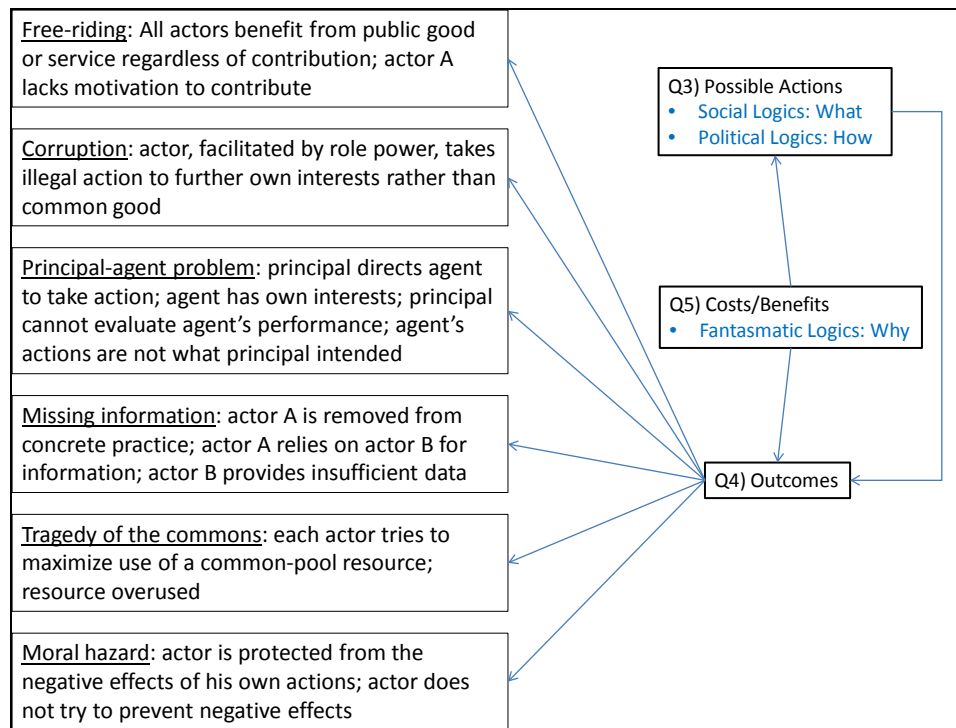


Figure 26. Collective Action Problems

Source: Created by author.

When the outcome of collective action is suboptimal, it becomes a collective action problem. In a collective action problem, one or more of the participants make choices that result in favorable outcomes for themselves at the expense of the rest of the participants in the situation. This poor decision-making process may be the result of either lack of information or lack of motivation. It is entirely likely that the participant making the poor decision would actually profit more in the long term from the optimal decision, but this awareness is overcome by the enticement of short term gains. This figure offers six possible forms that the collective action problem might take.

<u>Free-riding</u> : All actors benefit from public good or service regardless of contribution; actor A lacks motivation to contribute	Sapiro & Collectivization Older ag. workers leave
<u>Corruption</u> : actor, facilitated by role power, takes illegal action to further own interests rather than common good	Senatorial Selection
<u>Principal-agent problem</u> : principal directs agent to take action; agent has own interests; principal cannot evaluate agent's performance; agent's actions are not what principal intended	SSS vs. local draft boards
<u>Missing information</u> : actor A is removed from concrete practice; actor A relies on actor B for information; actor B provides insufficient data	Ag. Labor statistics
<u>Tragedy of the commons</u> : each actor tries to maximize use of a common-pool resource; resource overused	Hawley-Smoot Tariff Competition for manpower
<u>Moral hazard</u> : actor is protected from the negative effects of his own actions; actor does not try to prevent negative effects	McNary-Haugen Bill

Figure 27. Examples of Collective Action Problems

Source: Created by author.

Examples of collective action situations in which suboptimal outcomes were chosen or proposed as narrated in chapter 4 and analyzed in chapter 5.

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