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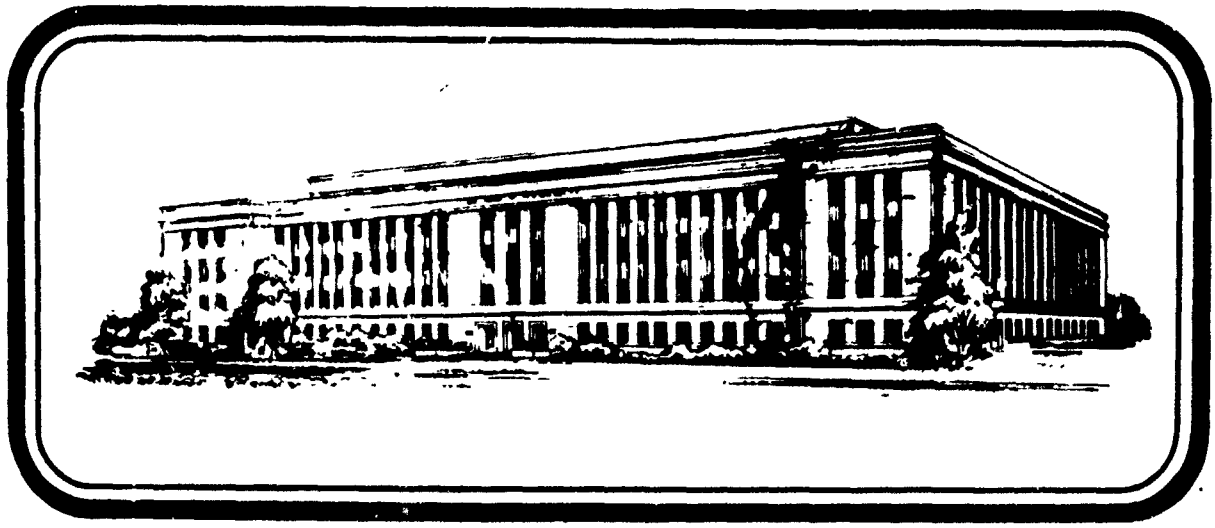
MOBILIZATION AND DEFENSE MANAGEMENT TECHNICAL REPORTS SERIES

IMPACT OF LABOR ON SURGE AND MOBILIZATION ABILITY IN THE AEROSPACE INDUSTRY— JAPAN VERSUS THE UNITED STATES



INDUSTRIAL COLLEGE OF THE ARMED FORCES

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In any future mobilization the aerospace industry will be among the most critical to a general mobilization effort. The success of efforts to rapidly expand production during mobilization will be tremendously sensitive to how effectively the aerospace industry plans for and uses its prime asset--labor. Since Japanese labor is enjoying great success in virtually every aspect of industry it may be very beneficial to see what lessons we can learn from them to apply to the benefit of our industry now and during mobilization. This study examines the lessons learned and makes appropriate recommendations.

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INDUSTRIAL COLLEGE OF THE ARMED FORCES
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MOBILIZATION STUDIES PROGRAM REPORT

IMPACT OF LABOR ON SURGE AND MOBILIZATION ABILITY IN THE AEROSPACE INDUSTRY-- JAPAN VS. THE UNITED STATES

by

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A RESEARCH REPORT SUBMITTED TO THE FACULTY
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EXECUTIVE SUMMARY

This mobilization studies program report undertakes a comparative analysis of the labor aspects of the aerospace industry in Japan and the United States in the current non-mobilized environment. The study works from the assumption that in any future mobilization, the aerospace industry will be among the most critical to a general mobilization effort. Further, the success of efforts to rapidly expand production during mobilization will be tremendously sensitive to how effectively the aerospace industry plans for and uses its prime asset--labor. The hypothesis of the study evolves around the fact that Japanese labor is presently enjoying great success in virtually every aspect of industry. Therefore, it may be very beneficial to see what lessons can be learned to apply to the aerospace industry now and during mobilization.

In making the comparative analysis of labor in Japan and the United States, five specific areas were addressed:

1) Characteristics of employment systems
2) Organization and role of unions
3) Training (to include both vocational and industry)
4) Productivity of workers
5) Role of Government

In studying these areas, an aggressive attempt was made to define the strengths and weaknesses in both labor environments to determine which aspects of each lend themselves to improved mobilization capability.

The general conclusion of the study is that Japanese labor performance, while steeped in tremendous cultural and social differences from the United States, has been effective in several areas which could benefit U.S. aerospace labor capability. Concentration on vocational training and on maintaining an amicable and productive relationship among management, labor and government are areas which lie at the heart of Japanese success and offer potential benefit for application to the U.S. aerospace industry.

Some of the more specific conclusions can be summarized as follows:

1) The lesson to be derived from the role of Japanese labor unions is that a cooperative versus confrontation role pays dividends in terms of the labor-management relations e uation.

2) In the labor training area, Japanese training programs, in terms of breath of education and skill level, enhance human resource management. Japanese government participation in the legislation planning and administration of vocational training programs has been instrumental in ensuring trained labor is available for industry needs.

3) The role of the Japanese government in labor and industrial planning is very significant. The government is viewed as an indispensable part of planning. Currently, the U.S. government has no centralized department which can effectively deal with industry. The U.S. government does not have a mechanism for anticipating long-term problems of industries or to prepare labor to make any necessary adjustments.

CHAPTER I

INTRODUCTION

In any future hostilities, the aerospace industry, which already plays the role of foremost recipient of defense procurement dollars, will be among the most critical elements of a major mobilization effort. The success of efforts to expand production of a broad range of aerospace products, during mobilization, will be tremendously sensitive to how effectively aerospace uses its prime asset--labor.

In its report titled "The Ailing Defense Industrial Base: Unready for Crisis" the Defense Industrial Base Panel of the House Armed Services Committee reported to the Ninty-Sixth Congress that skilled manpower is already a problem throughout the defense industry, including aerospace. They further indicate they "see no overall government programs aimed at solving this problem, and the industrial company efforts are only touching the tip of the iceberg." They also called the skilled manpower problem one of the "most difficult nuts to crack" of all the problems plaguing the defense industrial base. And finally they said:

> "The panel believes that the solution to this national manpower problem will require a national commitment. Further, unlike World War II, when under full mobilization, thousands upon thousands of people--farmers, housewives, construction laborers, clerks, and others--answered 'the call to arms' and poured into our defense factories, the current economic environment and weapon system sophistication will not support any quick fix or emergency manpower reallocation to satisfy surge require-ments."[1]

To get the most from labor, during a period of intense competition for manpower and a "no holds barred" rush for more productivity, it is essential that labor planning start now. Now, before the pressure is on, is the time to review and rethink the issues of past mobilizations to see where our in-being practices can be improved to enhance both current productivity and long range mobilization support.

Japanese labor is currently enjoying an excellent record of success in virtually every area of labor interest. It should be extremely worthwhile; therefore, to examine some mobilization sensitive aspects of labor in the Japanese aerospace industry, to see if any of their practices could be applied in the United States to enhance both current production and projected mobilization needs.

Before we begin our look at specific aspects of labor in the United States and Japanese aerospace industries, we need to get the similarities and dissimilarities in perspective. While the industry names are the same, there are tremendous differences which must be taken into consideration.

For openers, we are talking about two substantially different industries in size alone. In the United States, the aerospace industry is among the largest and most important industries. As evident in Figure 1-1, aerospace industry sales represent two to three percent of the Gross National Product (GNP) of the United States, a value of $63.5 billion. In Japan, aerospace is a relative newcomer to Japanese industry. Clearly, it seems to have tremendous potential in Japanese plans for the future but currently accounts for ten percent of Japanese GNP, a value of only $1.5 billion.

AEROSPACE SALES AND THE NATIONAL ECONOMY
Calendar Years 1967-1981
(Billions of Dollars)

Figure 1-1

The nature of aerospace in the United States is also highly defense oriented. In a country with a large defense budget the aerospace industry is consistently one of the largest recipients of defense procurement dollars. As shown in Figure 1-2. The United States Government (primarily the Department of Defense) accounts for over 50 percent of sales by the American aerospace industry. In Japan, a nation of far smaller defense budgets and a very reluctant attitude about arms, the situation is vastly different. With total sales of only $1.5 billion, the Japanese aerospace industry sells 85 percent of their product to its government. The balance of $18 million is placed on the export market, but has little impact on the overall Japanese trade picture. This again draws an interesting contrast with the United States which, with a largest ever export value of aerospace products in 1981 of $17.6 billion, accounted for nearly 8 percent of total exports through aerospace products (Figure 1-3).

Another item worthy of consideration is that Japanese aerospace production is currently done primarily under license from major foreign aerospace firms, including some in the United States. Licensed production in Japan now accounts for up to 80 percent of their total aerospace effort. In general, however, there is a growing interest by Japan in the aerospace markets which probably signal a coming trend to more totally Japanese aerospace production.

And finally, there are significant underlying structural differences in the aerospace industries of Japan and the United States. These differences are both in industrial and social structure. As shown in Figure 1-3, non-aerospace production by the entire aerospace industry in the United States accounts for only 16 percent of production effort. In Japan, on the other

AEROSPACE INDUSTRY SALES BY CUSTOMER
Calendar Years 1967-1981
(Millions of Dollars)

Figure 1-2

U.S. EXPORTS AND EXPORTS OF AEROSPACE PRODUCTS
Calendar Years 1960-1981
(Millions of Dollars)

Figure 1-3

hand, the largest company producing aerospace products is Mitsubishi Heavy Industry. Its aerospace effort is less than 10 percent of total production.

A final word on social structures. The social and cultural differences between the Japanese and Americans are the subjects of volumes of social studies. Let it suffice to say that those differences are recognized, but it is our feeling that while we cannot become Japanese--we can indeed learn from them.

In view of the above, we can now take a brief look at United States mobilization experience in the past to identify some aspects of labor in the aerospace industry which have historically shown a need for attention to ensure a successful mobilization effort.

While there are valuable lessons to be learned concerning mobilization in every aspect of labor management, we will narrow our consideration of contrast to five specific areas. The employment systems; roles of unions; training; productivity; role of government.

FOOTNOTES

CHAPTER I (Pages 1-7)

1 The Ailing Defense Industrial Base: Unready for Crisis, Defense Industrial Base Panel Report to House Armed Services Committee, 96th Cong., December 31, 1980, pp. 14-15.

CHAPTER II

THE AEROSPACE LABOR FORCE IN MOBILIZATION--WORLD WAR II

World War II was this country's last major full scale mobilization. From the experiences of the past, we can learn important lessons. In laying our groundwork for a comparative look at both the United States and Japanese labor in the aerospace industry, a study of our last similar experience will help clarify the key elements of our subject.

Prior to World War II, the aircraft industry was a relatively unimportant segment of the United States transportation-equipment manufacturing sector. While preparing for, during and certainly after the war, this somewhat infant activity grew to become one of the nation's major industries in terms of both employment and output. At the beginning of 1940, the United States was estimated to have the capacity to build 2,000 airplanes per year. Germany, by contrast, produced over 18,000 airplanes a year.[1]

The United States' capacity for building airplanes in 1938 was accomplished in only fifteen airframe, engine and propeller plants throughout the country. This number expanded to 41 plants by 1941 and doubled to over 80 plants by 1943.[2] From this meager start America produced over 300,000 military aircraft for the U.S. Army, Navy and Allies.

The expansion of America's aircraft production during World War II probably exceeded, in speed and magnitude, any industrial effort in history. The problems associated with this expansion were in themselves massive, and at the forefront of problems was Labor. Labor played a key role in this country's ability to produce the munitions and aircraft that enabled the allies to defeat two awesome empires at the same time.

While a number of factors greatly influenced labor during World War II mobilization, none was so pervasive as the greatly expanded role of government. Under the Federal Constitution, the major power in economic and industrial matters is vested in Congress under the "commerce clause." However, the executive branch of government has always played a large role in this area either through legislative delegation of power or through the exercise of "inherent" emergency powers. In terms of national crisis, World War II was no exception as President Roosevelt used his traditional war powers to create government agencies to deal with war and industrial mobilization.[3]

In May 1943, the President of the United States issued an Executive Order which delegated unprecedented authority to the Office of War Mobilization (OWM). This new office had authority over virtually all phases of the wartime government. Congress reaffirmed and extended these powers 16 months later. This creation is considered the broadest grant of power ever legislated by Congress. During the war, OWM acted as the highest government authority, short of the President, in the total field of industry and civilian mobilization.

Creation of this office evolved over four years and developed through the organizational changes of five other boards, committees and councils. (See Figure 2-1) As an outgrowth of five other government agencies before and during the war, the Office of War Mobilization (OWM) was ultimately created with the authority and power it needed to "do the job." Executive Order 9347, issued on May 27, 1943 empowered the OWM:

ARMS AND AMERICA

Figure 2-1

"(a) to develop programs and to establish policies for the maximum use of the nation's natural and industrial resources for military and civilian needs, for the effective use of the national manpower not in the Armed Forces, for the maintenance and stabilization of the civilian economy and for the adjustment of such economy to the war needs and conditions;

(b) To unify the activities of Federal agencies and departments . . . .

(c) To issue such directives on policy or operations to the Federal agencies and departments as may be necessary to carry out the programs developed, policies established and decisions made under this order . . . ."[4]

The OWM was elevated by the President to a position higher than any of the other agencies and departments of the Federal Government. In a sense, the director of OWM was "Assistant President"--more powerful than cabinet members.

An outgrowth of experience, OWM was extremely successful and remained as created until the war situation changed. Emphasis changed from not only mobilization, but to thinking of reconversion after the war. Thus, the Office of War Mobilization and Reconversion (OWMR) was created. Basically, everything stayed the same other than a little change and the transition from war to peace was planned.

Because of the new role of government in the aerospace industry and because of the press for war support production, the characteristics of employment in the aerospace industry under wartime conditions underwent irreversible changes.

The potential of the airplane as an offensive weapon made the location of the United States aircraft industrial facilities extremely important, yet vulnerable to air attack. It could no longer be taken for granted that the Atlantic and Pacific Oceans made this continent impregnable. Consequently,

the coastal location of aircraft plants was a source of concern. To correct the situation, new plant plans called for construction within the interior of the country. This shift was an early element of the mobility factor which still exists in the U.S. aerospace industry. However, early in the war, existing facilities had to be expanded in their present location because of the urgent need for airplanes. The shift in geographic distribution of the aircraft industrial plants was slow through the war years. The effect this movement had on labor, which was to become more and more of a problem as the war years continued, required the government to work with industry to initiate incentives to move the labor force to where the work was.

In the early days of the war, it appeared that our manpower resources were more than adequate. The pleas of government officials for stronger measures to establish controls over the labor market went unheeded. Because of the Great Depression, a large reservoir of unemployed was available for the industries to draw upon. However, there were shortages of particular skills. Until the Summer of 1943, manpower problems were largely "brush fire" problems, i.e., confined to specific issues. Examples were shortages of special skills, deficiencies in occupations characterized by low wages and unpleasant work and in places overloaded with war contracts. These "brush fires" or "bottlenecks" were serious; yet, the overall manpower situation was generally favorable.

After late 1943 and early 1944, the labor shortage developed into a national crisis. Manpower had become the major "bottleneck" in the war production effort. Even with this situation, the sense of urgency and fear in the country over the military outcome of the war had diminished. There was a

continued reluctance to undertake any broad new controls/policies, such as a national service. Thus the emphasis on manpower issues continued to emphasize voluntary measures. As a matter of record, the United States was the only major nation that went through the whole war without any general legislative authority for labor allocation (except for the draft).[5]

The manpower control measures the United States used during World War II centered on two things--persuasion and indirect compulsion. The results of the war show this was effective. However, few historians would disagree that if hostilities had continued or the military outcome had been less certain, the high demand for production and military manpower would have required far stronger manpower/labor control measures.[6]

Government agencies were not the only organizations coordinating or working on labor mobilization, another key player was the trade union.

A few days after the Pearl Harbor attack, the labor unions issued a voluntary "no strike" pledge which imposed a considerable self-restraint on union leaders and on collective bargaining in general.[7] In return, the government used its influence to prevent employers from interfering with the unionization of new and expanding industries. The result was a tremendous upsurge in union membership during the war. There was a negative impact though--the heavy hand of government prevented the normal process of collective bargaining for increased wages during the emergency.

To handle the government's portion of this relationship, President Roosevelt created the War Labor Board (WLB). The board had the authority to mediate, arbitrate and investigate disputes between labor and business. Overall, this board was rated as one of the success stories of the war.

Although there were problems—most were small and isolated. Ultimately, the volume of munitions this country produced could never have been completed without the mutual cooperation of industry, government and labor.

One specific innovative action that labor unions and industry (management) took, with a little push from the government, was the creation of "labor-management committees" in war production plants. The idea was a simple one, but an effective means of applying all the brains--both labor and management—in a factory to solve the problems of bottlenecks and upping war production. These committees were not grievance committees or collective bargaining sessions but a chance for both labor and management to get together to solve problems. The results surprised both groups--the idea worked. Some of the subjects the committee tackled were:

- Caring for tools
- Preventing breakdowns
- Reducing absenteeism
- Improving plant safety
- Improving plant lighting
- Adapting old machines to new ones
- Cutting waste
- Using every machine to maximum capacity
- Breaking down highly skilled jobs so less skilled people could do the work
- Training new workers [8]
- Retraining skilled workers

The American Federation of Labor, Congress of Industrial Organizations, National Association of Manufacturers and U.S. Chamber of Commerce made the following written endorsement of the Labor-Management Committee plan:

> "The labor-management committee programs now being promoted by the War Production Drive Division of WPB, under the direction of Mr. T. K. Quinn, endorsed by us, is not designed to increase power or position of any union. It does not interfere with any

> bargaining machinery or undertake its function. It is not designed to conform to any scheme that contemplates a measure of control of management by labor or labor by management. It is not a labor plan or a management plan. It is the War Production Drive Plan to increase production by increasing efficiency through greater management and labor cooperation."[9]

The labor unions were especially helpful in combing out the skills represented by their membership. Because of this early cooperation between labor unions and government, the impact of early manpower shortages was minimized. The government furnished the estimates of the manpower needed for each industrial area and for each industry. They helped workers and the unions straighten out wage or other employment problems with private companies. The trade unions responded by getting available workers, with the right skills, to the places they were needed.

Although successful at first, because of the large numbers of available workers and a relatively small build-up, this partnership did not support the numbers of workers needed later in the war. As the manpower problem and the magnitude of the skilled worker shortage grew at a fast pace, the need for skilled workers could no longer be met by bringing workers to the job--they had to be trained. The subject of training is discussed in a later portion of this chapter. The most unfortunate lesson to be learned from the government-labor cooperation of World War II was that while the results were good, they would not last without some sort of continuing government role in the industry when the crisis had passed.

This country's mobilization for World War II involved unprecedented changes in the size, use and distribution of America's manpower resources. More than 12 million men and women were in the Armed Forces when the war

ended. Between seven and eight million more were employed in industries directly involved in the production of munitions. To these millions must be added other millions who engaged in the production of goods and services indirectly equired for the war effort. The combination of patriotism, high wages and Selective Service brought into the labor force nearly seven million persons, who were mostly new workers. Others, who in normal times would have retired, continued in school or remained in the home. Millions of workers shifted to new areas, new industries, or new occupations as a result of the economic conditions produced by the war. With this vast change, came a still bigger chore, training the new workers.

In the aircraft industry, there were two things that simplified this monstrous task. The first was the American culture and the second was production technique changes. Prior to and during the war, the U.S. manpower pool consisted of men who understood machines, how to fix and run them. The country had first rate engineers and mechanics, plenty of scientists and graduates of scientific and engineering schools, and plenty of professional and amateur inventors. Starting with a new work force that had a basic understanding of mechanical works, the aircraft industry was able to train them and use their prior knowledge fast to keep up with the expanding demand for munitions.

Nonetheless, the large expansion of the industry placed a heavy training burden on both industry and the government. The government's participation in helping industry train the expanding work force was certainly significant. Innovative uses of government facilities and instructors were encouraged throughout the country. In the early years, the Labor Division of NDAC used

school facilities, normally idle during the summer, to improve and refresh the skills of some 500,000 workers.

The preliminary training of an employee prior to placement in a specific job had certain advantages. However, most manufacturers were unable to do this because of a lack of facilities, time, instructors, etc. Accordingly, the Labor Division recognized the need, stepped in and set up the training within industry branch. With the cooperation of both labor and management, an extensive worker-training program in or just outside the factory was started.

The branch, after conducting a survey and a study of the particular company, analyzed the training needs. They then aided the company in setting up the training program in the plant or using tax supported government agency services such as state employment services, vocational and/or trade schools, colleges, universities, etc. During the war the branch surveyed and made recommendations for training in more than 2,000 war contractors. By 1942 over three million workers were trained by this method, a little less than half of all the new workers employed during the war.[10]

Training took on even more meaning because of the magnitude of the turnover of employees in the aerospace industry during the war. In 1941, the airplane industry had to hire and train 1,500 workers to increase employment by 1,000; the following year to obtain the same increase required hiring 2,100 workers.[11] The problem became almost unbelievable in 1943, especially on the West Coast. During the first six months manufacturers employed 150,000 men and women--to net only 12,000 new workers.[12]

Although an enormous amount of time and effort was consumed for training a large wartime work force, the general mechanical knowledge of the American

worker and new production methods helped reduce the impact of major training problems for a mobilizing industry and country.

With the wartime mobilization in full swing in 1942, industry as well as government created vast new organizations, to revolutionize methods of operation and production. The increase in airplane output between 1940 and 1944 required far more than duplicating 1940 processes and tooling. The increased production required a revolutionary approach to the basic method of aircraft production. That process was to be "line-production."

The rapid increases in production needed to reach President Roosevelt's 50,000 airplanes a year would have been impossible using the manufacturing processes of 1940 such as "job shops" or hand-tooled parts. A new technique had to be developed before a large increase in production could be obtained. Borrowing from other industries, the aircraft manufacturers developed the technique of "line production"--well known to other industries but unknown or not favored by the aircraft manufacturers who were not previously used to large production volume.

Productivity of labor continued to rise during the war years as it had since 1919. The increases in productivity prior to the war years, to a large extent, can be traced to the development of machines and technological improvements. After the start of the war, particularly in 1942, the dramatic increase in productivity was truly remarkable considering that many manufacturing plants had to convert to new wartime products and many new plants never reached full use of their equipment.

The bottom line is that there is much to be learned from the lessons of history. Clearly, World War II demanded extraordinary measures to initiate and control a total mobilization effort. Labor issues such as new roles for unions, expanded roles for government, solid training programs and emphasis on increased productivity were without question at the forefront of attention for mobilization managers then and will undoubtedly again be at the forefront in any mobilization effort in the future.

FOOTNOTES

CHAPTER II (Pages 9-20)

1 Donald M. Nelson, Arsenal of Democracy, The Story of American War Production (New York: Harcourt, Brace and Co., 1946), pp. 48-49.

2 Ibid., pp. 36-237.

3 Robert Rankin and William R. Dallmayr, Freedom and Emergency Powers in the Cold War (New York: Meredith Publishing Co., 1964), p. 97.

4 Herman M. Somers, Presidential Agency OWMR the Office of War Mobilization and Reconversion (Cambridge: Howard University Press, 1950), p. 47.

5 Leonard G. Levenson, Wartime Development of the Aircraft Industry (Washington: Department of Labor, November, 1944), p. 11.

6 Eston T. White, Human Resources for National Strength (Washington: Industrial College of the Armed Forces, 1972), p. 99.

7 Rankin and Dallmayr, Freedom and Emergency Powers in the Cold War, p. 99.

8 Labor and the War Labor Fact Book 6 (New York: International Publishing Company, 1943), pp. 86-87.

9 Nelson, Arsenal of Democracy, p. 321.

10 Ibid., p. 311.

11 Levenson, Wartime Development of the Aircraft Industry, p. 13.

12 Gene R. Simonson (ed.), The History of the American Aircraft Industry (Cambridge: Massachusetts Institute of Technology, 1968), p. 156.

CHAPTER III

A COMPARATIVE LOOK AT UNITED STATES-JAPANESE LABOR IN THE AEROSPACE INDUSTRIES

Introduction

As differences between nations in the traditional mechanisms of international competition continue to diminish, human resource management is the key to competitive advantage. Two conditions lend credence to this fact:

(1) Industrial technology is readily transferable; and

(2) Social, cultural and political values and norms, mobilized within a society to establish a particular workplace organization, are not normally transferable.

The end result is that the real competitive advantage for a country may not be in capital technology or market-know-how, but rather in unique ways in which workers and managers organize for work.

The rapid growth of Japan's industrialization has taken place by the introduction of Western technology and methods into a Japanese social structure. The result has been a unique and effective business system. In the melding of imported techniques in Japan, special business practices have developed, especially in terms of labor policies and practices that differ markedly from those in the West. The purpose of this chapter is to present a description of American and Japanese labor practices and policies by discussing the features of the employment system, the role of labor unions, the role of government, the emphasis on training and the productivity factor of labor.

Characteristics of Employment in the Aerospace Industry

Labor in the United States aerospace industry, like many other industries in the United States, is somewhat difficult to address in terms of specific characteristics. This problem stems from the fact that labor in various elements of the aerospace industry reflects a tremendous range of occupational skills and is organized in many differing fashions. (See Figure 3-1) There are, for instance, fully unionized large aircraft production firms, which essentially describes all major aircraft makers except Grumman and Northrop.[1] Obviously, a one-word descriptor (describer ?) of the organizational characteristics of labor throughout the American aerospace industry will be hard to coin, unless we are willing to accept something as non-descriptive as "diverse" or "non-homogeneous."

As a practical matter, we will focus on the majority representative elements of the aerospace industry as we look further into aspects of labor. The large aircraft and subsystem builders, of whom we can at least say, "tend" to be unionized.

A labor characteristic which is consistent in the aerospace industry is mobility, or perhaps even more accurate "instability." An industry long known for its boom or bust character, the labor element of aerospace clearly reflects the ups and downs of its industry as shown in Figure 3-2. This provides tremendous contrast with general industry data shown in Figure 3-3. Since ours is an employment system without guarantees, skilled worker turnover and the attendant migration between geographical areas and between or within industry is an all too ominous part of labor character in American aerospace.

OCCUPATIONAL PROFILE OF THE AIRCRAFT AND PARTS INDUSTRY
(SIC 373) 1970

Figure 3-1

LABOR TURNOVER RATES IN THE AEROSPACE INDUSTRY
Calendar Years 1967-1981
(Rates per 100 Employees per Year)

Figure 3-2

ANNUAL AVERAGE OF MONTHLY LABOR TURNOVER RATES*
IN MANUFACTURING IN THE UNITED STATES

Figure 3-3

"The great majority of American Employees (excluding those in education, civil service, the military and the church) have a minimum degree of job security. Although union members are often protected by labor contracts that provide seniority protection, most American workers can literally be dismissed on a moment' notice with little, if any, recourse."[2]

Because of the mix of union and non-union workers, a clear cut system of establishing and maintaining salaries for aerospace workers has been a negative characteristic of the industry. While union workers have set compensation based on seniority through the traditional method of collective bargaining, non-unionized workers follow various methods, from emulating union contracts to laying themselves at the good graces of management. In the wake of declining union strength and an up and down aerospace market, wages in the aerospace industry have declined relative to other major United States industries as well as foreign aerospace competitors. For instance, as late as 1967 average earnings in the United States automobile industry were only 2.0 percent greater than aircraft; by 1978 the gap was 12.9 percent. In basic steel, the gap grew from 3.5 percent to 24.8 percent over the same period.[3] International comparisons, including Japan, are similar as reflected in Figure 3-4.

There are three basic elements of the Japanese employment system which particularly reflect the uniquely Japanese character of labor:

"(1) The lifetime employment system;
(2) The seniority wage system; and
(3) The enterprise union."[4]

The first two elements will be addressed in this section. The latter will be discussed in the section on the role of labor unions.

The employment system in Japan tends to differ little between industries, so whether studying aerospace or any other industry, it cannot really be understood apart from the values of Japanese society itself. For example, from the

COMPENSATION PER HOUR IN 10 COUNTRIES: ALL MANUFACTURING INDUSTRIES

Figure 3-4

earliest period of Japanese industrialization, there had been a clear distinction between white collar and blue collar workers. However, the social clarification among workers is not related to skill level, but to the size of the company a person works for. The bigger companies attract the most promising workers, not only because of prestige factors, but also because of better working conditions, employment stability, better capital equipment and higher wages.

The employer-employee relationship in the Japanese lifetime employment system is not based on law, a collective agreement or employment contract.[5] It has grown out of a historically tacit understanding between labor and management. Basically, company management will not discharge an employee until he reaches retirement age. The attitude of management is expressed by the common saying "the enterprise is the people."[6] The employee understands that once he joins a company, he is to stay until retirement. The employee becomes a member of the company "family."[7]

There are two distinct categories of workers in the Japanese employment system, regular and temporary employees. The regular employees are the backbone of the labor force for a company. These employees are normally characterized as workers recruited (at one time) from graduates of formal schools, such as high schools, vocational schools and colleges and universities. This employment takes place in April, immediately after the end of the academic year. These employees are raw recruits, with no occupational history. The larger the company, the more it depends on the annual influx of new workers. The second group of employees are classified as temporary or non-regular because they are not hired at this April set-time of the year.

These people are not recent graduates. They may have been employed by other companies or self-employed. In Japan, they are referred to as "half-way workers" or "mid-way workers."[8] The recruitment of these types of employees depends upon the size of the firm, economic conditions and changes in the labor force structure. Women in the Japanese labor force are also normally classified as temporary employees.

The seniority wage system is a second important component of the employment system in Japan. When compared to wages in other countries, Japanese wages exhibit several special characteristics. First, the wages are almost always calculated in monthly amounts. Next, there is little difference in wage payments and calculation systems between blue-and-white collar workers. A third characteristic is the distinction between the portion earned for one's work and the portion paid by virtue of just being an employee. For the most part, basic wages are fixed by age, educational background and years of service.[9] However, a small portion of the basic wage has been paid in accordance with job content and employee ability. Regardless of wage determination method, wages are revised annually and reflect current business conditions. Additionally, a semi-annual bonus system exists to reward workers on the basis of the profitability of the company. Lastly, wage rates and wage structures are specific to each company and reflect only the economic situation of the company and not conditions throughout the industry.[10] Wage determination will be discussed further in describing the role of labor unions.

Like the wage system, personnel practices regarding promotions and retirements are also quite different from Western patterns. In the Japanese system, promotional opportunities are normally not based on competition among

employees. They are based on an employee's seniority, educational background and training. Employees are rotated fairly regularly and periodically among different job assignments, with promotion more or less automatically geared to length-of-service. However, there are some distinct differences between white and blue collar workers. White collar workers provide the nucleus for the company staff. This group is trained for future management and tend to experience regular transfers and broad job rotations. The blue collar workers are trained for production jobs. Their flexibility for job transfers is somewhat restrained. Their promotions and transfers are carried out within the scope of their assigned specialities.

In the Japanese employment system, most employees arrive at retirement through seniority promotions accompanied by several job transfers. Currently, Japanese companies adopt the system of compulsory retirement at a certain fixed age somewhere between 55 and 60. By 1985, the Japanese Government will require all companies to extend the retirement age to 60 years.[11] Retirement, in the Japanese labor context, does not necessarily mean retiring from the labor force or working career. It simply means retiring from the company where the worker had been employed. Most workers continue to work after this "retirement." One authority cites the labor force participation rate for male workers 55 to 60 years of age, who presumably retired once, to be as high as 86 percent.[12] Upon compulsory retirement from a company at an age between 55 and 60, an employee is given a lump sum payment as a retirement allowance. This payment is currently equivalent to approximately 40 regular monthly wage payments for large private firms.[13] The amount and rate vary with the length of service, education, the type work, the size of the firm and industry.

To supplement this allowance, a retiree receives a government old-age pension at the age of 60 years old.

Other important aspects of the Japanese employment system involve employee mobility, dismissals and temporary layoffs. In terms of employee mobility, the Japanese employment system fosters both flexible and inflexible conditions. Since the system by nature creates a closed labor market within the company, a degree of labor mobility is afforded only within the internal labor market of the enterprise. For an employee to leave a company for another job is a big decision. The movement is normally made at a young age (under 25) and when an employee is at odds with the company and its strong community control.[14] There are flexible conditions for mobility within an internal labor market. Company and labor union policies, along with training programs facilitate this movement.

Employee dismissals under the Japanese system are very difficult. There is no legal restriction on the right of an employer to discharge an employee. In reality, however, conditions prevalent in Japan (court decisions) make such dismissals extremely difficult. It is this aspect of Japan's lifetime employment system that helps maintain a high degree of employment stability.

Since it is highly unlikely that an employer can discharge an employee (unless he commits a serious offense), the financial burdens, there are social pressures involving not breaking the close employer-employee relationship or not maintaining both employment stability and labor and management trust. To avoid employee layoffs, in business downturns, Japanese companies would do the following in priority order:

(a) decrease or cut dividends;
(b) reduce salaries and bonuses of top management;
(c) reduce middle management salary;
(d) transfer rank and file to subsidiary or related firm; and
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(e) voluntary employee reductions-in-force and pay cuts.

The Organization and Role of Labor Unions

Since our labor study-comparison encompasses an industry which is heavily unionized in both the United States and Japan, a hard look at the roles of those unions will be indispensable. While we have previously discussed the extent of unionization in American aerospace, we will now take a closer look into how unions are organized and what significant roles they play in the aerospace industry.

The major aircraft companies, whose workers are unionized, are essentially organized as follows:

"The International Association of Machinists and Aerospace Workers (IAM) represents more aerospace workers than any other union. Its coverage includes Boeing, General Dynamics, Lockheed, McDonnell-Douglas and United Technologies among the largest primes as well as Buch Aircraft, Cessna, Gates Learjet, and Piper Aircraft among the smaller general aviation firms. The United Automobile Workers Union (UAW), actually the United Automobile, Aerospace and Agricultural Implement Workers of America, represents workers in several McDonnell-Douglas facilities as well as Martin-Marietta and North American Rockwell. The International Union of Electric Workers (IUE) represents aircraft workers through its contracts with the General Electric Aircraft Engine Group. Ironically, even the Carpenter's Union is well represented in the industry, a legacy from the
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days of Hughes Aircraft's 'Spruce Goose'."

Characteristically, however, while each of the unions represents many organized workers, of varying skills, who produce different products, in widely separated areas of the United States, their structure and roles are very much alike.

As the Japanese unions tend to be vertically organized, the American unions are horizontal. Officials of the American labor unions feel very strongly that the interest of labor are so fundamentally different, and frequently at variance, with those of management that preservation of union membership to worker levels only is an absolute must for a union to be successful.[17]

Further enforcing horizontal structure in the American union picture is the fact that several unions may represent the interest of different types of workers in a single plant.

> " . . . workers within one plant may be divided among different locals, each affiliated with a different national union. This type of arrangement is becoming increasing common. It is not unusual for an employer to find his workers represented by a half-dozen different unions. His production workers may belong to the United Auto Workers, the electricians may be in the International Brotherhood of Electrical Workers, the truck drivers may be in the Teamsters Unions, the engineers may have their own union, etc."[18]

When the factor of competing and even conflicting interest is added to this picture the consequences, while perhaps representative of numerous points of view, can be chaotic.

The predominantly horizontal nature of American unionism is clearly reflected in Figure 3-5. The real meat of union organization is at the local level. There are about 75,000 local unions in the United States. While most are chartered by somewhat loosely knit national unions, many operate without national affiliation. In either case, however, the real by-word seems to be the "autonomy" of the local.

EXAMPLE OF NATIONAL, REGIONAL, AND LOCAL STRUCTURAL RELATIONSHIPS

Figure 3-5

"In a number of ways, the functions of the local union overlap those of the national. This is especially so in collective bargaining . . . where the autonomy of the local . . . varies from union to union. Functions that are primarily within the local's province include a day-to-day policing of the union-management contract, processing grievances of workers, managing the contract of strikes, and collecting dues and assessments . . . . Occasionally a local matter will explode into a big issue that involves eventual action by the national union but most daily working problems are resolved locally."[19]

The national unions, on the other hand, are involved in promotion of organization within the industry or trade, bargaining assistance to the locals and maintaining a close watch on legislative developments. In recent years, bargaining assistance has largely come to mean pattern bargaining. "In pattern bargaining an agreement between a union and a prominent firm in an industry becomes a pattern for other settlements."[20] Centralized strategy planning for pattern bargains, bigger national union budgets, and the increased importance of legislative matters have, since World War II, set a trend toward more centralized control of unions in aerospace and other major United States industries. Recent requirements for local deviations from pattern bargains and, indeed, prospects for further erosion of benefits won by labor in prosperous years past, may result in a resurgence of local union autonomy in the bargaining area.[21]

The bottom line of the foregoing discussion of union organization is that the primary role or tool of the unions, national or local, is the collective bargaining process. Aerospace worker unions, like other American industry workers, have used this tool with varying degrees of success." In general, the aerospace union workers have been successful bargainers but not nearly as strong as organized labor in . . . autos, steel, rubber or electrical equipment--comparable manufacturing industries."[22]

Perhaps a good measure of union success is the quality of relationship with management and their ability to win concessions without resorting to strikes or other work disruptions. As reflected in Figure 3-6, the track record for the aircraft industry has had a pretty consistent loss of productive time.

Like many other industries, American aerospace labor largely sees itself at odds with its management counterpart. Each element sees its historical relationship with the other as "adversarial." Labor largely sees the problem as an outgrowth of management's view that labor is a short-run concern with no real permanent status. Perhaps more important, while labor and management both see a need for a better relationship neither sees any trend toward improvement in the future.[23]

The labor and management relationship in Japanese companies and industries can be characterized by the phrase "conflict in harmony."[24] Two words associated with negotiations more clearly differentiate the labor philosophy of Japanese and Western unions. They are the terms "fight for" and "seek". The former normally being associated with Western union philosophy, while the latter is associated with the Japanese. Japanese industrial relations can also be described as having four pillars: Permanent employment system; the seniority-based wage system; enterprise unionism; and common belief shared by management and workers to view enterprise as a community.[25] These four characteristics of the Japanese industrial relation systems provide the basis for the favorable labor and management environment.

WORK STOPPAGES IN The AEROSPACE INDUSTRY, 1950-78

Figure 3-6

The most distinctive features of labor unions in Japan are that they are organized vertically and along the lines of individual enterprises. They seldom take the form of an industrial or craft union as is the case in Western nations. Individual enterprise unions in the same industrial category come together in the form of a joint organization, namely an Industrial Federation of Labor Unions.[26] In the case of the aircraft industry, ten enterprises form the Council of Aircraft Industry Workers Union (Japanese-Kokurokyo). The next organizational level for labor comprises nation-wide labor unions known as National Centers. There are four basic National Centers: Sohyo, Domei, Churitsuroren and Shinsunbetsu.[27] The differences between centers evolves around fundamental ideas about labor movement and political ideology. Membership in these National Centers is open to all industrial federations. However, there are a number of federations, such as Kokurokyo, which are not affiliated. Non-affiliation is normally because of the confrontations and divided labor front which characterize the National Center. Specifically, over one-third of organized workers join none of the National Centers because they want to remain outside of confrontation troubles.[28]

To the average Japanese worker, the enterprise union and industrial federation are of primary importance to his welfare. There are currently in Japan over 100 nation-wide federations. These are not normally directly involved in collective bargaining. Their control over member unions is often rather weak. They perform five main functions:

(1) Coordinate member union efforts to improve wages and working conditions, i.e., spring labor offensive;

(2) Solve whole industry problems;

(3) Provide specific assistance to individual unions;

(4) Provide administrative services; and

(5) International activities.[29]

The industrial federal role in the Spring Labor Offensive deserves more elaboration because it is a unique system for wage negotiations. Today, nearly 80 percent of organized labor goes into wage negotiations at the time of the Spring Offensive.[30] The Spring Offensive begins in the iron and steel industry where a wage increase rate is negotiated. This rate is used as a benchmark for other industry negotiations. Eventually, all industries negotiate a rate. An average of these rates is called the "Spring Labor Offensive" rate.[31] This rate is gradually set as a general indicator and will affect wage negotiations in the private enterprises. Prior to 1975, wage increase rates rose every year and differentials between industries were small.[32] After 1975, with a decline in economic growth, wage increase rates have been declining and discrepancies between industries have widened.

In general, the organizational structure of enterprise unions correspond to that of the enterprise. Members of enterprise unions are regular employees of the company regardless of occupational categories. Union officials are elected from among union members and are thus also permanent employees of the company. Enterprise unions are entirely autonomous in carrying out union activities; are financially independent and self-supporting.[33] As could be expected from above, collective bargaining in Japan is held at enterprise union level with individual companies.

Collective bargaining normally includes a wide range of issues which results in comprehensive labor agreements. The one exception is wages which are normally concluded in separate agreements. As mentioned previously, there

exist a non-adversial approach to labor-management relations exists. Union officials are well attuned to management problems, employee productivity, company market share and competition.

Japanese unions do not seek wages and fringe benefits that are equal to firms of all sizes. Instead they try to get their particular firm to pay wages, provide fringe benefits and working conditions appropriate to their size. The regular employees (union members) exhibit a tendency toward "dual allegiance" in their attitude toward their firm and union.[34] The employees have expectations from both company personnel policies and union policies. The personnel policies provide expectations basically derived from the characteristics of the employment system, i.e., promotions and pay increases. The union policies provide expectations of protection against arbitrary treatment from management.

Communication and information sharing are key ingredients in the labor-management relationship. To facilitate communication and understanding the labor-management joint consultation system has been established in most enterprises. This system allows the two parties to discuss problems related to management and production not suitable for collective bargaining. It is also a vehicle for preliminary talks prior to collective bargaining even on issues connected with working condition. At the enterprise level, labor and mangement joint consultation machinery is clearly distinguished from collective bargaining.

At the industry level, the system of labor-mangement consultation has been established in many industries between union federations and corresponding employer organizations. The system provides a forum to promote better

communication and mutual understanding regarding industry problems and trends. Working conditions are seldom dealt with.

The Japanese labor force is unionized to the same extent as in the West.[35] However, the role of labor unions that provides the stability in labor relations in Japan, must be seen as a source of competitive advantage of Japanese firms in world competition. It makes possible flexible use of the labor force and rapid introduction of new technology. The principle factors which allow these conditions to occur are: (a) Unions do not get involved with job content or work speed; and (b) union-company relations reduce frequency and severity of strikes.

Training/Retraining

As indicated in the introductory portion of this report, an already existing shortage of skilled labor, which is projected to continue to grow, is at the heart of much concern for United States industrial mobilization planners. Since the ultimate solution to a skilled worker problem must begin with training more workers, a look at the current record of worker training in the aerospace industry is a must.

The dearth of current supply can be traced to the retirement of many workers who were hired and trained during World War II as described in Chapter II.

> "A sad commentary on the current situation is that . . . in a few industries structural unemployment--a persistent mismatch between job vacancies and unemployment is so evident. Neither the public school nor the vocational educational system seems to have adequately prepared the available workers for skilled work in the aerospace industry. For whatever reasons, firms were extremely tardy in bringing the problem to national attention."[36]

But the problem runs even deeper. There is no clear cut line of responsibility or single agency of interest for the training problem. For instance, labor has a role. As an item of collective bargaining, 8,000 hour training programs are jealously guarded and modified for the majority of the skilled trades (provided, of course, those skills are organized under the trade union).[37] However, unions do not hire people and do not participate in the cost of training, so industry management plays the bigger role. Management, however, feels even if they have a perfect forecast of industry demands they cannot assure a sufficient trained labor supply. Their problems stem largely from the fact that running more than a four-year apprenticeship program aimed at short term needs is expensive, in an industry where long-range performance is currently at best, an educated guess: "Industrial firms are reluctant to invest in training because of the threat of either active or passive pirating. By its very nature, basic skill training is transferable to other firms (and other industries)."[38] Add to this such problems as lack of readily available, trainable workers due to geographical mismatches of population and ineffective public school pre-training preparation and clearly the problem is probably too large for the industry to handle alone. This is particularly true now, since a depressed aerospace industry has made skilled workers available in large numbers, tending to once again take the pressure off a serious long-term problem.

The third element of the training equation is the role of government. While in American industry the most direct training roles are played by industry management and labor, the underlying role of government is undeniable. The range and quality of basic education through the government

run school systems is the foundation of trainability for workers in any industry. At present, the quality of that role is severely under fire nation-wide.

> "Commenting on the crucial aspects of government training roles in the Hartford, Connecticut area industry managers recently stated they do not perceive the unemployment workforce as 'ready' for skill training and philosophically question whether it is the proper role of the employer to offer remedial education in math and English."[39]

Going back to 1961, government has recently increased its attempts to take a more direct role in the occupational training/re-training task, normally performed by industry or education, by sponsoring limited vocational training programs.

> "It is clear that the brunt of the retraining job must fall upon the government. President Kennedy has asked the Congress for the authority and the appropriations to assume this responsibility; and the committees in both houses have now reported out favorably the Manpower Development and Training Act of 1961."[40]

However, despite this and several other attempts, with the recent demise of CETA, it must be concluded that if not in direction, than in execution, the government's role in vocational training in support of industry was either mismanaged or misdirected and had done little to alleviate skilled worker shortages.

> "What is abundantly clear is that a severe mismatch exist between the short run demand for skilled workers and the supply of already trained craftsman and journeymen. Apprenticeship programs, and perhaps remedial education programs to ready workers were needed in the 1970's . . . . Neither the (aerospace) industry nor the government met the challenge. The only major observable response has been the industry's attempt to circumvent the skill shortage by relying on more sophisticated capital equipment and altering the occupational shift from the utilization of blue collar workers to a greater reliance on overhead employees . . . . This trend has obvious implications for the entire American labor force, not only for the aerospace industry."[41]

On the other side of the equation, Japanese employers are generally very sensitive to recruiting, training and preserving a work force responsive to the present and future company needs. A fact which illustrates the importance of training to a Japanese employer is that often in recruiting employees, more emphasis is placed on trainability of the employee than experience. From a society context, there is governmental legislation which places primary responsibility on employers for providing adequate training opportunities to their employees. Training opportunities can be found in company programs, public vocational training centers and vocational education programs which are a part of the school system.

Japanese training can be categorized into two basic classes--vocational and industry. The fundamental principles and standards which govern vocational training are layed out in a National Vocational Training Law. This law ensures training opportunities are available to meet the needs of the worker and the employment market. The law also aims at establishing a system by which occupational capabilities of workers may be evaluated and socially acknowledged. In Japan, the Minister of Labor assumes overall responsibility for vocational training. This function also formulates a long-term national plan for vocational testing. The plan's primary purpose is to specify the trends in demand and supply of skilled workers and provide the target for vocational training. Vocational training is identified by three types:

Initial training

Upgrade training

Occupational capacity redevelopment training

There are statutory standards specifying the curricula, duration of training, facilities and equipment. The government also provides various types of

financial assistance to workers and subsidies to employers to facilitate training opportunities.

As indicated previously, industry/company training is very sensitive with Japanese employers. This probably is an indication of why most firms develop their own strategy, plans and programs for training. According to a Ministry of Labor study in 1981, 87 percent of firms with 100-500 employees, 98 percent of firms with 1,000-5,000 employees and all firms employing over 5,000

employees have training programs. Japanese firms structure training programs both to develop the breath and level of a worker's skill and to increase the worker's knowledge and awareness of the company. An initial training period for regular workers includes an intensive introduction to the company's organization, product lines, production, technology and nature of competition. Further follow-on training is provided through systematic rotation of workers among a wide variety of jobs within the company. The amount and type of training given to workers depends upon the expected tenure of the worker with the company. Regular employees enjoy better training opportunities than temporary employees or "mid-career" hires. Company training can be categorized as basically on-the-job training, off-the-job training (either in-company or external) and training derived from an atmosphere which is conducive to self-development.

The Japanese labor unions foster a very cooperative environment for company training programs. An obvious reason for this attitude is that training is an integral part of the Japanese lifetime employment. Another reason is that unions are not normally involved with job control or work rate. A third reason for a cooperative attitude is that a flexible, well trained company

workforce is advantageous to union activities. Employment readjustments are made easier, new technological introductions are easier, and productivity levels are easier to raise. The only way unions can increase benefits for their members is if the company profits and market share grows, as a result of a skilled labor force.

Productivity of Labor

No discussion of labor in any United States industry could be complete without a look at productivity. Since this report concerns itself with relative merits of American and Japanese industries, a look at the aggregate merits of each among other nations is a good place to start. (See Figure 3-7) While any number of productivity breakdowns and data displays could be used to further amplify the problem, it suffices to say that worker productivity growth has been slowing in the United States aerospace industry since 1971 and now very clearly lags that of several industrial nations.

While labor costs are frequently a convenient target for explaining productivity problems, the relative compensation discussed earlier in Figure 3-4 clearly shows that several countries with labor costs higher than the United States also have better productivity. "Although aircraft employers may find other problems with it, the United States workforce has definitely not

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priced itself out of the market."

We earlier made references to the tendency in the United States aerospace industry especially the engine producers, to retain higher paid white collar employees instead of hiring and training blue collar technicians during periods of industry decline. Undoubtedly, such actions have had an impact on

NATIONAL PRODUCTIVITY COMPARISONS (1972-1977)

Figure 3-7

cost and productivity and deserve more analysis than seems to be available. A steady decline in the ratio of production workers to total workers is clearly evident in Figure 3-8.

Not considered a part of this study are factors such as capital investment in machinery, facilities, research and production methods, all of which also play a key role in long term productivity growth, and each of which is worth analysis in at least as much depth as is traditionally given to the cost of labor. A quick overview of the decline in capital expenditures for the period 1960-1976 versus the value of the product and the size of the production workforce is shown in Figure 3-9.

The bottom line of this short productivity growth discussion of the United States aerospace industry is that the drastic drop in expenditures through the 1970s is probably more of a negative factor than any change in worker attitudes or practices can hope to counterbalance. However, that does not imply there is no room for improvement in labor practices that have changed little since World War II in the face of rapid technological change in manufacturing techniques. And it is in this vain that we need to examine the productivity increases in the Japanese labor market.

The subject of higher Japanese rates of productivity growth versus those of United States is a much discussed topic. The reasons often given for Japan's higher productivity growth are differences in management philosophy, differences in company financing, Japan's basic full employment economy and labor force (employee) attitudes. In this section, only employee attitudes which contribute to productivity will be addressed. No attempt will be made to quantify any productivity differences.

EMPLOYMENT IN THE U.S. AIRCRAFT AND PARTS INDUSTRY, 1960-1980

Figure 3-8

GROWTH IN CAPITAL EXPENDITURES

Figure 3-9

Japanese workers readily recognize that "the improvement of productivity is the key to survival for their company in the tense competition of domestic and international markets."[45] To the workers, the company is the source of wages, bonuses, retirement allowances and various welfare measures. To get increases in the above, the company must grow and profit. Workers realize that a rise in productivity is one way a company can increase profits and subsequently increase compensations and allowances.

As previously mentioned, the Japanese worker views his employment as being a part of an enterprise family. He takes pride in being a member of a company and having his name associated with that company. He subordinates his family and leisure activities to those which benefit the company. He respects the supervisor/subordinate social norm in his company. He also likes to be a part of a team or group effort, within a defined sphere and with a defined goal. From the above description, it can be seen that a Japanese worker makes a commitment to the company which helps to foster a productive labor force.

Besides individual commitments to enhance productivity, employees group together in the workplace to form "autonomous small group activities."[46] Examples of these group activities are Quality Control Circles, Zero Defect Movement Effort, Management by Objectives and Industrial Engineering Group efforts.[47] Their objectives are all related to enhanced productivity. They are such things as reducing cost, improving quality, meeting time schedules and improving work methods. These small group activities associated with quality control and productivity improvements did not originate in Japan, but were actually imported from the United States. Mr. Hajime Karatsu, an executive director of Matsushita Communications Industrial Corporation,

described what has happened: "The quality control and productivity improvement methods that we imported from America after the war have proven effective. However, the Americans have been less diligent in applying and developing them."[48]

Role of Government

We have discussed the role of government in specific areas related to aerospace labor, such as training. However, it is essential that we also consider the role of government in the broader context of its total role in the aerospace industry.

Essentially the roles of government which effect labor in the aerospace industry are two-fold. The first is the role of regulator, which is carried out through a long history of labor laws. The second is the role of primary customer, through which the government tends to play a large, though more subtle, role in every facet of the aerospace industry.

In its role as regulator, the government actually forms the third leg of the adversarial triangle that is the aerospace industry. We had earlier discussed the somewhat strained relations between management and labor. Even a cursory look at government regulation of aerospace management, via the seemingly endless volumes of procurement laws and regulations, and of labor, via an equally comprehensive set of labor laws, leaves little doubt that government plays a large and often unwelcome role in the regulation of the aerospace industry.

The real paradox of this situation, however, lies in the fact that while government wields a heavy hand in regulating aerospace, the degree of market sheltering and government support for the aircraft industry is unique in the American economy . . . where nearly half of all sales are still made to the United States Government.[49]

The net effect of this situation is that the government, who dominates the industry through regulation and volume of purchase, is in the enviable position of bearing no real responsibility for how the industry fares. It takes no part in planning the expansion or contractions of the industry. As with any other industry, government reacts after the fact to relieve the financial suffering of labor following an economic downswing, but has never wanted to, or been able to, work ahead to prevent the major labor adjustments which plague both ends of each economic cycle.

Of particular interest, neither labor or management is too enthralled by any prospect for a major change, resulting in a more active role for government. While they mutually agree that some department of administrative government needs to take a leading role in training unskilled workers, they are at a loss to see where any single department has the influence or ability to play an effective role in industrial planning. While State and Defense might have the influence to do it, it is justly not in their charter. Departments such as Labor and Commerce, who might conceivably have the interest, are apparently without the influence to play a more significant role in any type of industry/labor planning and adjustment.

The bottom line is that without some element of strong, centralized government coordination, if no planning, for the aerospace industry, its past role of regulator and chief customer are likely to remain unchanged for some time to come.

> "Whether famine follows the current front, as has been the tradition in the industry, depends on whether the private sector, working with an enlightened government, can find the secret to smoothing out the aerospace cycle . . . ".[50]

As for Japan, in the eyes of many outsiders, the popular conception is "Japan Incorporated," a superstate built around a web of institutional connections.[51] The overtone of what is meant by institutional connections actually refers to a close business-government dialogue or conspiracy against foreigners. Contrary to this belief, it is characteristic of Japanese society to have excellent and effective public and private sector interaction. Channels of communication exist for interaction among officials of ministries and business groups. One important business group is the Federation of Employers Association (Nikkeisen) which deals with labor-management issues, including such topics as productivity, industry mobilization and technological change. At a government level, the most important, the Ministry of International Trade and Industry (MITI) is structured according to the main industry sectors. It is no secret that the Japanese government and business are working hard on industrial planning to raise the nation's technological base and restructure industry around higher added-value products.[52] The MITI has clearly labeled the aerospace industry as one of the three main pillars of the nation's future economic growth.[53] Evidence to support this exist in government subsidies provided for skilled workers and sophisticated equipment to

produce major portions of the Boeing 767 aircraft.[54] The remainder of this section will specifically address the Japanese Government's role in labor policies and development.

At the national level, the highest echelon of the joint labor-management consultation system are enterprise and industry is the Triparte Joint Consultation System. This council consists of the highest levels of government, labor and management. Their purpose is to discuss socioeconomic problems concerned with declining economic growth, increasing unemployment and increasing inflation. They also address labor problems resulting from the need to modify industry structure, aging labor force and trends toward higher educational levels among workers. The focus of this Triparte council is for all parties to gain a mutual understanding which will promote public consensus regarding policymaking decisions.

The role of government in labor policies is to promote full employment and encourage companies to maintain employment in economic recessionary conditions. This role is carried out through government sponsored employment plans and employment agencies.

There are two types of employment plans: (1) The basic Employment Measure Plan formulated under the Employment Measures Law; and (2) Annual Employment Plan which is an implementation plan.[55] The aim of the Fourth Basic Employment Measure Plan approved by the Cabinet Meeting in August 1979 was to provide the basic future direction of employment for the seven-year period from 1979 to 1985.[56] Generally, it deals with the problem of maintaining full employment and preparing for an aging society. More specifically, it also addresses changes in labor supply, changes in industrial structures and

replenishment of vocational training systems. The Annual Employment Plan is administered by an Employment Security Administration. The plan contains active administrative guidance, such as spreading the practice through the industries of increasing mandatory retirement age to 60 years of age by fiscal year 1985.

The Employment Security Administration is comprised of three elements: (1) In the Ministry of Labor, the Employment Security Bureau; (2) On a regional basis, The Employment Security Section; and (3) the Public Employment Security Office.[57] The Employment Security Bureau is the supreme organ responsible for employment security administration. It forms the basic Employment Measures Plan which plans for employment promotion of older employees, provides for unemployment relief measures and plans for employment exchange and adjustments. At the regional or state level, the Employment Security Section collaborates with other government agencies in order to attain the goal of employment stabilization. The Public Employment Security Office, at the local level, is responsible for administering such things as employment exchange system, supply of employment information and guidance and assistance to job offerers.

In addition to the employment plans and agencies, the Japanese government is involved in two other programs to promote employment stabilization. One involves the sponsoring of an Employment Insurance System.[58] The other program deals with an Employment Stabilization Fund.[59] The basic intent of the Employment Insurance is to grant necessary benefits to workers when unemployed and to facilitate their job-seeking activities. The Employment Stabilization Fund provides government subsidies to employers who must carry

out employment adjustments in response to economic fluctuations or changes in industry structure. If a company must temporarily shut down, the government will pay from one-half to two-thirds of the off-duty allowance.[60] If retraining of the workforce becomes necessary, the government will again subsidize from one-half to two-thirds of employee wages, plus provide a given sum per worker as the training cost.[61] Lastly, the government will even subsidize employee transfers to related companies at the same rates as above.

Like the government role in employment policies, training, in either the public or private sector, is also greatly influenced by government activities. One government sponsored activity is an agency called Employment Promotion Projects Corporation.[62] This agency manages government projects called human capabilities development and employment improvement. It also offers a variety of financial assistance to employees and employers in connection with vocational training. Finally it establishes and administers vocational training institutes of its own.

The types of government assistance to workers and employers to facilitate and encourage training opportunities are:

(1) Financial assistance to workers;

(2) Assistance and incentives to employers;

(3) Incentive Grant for paid educational loans; and

(4) Vocational training assistance.[63]

Financial assistance to workers comprise such things as interest-free loans and subsidies called "skill acquisition allowance." Assistance to employers consist of grants for public training and subsidies for cost of internal training programs. Employers can also receive an incentive grant for allowing

special paid educational leave to employees. The last category of assistance consist of loans, tax privileges and subsidies to certain types of association of employers and corporate bodies for vocational training facilities.

FOOTNOTES

CHAPTER III (Pages 22-59)

[1]Interview with Reginald Newell, Director of Research, International Associaton of Machinists and Aerospace Workers Union (IAM), (Washington, January 12, 1983).

[2]Jerome M. Rosow, Quality of Work-Life Issues for the 1980's (New York: Van Nostrand Reinhold Col., 1979), p. 166.

[3]Bluestone, Jordan, and Sullivan, Aircraft Industry Dynamics (Boston, Mass.: Auburn House, 1981), p. 144.

[4]Interview with Nabuo Hatakenaka, Labor Attache, Japanese Embassy (Washington, November 18, 1982).

[5]Ibid.

[6]Fujio, John Tanaka, "Lifetime Employment in Japan," Challenge, July-August 1981, p. 24.

[7]Ibid., p. 24.

[8]Dr. James Orr, "Planning for Change: Employment Adjustments in U.S. and Japanese Companies," Unpublished Paper, Department of Labor, 5 August 1982, p. 6.

[9]"Labor Problems and Industrial Relations," About Japan Series #9, Foreign Press Counter, Japan, May 1978, p. 12.

[10]Rodney Clark, The Japanese Company (New Haven: Yale University Press, 1980), p. 67.

[11]"Employment and Employment Policy," Japan Industrial Relations Series, Japan Institute of Labor, 1982, p. 19.

[12]Interview with Hatake-Naka, Nobuo, Labor Attache, Japanese Embassy, Washington, D.C., November 18, 1982.

[13]Karuo Shimada, "The Japanese Employment System," Keio University, p. 28.

[14]Clark, The Japanese Company, p. 179.

[15]James N. Ellenberger, "Japanese Management: Myth or Magic," AFL-CIO American Federationist, April-June 1982, pp. 10-11.

[16]Bluestone, et al., Aircraft Industry Dynamics, p. 151.

[17]Interview with Reginald Newell, Director of Research, IAM.

[18]Sanford Cohen, Labor in the United States (Columbus, Ohio: Merrill Publishing Co., 1970), p. 159.

[19]Ibid., p. 184.

[20]Ibid., p. 201.

[21]"One Dark Cloud Over Aerospace," Labor Analysis, Business Week, September 29, 1980. Also "Labor Seeks Less," Labor Analaysis, Business Week, December 21, 1981.

[22]Bluestone, et al., Aircraft Industry Dynamics, p. 152.

[23]Interview with Reginald Newell, Director of Research, IAM.

[24]Frank J. Versagi, "What American Labor/Management Can Learn from Japanese Unions," Management Review, June 1982, p. 27.

[25]Yoskitaka Fujita, "The Workers Autonomous Small Group Activities and Productivity in Japan," Management Japan, Vol. 14, No. 2, Summer 1981, p. 17.

[26]"Labor Unions and Labor-Management Relations," Japanese Industrial Relations Series, Japan Institute of Labor, 1979, p. 5.

[27]Ibid., p. 5.

[28]Ibid., p. 14.

[29]Ibid., pp. 9-10.

[30]Ibid.

[31]Ibid., p. 6.

[32]Fujita, "Small Group Activities," p. 18.

[33]"Labor Unions and Labor-Management Relations," p. 8.

[34]Interview with Nabuo Hatakencha, Labor Attache, Japanese Embassy.

[35]Shimada, "The Japanese Employment System," p. 28.

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15 James N. Ellenberger, "Japanese Management: Myth or Magic," AFL-CIO American Federationist, April-June 1982, pp. 10-11.

16 Bluestone, et al., Aircraft Industry Dynamics, p. 151.

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19 Ibid., p. 184.

20 Ibid., p. 201.

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22 Bluestone, et al., Aircraft Industry Dynamics, p. 152.

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25 Yoskitaka Fujita, "The Workers Autonomous Small Group Activities and Productivity in Japan," Management Japan, Vol. 14, No. 2, Summer 1981, p. 17.

26 "Labor Unions and Labor-Management Relations," Japanese Industrial Relations Series, Japan Institute of Labor, 1979, p. 5.

27 Ibid., p. 5.

28 Ibid., p. 16.

29 Ibid., pp. 9-10.

30 Ibid.

31 Ibid., p. 6.

33
"Labor Unions and Labor-Management Relations," p. 8.

34
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35
Shimada, "The Japanese Employment System," p. 28.

36 Bluestone, et al., Aircraft Industry Dynamics, p. 179.

37 Apprenticeship Policy Manual, International Association of Machinists (Washington: 1980), p. 17.

38 Bluestone, et al., Aircraft Industry Dynamics, p. 134.

39 Ibid.

40 Fogel and Kleingartner, Contemporary Labor Issues (Belmont, Calif.: Wadsworth Publishing Co., 1966), p. 405.

41 Bluestone, et al., Aircraft Industry Dynamics, p. 135.

42 "Vocational Training," Japanese Industrial Relations Series, Japan Institute of Labor, 1981, p. 12.

43 Interview with Nobuo Hatakenaka, Labor Attache, Washington, D.C., November 18, 1982.

44 Bluestone, et al., Aircraft Industry Dynamics, p. 145.

45 Fujita, "Small Group Activities," p. 1.

46 Ibid.

47 Ibid.

48 Fujoio Wakagama, "Japan to Rescue American Business," The Asia Record, August 1982.

49 Bluestone, et al., Aircraft Industry Dynamics, p. 164.

50 Ibid., p. 164.

51 Dexso Harvath and Charles McMellan, 'Industrial Planning in Japan," California Management Review, Fall 1980, p. 11.

52 Paul J. Rubin, "Japan's Growing Aerospace Industry," American Chamber of Commerce-Japan, May 1982, p. 1.

54
Ellenberger, "Japanese Management: Myth or Magic," p. 11.

55
"Employment and Employment Policy," p. 9.

56
Ibid., p. 19.

57
Ibid., p. 20.

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Ibid., p. 21.

59
Ibid., p. 23.

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Ibid.

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Ibid.

62
"Vocational Training," p. 12.

63
Ibid., pp. 15-16.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The Japanese employment system as described in the previous chapter is a statement of the ideal type. In practice, of course, there are exceptions to each of its essential features. The pattern of employment described has been an attempt to provide a general pattern characteristic of Japanese companies who are a part of the aerospace industry.

In comparing the Japanese and United States aerospace industries, it must be recognized that only gross comparisons can be made. This is because of distinctly different characteristics in terms of industrial context, labor market and internal organizations of the two industrial systems as described in Chapter III.

Recognizing the restraints outlined above, there appears to be three general aspects of Japanese labor practices where lessons can be learned to facilitate U.S. labor mobilization efforts. These involve role of labor unions in industrial relations, employee training and the role of government planning.

The lesson to be derived from the role of Japanese labor unions is that a cooperative versus confrontation role pays dividends in terms of the labor-management relations equation. The dividends are increased communications, more information sharing and cooperative actions for the ultimate benefit of the company. The net result is a company labor force which is concerned with productivity, understands economic constraints facing the company, has a

shared value in the company and in return expects and receives sense of security. These labor force characteristics provide positive implications for company long range planning. In a mobilization context, the Japanese labor union's role, without government intervention, would more readily facilitate labor skill readjustments, labor training and production planning.

In the labor training area, lessons can be derived from both company and government roles. From a Japanese company aspect, the training programs in terms of breadth education and skill level, enhance human resources management. They enjoy great flexibility and reduce costs of transferring workers among jobs when adjustments are necessary. The bottom line is Japanese workers are better prepared to perform related jobs within a company day-to-day or during the increased pace of a full mobilization. From the government aspect, the legislation planning and administration of vocational training programs have been important factors which ensure trained labor is available for industry needs. Other government actions such as subsidies, grants and financial assistance to both employers and employees are helpful in maintaining trained labor pools while preserving a strong sense of stability in a volatile industry.

The Japanese training practices in terms of government and company roles could provide, in a mobilization environment, a more flexible and better trained labor force, an increased training resource capacity and a better awareness of potential labor shortages.

The role of the Japanese Government in labor and industrial planning is very significant. In a Japanese social context, the government is viewed as being an indispensable part of the planning role. Also significant is the

communication system established through the Joint Consultation System which brings government, labor and management together. At the national level, there is a forum to address industrial and labor planning issues. Also, at the national level, there is a government department (Ministry of International Trade and Industry) which deals with the unique aspects of industries such as aerospace. Currently, there is no such department in the United States Government to deal specifically with any industry. A lesson which should have been learned from World War II is that a cooperative labor-government-management relationship does not last without a continuing non-threatening government role in the industry. A lesson which the Japanese continue to illustrate is that a cooperative relationship between government and business (irrespective of subsidies) for industrial planning can raise a nation's technological base and restructure industry to meet anticipated needs without major confrontations or problems. This has important implications for a nation or an industry which faces a full scale change in workload intensity in the event of mobilization. A second lesson that can be derived from Japanese industrial and labor planning is that the United States Government does not have a mechanism to anticipate long-term problems of industries or to prepare labor to make any necessary adjustments. This mechanism would greatly facilitate any potential mobilization planning for aerospace or any other U.S. industry. Such a role performed as participating, rather than directing, could, as in the case of Japan, become the key to enhanced peacetime operations as well as the key to smooth transition into a major mobilization.

Recommendations

It is realized that the conclusions derived from the comparative review of Japanese and United States labor policy and practices are very broad. It is also realized that implementing any broad policy changes regarding labor, is extremely difficult when extracting these policies from one unique industrial context for infusion into another. However, during the course of researching this paper, two areas that merit much deeper, specific detailed study have become apparent.

The first area involves labor training. A comprehensive review of government legislation and administration of vocational training programs both Japanese and American may provide an insight into how to make a national system effective for labor training. Coupled with this effort, there should be a detailed review of internal company training programs to determine what specific changes can be made to improve flexibility for mobilization purposes.

The second area involves studying the role of the Ministry of International Trade and Industry (MITI) in terms of industrial planning for specific industry sectors and the interface with specific industries, such as aerospace. Learning how mechanisms function for industrial planning, anticipating problems and suggesting labor resource allocations would have benefits for a government such as ours which is void of such a function on any centralized basis.

BIBLIOGRAPHY

Aerospace Facts and Figures 82/83. New York: McGraw-Hill, 1982. Compiled by Aerospace Industries Association of America.

"Aerospace Review and Forecast 1980/1981." Aerospace, Winter 1981, p. 3.

Apprenticeship Policy Manual. International Association of Machinists and Aerospace Workers, 1980.

Bluestone, Barry, et al., Aircraft Industry Dynamics. Boston: Auburn House, 1981.

Boyan, Edwin A. Handbook of War Production. New York: McGraw-Hill Book Co., Inc., 1942.

Burtt, Everett J. Labor in the American Economy. New York: St. Martin's Press, 1979.

Catton, Bruce. The War Lords of Washington, D.C. New York: Harcourt, Bruce and Co., 1948.

Clark, Rodney. The Japanese Company. New Haven: Yale University Press, 1980.

Cohen, Sanford. Labor in the United States. Columbus, Ohio: Merrill, 1970.

Cole, Robert E. Japanese Blue Collar. California: University of California Press, 1972.

Defense Service Board. 1980 Summer Study Panel on Industrial Responsiveness. Report to Secretary of Defense. Washington: Office of Under Secretary of Defense Research and Engineering, 1981.

Dillon, Corley. Government-Labor in Action (Labor Meets Government). Manassas, Va.: Capital Publishing Co., Inc., 1951.

Ellenberger, James N. "Japanese Management: Myth or Magic." AFL-CIO American Federationist, April-June 1982, pp. 3-12.

Fogel, Walter and Kleingartner, Archie. Contemporary Labor Issues. Calif.: Wadsworth, 1966.

Fraser, C. E. and Teele, S. F. (ed.). Industry Goes to War. New York: McGraw-Hill Book Co., Inc., 1941.

Fujita, Yoshitaha. "The Worker's Autonomous Small Group Activities and Productivity in Japan." Management Japan, Vol. 14, No. 2, Summer 1981, pp. 16-18.

Goldberg, Alfred (ed.). A History of the United States Air Force 1907-1957. Princeton, N.J.: D. Van Norstrand Co., Inc., 1957.

Hayaski, Kichino. "Corporate Planning in the Japanese Cultural Milieu." Management Japan, Vol. 13, No. 2, Autumn 1980, pp. 6-11.

Hayes, Robert H. "Why Japanese Factories Work." Harvard Business Review, July-August 1981.

Hirakatsu, Orasawara. "Recommendations of Japan's Labor Policy." Japan Economic Studies, Winter 1979-80, pp. 5-47.

Hollingworth, J. Rogers. "Government and Economic Performance." The Annual, January 1982.

Horvath, Dezso and McMillan, Charles. "Industrial Planning in Japan." California Management Review, Fall 1980, pp. 11-21.

Interview with Dr. Edward Lincoln, Department of Economic Studies, Japan Economic Institute of America, Washington, D.C.: 8 November 1982.

Interview with James Orr, Office of Industrial Studies, U.S. Department of Labor, Washington, D.C.: 17 November 1982.

Interview with William McLaughlin, Mobilization Coordinator, U.S. Department of Labor, Washington, D.C.: 17 November 1982.

Interview with Sandra King, Office of Industry Wage Surveys, U.S. Department of Labor - Bureau of Labor Statistics, Washington, D.C.: 10 January 1983.

Interview with Lawrence Fulco, Office of Productivity Studies, U.S. Department of Labor - Bureau of Labor Statistics. Washington, D.C.: 10 January 1983.

Interview with Patricia Wilder, Office of Studies-Durable Manufacturing-Aerospace, U.S. Department of Labor, U.S. Department of Commerce, Washington, D.C.: 11 January 1983.

Interview with Richard Nanto, Economic Section - Congressional Research Service, Library of Congress, Washington, D.C.: 10 January 1983.

Interview with Nabuo Hatakanoka, Labor Attache, Embassy of Japan,. Washington, D.C.: 18 November 1982.

Interview with Reginald Newell, Director of Research, International Association of Machinists and Aerospace Workers, Washington, D.C.: 1 February 1983.

Interview with Helen Kramer, Research Analyst, International Association of Machinists and Aerospace Workers, Washington, D.C.: 11 January 1983.

Interview with Leonard Price, Public Relations, United Auto Workers, Washington, D.C.: 10 February 1983.

Japan Foreign Press Center. "Labor Problems and Industrial Relations." About Japan Series, May 1978, pp. 3-41.

Japan Public Information Bureau. "Industrial Relations." Facts About Japan Series, April 1974, pp. 1-6.

Japan Institute of Labor. "Employment and Employment Policy." Japanese Industrial Relations Series, 1982, pp. 5-27.

Japan Institute of Labor. "Labor Unions and Labor-Management Relations." Japanese Industrial Relations Series, 1979, pp. 5-34.

Japan Institute of Labor. "Vocation Training." Japanese Industrial Relations Series, 1981, pp. 5-32.

"Japanese Enterprises Endeavors to Survive." Industria, August 1982, pp. 28-33.

"Japanese Management and White Collar Government." Management, Winter 1982, pp. 2-8.

Kerr, Clark and Rosow, Jerome M. Work in America--The Decade Ahead. New York: Van Nostrand-Reinhold, 1979.

Labor and the War Labor Fact Book 6. New York: International Publishing Company, 1943.

"Labor Seeks Less." Business Week, December 21, 1981.

Levenson, Leonard G. Wartime Development of the Aircraft Industry. Washington: Department of Labor, 1944.

Litley, Tom (et al.). Problems of Accelerating Aircraft Production During World War II. Boston: Harvard Business School, 1947.

Manchester, William. The Glory and the Dream. A Narrative History of America--1932-1972, Vol. 1. Boston: Little, Brown and Company, 1973.

Nelson, Donald M. Arsenal of Democracy, The Story of American War Production. New York: Harcourt, Brace and Co., 1964.

"One Dark Cloud Over Aerospace." Business Week, September 29, 1980.

Orr, James. "Planning for Change: Employment Adjustments in U.S. and Japanese Companies." Unpublished research paper. Labor Department, August 1982.

Piore, Michael J. "American Labor and the Industrial Crisis." Challenge, March-April 1982.

Rankin, Robert and Dallmayr, William R. Freedom and Emergency Powers in the Cold War. New York: Meredith Publishing Company, 1964.

Rosow, Jerome M. Quality of Work--Life Issues for the 1980's. New York: Van Nostrand-Reinhold, 1979.

Simonson, Gene R. (ed.). The History of the American Aircraft Industry. Cambridge, Mass.: Massachusetts Institute of Technology, 1968.

Shimada, Haruo. "The Japanese Employment System." Draft paper, Keio University, pp. 1-62.

Somers, Herman M. Presidential Agency, OWMR the Office of War Mobilization and Reconversion. Cambridge, Mass.: Howard University Press, 1950.

Stryher, Perrin. Arms and the Aftermath. Boston: Houghton Mifflin Company, 1942.

Takezawa, Shin-Ichi and Whitehall, Arthur M. Work Ways: Japan and America. Tokyo: Japanese Institute of Labor, 1981.

"Trained Worker Shortage Seen Increasing Costs of Production." Aviation Week, May 12, 1980.

Tunaka, Fujo John. "Lifetime Employment in Japan." Challenge, July-August 1981, pp. 23-29.

U.S. Congress. House. Defense Industrial Base Panel of the Committee on Armed Services. The Ailing Defense Industrial Base: Unready for Crisis. Report. Washington: U.S. Government Printing Office, 1980.

U.S. Department of Labor. Bureau of Labor Statistics. Area Wage Survey: Seattle, Washington, December 1981. Washington: U.S. Government Printing Office, March 1982.

U.S. Department of Labor. Bureau of Labor Statistics. Collective Bargaining in the Aerospace Industry. Report. Washington: U.S. Government Printing Office, August 1980.

U.S. Department of Labor. Bureau of Labor Statistics. Industry Wage Survey: Machinery Manufacturing 1981. Washington: U.S. Government Printing Office, April 1982.

U.S. General Accounting Office. DOD's Industrial Preparedness Program Needs National Policy to Effectively Meet Emergency Needs. Comptroller General Report to the Congress, 1981.

Wakayama, Fujio. "Japan to Rescue American Business." The Asia Record, August 1982.

Wartime Production Achievement and the Reconversion Outlook. Washington: War Productions Board, 1945.

White, Eston T. Human Resources for National Strength. Washington: Industrial College of the Armed Forces, 1972.

Vawter, Roderick C. Industrial Mobilization--An Historical Analysis. Washington: National Defense University Press, 1981.

Versagi, Frank J. "What American Labor/Management Can Learn From Japanese Unions." Management Review, June 1982, pp. 24-28.

Vogel, F. Ezra. Modern Japanese Organization and Decisionmaking. California: University of California Press, 1980.