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Social Science and State Policy in World War II: Human Relations, Pedagogy, and Industrial Training, 1940-1945

During World War II, the organization Training Within Industry (TWI) developed programs to help industry cope with the flood of new and unskilled war workers. Guided by representatives of the new profession of personnel management and assisted by university-based social scientists, the organization developed innovative methods of industrial training that drew on both the scientific management tradition and the newer human relations approach fostered by the Hawthorne experiments. The introduction of the human relations approach was severely criticized in the postwar era for its manipulative potential, but the wartime training program on which it was based did not exhibit that tendency. Moreover, management, which theoretically should have embraced TWI programs, was unsupportive, and organized labor, which had reason to be suspicious, was very responsive. Workplace reform, not the psychological conditioning of workers, drove the TWI programs.

The two world wars of the twentieth century promoted close ties between the emerging social sciences and the American state. In World War I, for example, psychologists and statisticians made spectacular contributions to the war effort. Robert M. Yerkes, who was president of the American Psychological Association when America entered the conflict, presided over the development of the army's Alpha and Beta Tests. These standardized intelligence tests were administered on an unprecedented scale to approximately 1.75 million recruits. Although the military remained skeptical about the value of the results, the wartime experience popularized and made respectable the practice of intelligence testing in the wider American society. Two other psychologists, Walter V. Bingham and Walter Dill Scott, who were interested in more immediately practical applications of psychology, developed "a scheme for the selection of officers by rating personality traits." This program was subsequently expanded to permit the classification of all recruits and their allocation to the multitude of specific military occupations in an army that rapidly grew to around four million men.

The Committee on Classification of Personnel eventually interviewed and classified over three million men and established 112 trade tests for 83 military jobs.¹

Statisticians and economists also offered their services to the national government and set about developing reliable and up-to-date information on the operation of the wartime economy to guide policymakers. Leonard P. Ayres of the Russell Sage Foundation and Edwin F. Gay of Harvard Business School were both leaders in this endeavor. Gay has been described as "a wartime pioneer in the organization and application of quantitative analysis to managerial decision-making in the public sector and in the use of administrative statistics as a tool for presidential control."² However, few of these innovations within government survived the war, although, in the interwar period, various academic entrepreneurs began to apply some of the ideas in the private sector.³

If World War I was a stimulus to the integration of the social sciences and the state, World War II represented the flowering of that relationship. One historian described World War II as unquestionably "the most important factor in the progress of American social science."⁴ Economists and statisticians again played a vital role in mobilizing the nation's resources and in creating sophisticated methods of central oversight of war production. The mobilization generated an immense demand for the skills of psychologists. Public opinion and attitude surveys became essential tools of government as administrators struggled to keep abreast of changing public attitudes. Opinion and attitude testing had only emerged in the 1930s, and World War II provided the stage for the same kind of favorable publicity that psychological testing had received in World War I. Samuel A. Stouffer's survey work on the adjustment of recruits to military life, to combat, and to postwar society is perhaps the best-known case study of attitude testing research in government.⁵ However, each military service utilized psychologists to devise ways of allocating manpower to specific occupations. As the historian Sanford Jacoby noted: "The single largest project [involving the behavioral sciences] was refining the army's personnel classification and selection system, including its IQ tests."⁶

Opinion and attitude testing had been one of two important influences on the development of the behavioral sciences in the inter-war period. The other influence had been the Hawthorne experiments carried out between 1924 and 1933 at AT&T's giant Western Electric plant at Hawthorne, on the outskirts of Chicago. The plant employed 29,000 people. The Hawthorne experiments, a venture that combined the disciplines of psychology, anthropology, sociology, and psychiatry, remain among the most controversial projects in the history of the social sciences. Debate over the meaning of the experiments has continued to the present.

¹ Daniel J. Kevles, "Testing the Army's Intelligence: Psychologists and the Military in World War I." *Journal of American History* 55 (Dec. 1968): 565-81 (quote, 569); Donald S. Napoli, *Architects of Adjustment: The History of the Psychological Profession in the United States* (Port Washington, N.Y., 1981), ch. 1.

² Robert D. Cuff, "Creating Control Systems: Edwin F. Gay and the Central Bureau of Planning and Statistics", 1917-1919, *Business History Review* 63 (Autumn 1989): 613. On the role of Ayres, see William J. Breen, "Foundations, Statistics, and State Building: Leonard P. Ayres, the Russell Sage Foundation, and U.S. Government Statistics in the First World War," *Business History Review* 68 (Winter 1994): 451-82. See also Gene M. Lyons, *The Uneasy Partnership: Social Science and the Federal Government in the Twentieth Century* (New York, 1969), 22-31.

³ Lyons, *Uneasy Partnership*, 29-34; Richard Gillespie, *Manufacturing Knowledge: A History of the Hawthorne Experiments* (New York, 1991), 31-6.

⁴ Lyons, *Uneasy Partnership*, 81.

⁵ Samuel A. Stouffer et al., *The American Soldier*, 4 vols. (Princeton, N.J., 1949); Lyons, *Uneasy Partnership*, 102-11.

⁶ Sanford M. Jacoby, *Modern Manors: Welfare Capitalism since the New Deal* (Princeton, N.J., 1997), 225.

The dominant interpretation was set by Elton Mayo and Fritz Roethlisberger, both members of Harvard Business School, who helped to formulate and conduct the experiments and wrote the official accounts.⁷ The experiments, they claimed, were firmly grounded in objective scientific research. As one recent historian remarked of that era: "Social scientists and business leaders never doubted that scientific knowledge was objective and that scientific experts could therefore stand above the special interests of social classes and determine what was best for the whole society."⁸ The Hawthorne research was apparently rigorously scientific in its procedures, was carried out on a large scale, and involved a range of the social sciences. "Here, it seemed, was the first step in the human engineering of industrial work."⁹

The experiments were designed to test worker productivity, job satisfaction, and workplace organization. The outcome of the series seemed to show that "the behavior of workers and supervisors and their productivity were influenced as much by personal attitudes and informal social organization as they were by the formal lines of organization and authority."¹⁰ A major conclusion drawn from the experiments was the importance of management's listening seriously to what workers themselves had to say. In the interwar years, some advanced firms, such as Sears Roebuck, had begun to encourage supervisors to be sensitive to employees' needs and fair in their treatment of workers. This approach, which came to be labeled "human relations," was a far cry from the "drive" system that typified most workplace situations.¹¹

The findings of the Hawthorne experiments challenged the two prevailing orthodoxies of the American workplace in the early twentieth century, the drive system and scientific management. Under the traditional drive system, the factory foreman was "the undisputed ruler of his department, gang, crew, or shop." He was responsible for the tempo of production, for interpreting management's policies to workers, and for supervising, training, and disciplining workers. Foremen were authoritarian and could hire and fire at will with little interference from senior management.¹² However, after the turn of the century, the drive system had been challenged by Frederick W. Taylor's vision of a "scientifically" organized workplace. Taylor advocated a system in which skilled jobs were broken down into their component parts and each part was given to a semiskilled worker. Each job was to be timed precisely to decide what was an appropriate duration for completing each task. In essence, the knowledge traditionally held by skilled craftsmen, which gave those workers virtual control over the pace of production, was to be appropriated by management. Predictably, the

⁷ Elton Mayo, *The Human Problems of an Industrial Civilization* (New York, 1933); Fritz J. Roethlisberger and William J. Dickson, *Management and the Worker: An Account of a Research Program conducted by the Western Electric Company, Hawthorne Works, Chicago* (Cambridge, Mass., 1939).

⁸ Gillespie, *Manufacturing Knowledge*, 32.

⁹ Gillespie, *Manufacturing Knowledge*, ch.1. (quotation on p. 36). Part of the controversy surrounding the Hawthorne experiments relates to the "scientific" pretensions associated with the project. Social scientists in the early 1920s had begun to model themselves "explicitly on the successes of scientific medicine over the previous three decades" (p. 5). However, as Gillespie makes clear, the results of the experiments were tainted by various assumptions held by the researchers, and there was little initial agreement on the conclusions to be drawn. It was only Elton Mayo's success in bringing together the research site at the Western Electric plant, the academic prestige of Harvard Business School, and the financial resources of the Rockefeller Foundation and the National Research Council that "stabilized the initially problematic interpretations of the Hawthorne experiments and facilitated the elaboration of a single, authoritative account, then ensured that the official version was widely disseminated and applied" (p.5). For a summary statement of Gillespie's critique of the "scientific" foundations of the Hawthorne experiments, see pp. 264-71.

¹⁰ Gillespie, *Manufacturing Knowledge*, 3.

¹¹ Sanford M. Jacoby, *Employing Bureaucracy: Managers, Unions, and the transformation of Work in American Industry, 1900-1945* (New York, 1985), 68-9. Jacoby estimates that, in 1935, a majority of American companies "still adhered to the tenets of the drive system" (p. 243).

¹² Daniel Nelson, *Managers and Workers: Origins of the New Factory System in the United States, 1880-1920* (Madison, Wis., 1975), 42-3.

introduction of "scientific management" in the pre-World War I era had led to clashes with craft unions determined to defend their trade skills. By the end of that war, an implicit bargain between the unions and the advocates of scientific management had established a truce: unions were prepared to accept aspects of scientific management if management was prepared to accept collective bargaining.¹³

If workplace orthodoxies were being challenged in the interwar period, the structure of industry itself was also changing. Two developments in particular were transforming the industrial landscape. Federal government support for union organizing in the New Deal led to a dramatic upsurge in union activity during the late 1930s and World War II. Management had to adjust to this new environment, which usually meant enhancing the role of the firm's personnel department. The spread of unions and the expanding role of the personnel manager steadily undercut the power of the foreman. Over time, personnel managers gradually wrested control over hiring and firing, promotion, and wage rates from the foremen. By the end of World War II, the industrial transformation was complete: instead of being subject to the foreman's whim, workers now had the dual protection of a powerful union movement and an orderly system of rules, grievance procedures, and avenues for promotion. The drive system had been replaced by a bureaucratic internal labor market operated by strong personnel departments.¹⁴ As personnel work became increasingly professionalized, the outlook of personnel managers shifted as well: in the early years of the century, personnel managers tended to think of themselves as "a third force in the firm, neither staff nor line, who would mediate between workers and management." By the second half of the 1940s, the ideal of the independent professional had faded, and personnel managers saw themselves now as part of management.¹⁵

As America began to rearm at the end of the 1930s, it was inevitable that the issues of the interwar years would carry over into the industrial mobilization. One area in which the relation of the social sciences, particularly psychology, to industry became particularly important was industrial training. Thoughtful observers were concerned about the possibility of an abrupt and severe shortage of skilled manpower once the rearmament program gained momentum. Any failure in industrial production could have alarming consequences. The Great Depression had drained the pool of skilled manpower available to industry, and the emergency situation would not permit the more leisurely pace of peacetime training methods. But mass training of new industrial workers immediately brought up the issues raised by scientific management at the beginning of the century: the influx of insufficiently skilled workers would necessitate the subdivision ("dilution") of existing skilled tasks to enable unskilled workers who had been specially trained to perform one specific part of the task; in time, this would require the cooperation of a much stronger union movement than the earlier scientific management advocates had faced. The precarious truce that had been engineered at the end of the First World War between scientific management advocates and the unions would be severely tested. Moreover, the Hawthorne experiments had demonstrated the connection between worker satisfaction and industrial production: those findings would need to be incorporated into the workplace, and industrial training programs were an obvious medium for the dissemination of such ideas. At the same time, any hint of an attempt to manipulate worker response deliberately by psychological means would create suspicion and disaffection. In the success of any training program, the attitude of management would obviously be enormously

¹³ Daniel Nelson, *Frederick W. Taylor and the Rise of Scientific Management* (Madison, Wisc., 1980), 201-2.

¹⁴ Jacoby, *Employing Bureaucracy*, 260-74.

¹⁵ *Ibid.*, 129-32 (quote p. 130), 273-4.

influential; similarly, the attitude of the personnel managers placed in charge of such a training program would be critical. Industrial training could easily become a domestic battleground.

Establishing Training Within Industry

The issue of industrial training was intensely scrutinized early in the rearmament period. In mid-1940, President Franklin D. Roosevelt reactivated the Council of National Defense, a World War I organization, and appointed Sidney Hillman, the well-known labor leader who headed the Amalgamated Clothing Workers of America and had helped found the Congress of Industrial Organizations (CIO), as commissioner of employment on the advisory commission of that body. After seeking advice from industrial leaders on the needs of industry, Hillman recruited two experienced personnel managers, Channing R. Dooley of Socony-Vacuum and Walter Dietz of the Western Electric Company, to develop an appropriate training program. They both arrived in Washington on August 24, 1940. Initially recruited as volunteers for six weeks, they stayed in Washington "until Training Within Industry [TWI] closed its operations in the fall of 1945."¹⁶

Channing Rice Dooley was sixty-two when he came to Washington in August 1940. He had graduated from Purdue University in 1900 as an electrical engineer and had initially worked as a design engineer with Westinghouse Electric and Manufacturing Company of Pittsburgh, before being appointed its first director of personnel and training. He was a member of the American Institute of Electrical Engineers, the American Society for Engineering Education, the American Society for the Advancement of Management, and the Industrial Relations Research Association. After World War I, he became head of training and personnel for Standard Oil (New Jersey), before moving, in 1929, to the Standard Oil Company of New York. After the latter merged with Vacuum Oil, Dooley became manager of industrial relations for Socony-Vacuum. An experienced personnel manager, he "used neither questionnaires nor intelligence tests, preferring to study the applicant's records, history, aims, and personality."¹⁷ Well known throughout industry, with experience of the labor mobilization during World War I, Dooley was an excellent choice to become the new director of TWI.

J. Walter Dietz, another engineering graduate of Purdue University, was appointed

¹⁶ War Manpower Commission, Bureau of Training, Training Within Industry Service, *The Training Within Industry Report, 1940-1945* (Washington, D.C., 1945), 4-5. [Hereafter *TWI Final Report*.] This lengthy report (330 pp.) contains an excellent, detailed overview of the work of the TWI group. Initially created under the mantle of the National Defense Advisory Commission of the Council of National Defense, TWI was later transferred to the Office of Production Management, then to the War Production Board, then to the Federal Security Agency, and finally to the War Manpower Commission. On Hillman, see Steven Fraser, *Labor Will Rule: Sidney Hillman and the Rise of American Labor* (New York, 1991).

¹⁷ *New York Times*, 26 June 1956, 29 (obit.). Dooley died in 1956 at age 78. He was a pioneer in industrial education: in 1914, he served as a charter member of the National Association of Corporation Schools, and from 1934 to 1946, he was a member of the Federal Committee on Apprenticeships. In World War I, he was called by the War Department to establish and direct the system of technical training in military camps. In the post-World War II period, he served as a consultant to the International Labor Office (ILO) in 1948, 1949, and 1950. In 1946, he established the Training-Within-Industry Foundation and served as the president until he died. The Foundation, which was incorporated in New Jersey, was designed "to keep available the supervisory training programs developed by TWI as a war agency and to adapt, improve, and broaden these programs to meet the current needs of industry and commerce." See John Walter Dietz with Betty W. Bevens, *Learn by Doing: The Story of Training Within Industry, 1940-1970* (Summit, N.J., 1970), 51. For a discussion of the influence of TWI in the postwar world, particularly in Japan, see Alan G. Robinson and Dean M. Schroeder, "Training, Continuous Improvement, and Human Relations: The U.S. TWI Programs and the Japanese Management Style," *California Management Review* 35 (Winter 1993): 35-57. On the National Association of Corporation Schools, see Sanford M. Jacoby, *Employing Bureaucracy*, 68-9.

associate director of TWI. After graduating in 1902, he started as a student engineer with the Western Electric Company. Dietz stayed with the company until he retired. Like Dooley, he gradually moved out of engineering into personnel work and industrial relations. In 1937 he was appointed personnel relations manager (New York) of Western Electric and was working in that capacity when he was called to Washington in 1940. At the time, Dietz was a member of both the Federal Advisory Commission for the U.S. Employment Service and the National Occupational Conference.¹⁸ Like Dooley, he had broad experience in personnel work and industrial training.

In September, Dooley and Dietz were joined by two other personnel, men from industry, William Conover and Michael J. Kane. Conover had graduated from the University of Iowa in 1922. After a period spent working in industry, he went to the Kearny, New Jersey, plant of Western Electric as training director. In 1932, he moved to the Philadelphia Gas Works Company to assist in a program of reorganization and subsequently was appointed assistant to the president. In 1936 he joined the U.S. Steel Corporation of Delaware, where he was assistant director of industrial relations when he was called to Washington in 1940.¹⁹ Michael J. Kane had been personnel manager at the West Lynn Works of the General Electric Company in Massachusetts prior to America's entry into World War I. During World War I, he had trained shipyard workers for the Emergency Fleet Corporation and, in collaboration with Charles Riborg Allen, had written the first foreman training manual, which was published in 1919 by the Federal Board for Vocational Training. In the mid-1920s, he moved to the American Telephone and Telegraph Company in New York, where he was responsible for training supervisors, conference leaders, and instructors.²⁰ Known affectionately within the organization as the "Four Horsemen," this group became the driving force behind the wartime government program for promoting training within industry.

These four individuals were all members of a new profession, personnel management, that had only begun to emerge in the decade prior to World War I. World War I had seen a "meteoric" growth in personnel management, which then slowed dramatically during the 1920s. The 1930s witnessed another surge of growth: "Between 1933 and 1935, the rapid growth in the number of personnel departments and the improvement of their status in the

¹⁸ See biographical sketch of Dietz in *Supervision: The Magazine of Modern Industrial Relations and Operating Management*, with which is combined *The Foreman* 3 (Jan. 1941): 5. Along with Dooley, Dietz had helped organize the National Association of Corporation Schools in 1914 and, in 1917, had served as its president. From 1917 to 1919, although still employed by Western Electric, he worked with Dooley in assisting the War Department develop its training program. After World War II, Dietz helped form the TWI Foundation in 1946, which was designed to promulgate the TI-TI message in the postwar era. In 1956, on the death of Channing Dooley, Dietz became president of the foundation. In 1944, Dietz and Dooley were awarded honorary degrees of Doctor of Engineering in human relations at Purdue in recognition of their leadership in industrial relations. In 1945, they also shared the first award in human relations given by the Society for the Advancement of Management. See Dietz with Bevins, *Learn by Doing*, 100.

¹⁹ See biographical sketch of William Conover in *Supervision* 3 (Jan. 1941), 5. After graduating, Conover worked for six years in The Lycoming Manufacturing Company. Beginning as a laborer he rose to become assistant superintendent at Lycoming, where he also developed his interest in foreman training. Conover resigned from TWI in 1944 to join General Cable Corporation as director of manufacturing. Later he became superintendent of production for Carrier Corporation. At the time of his death in 1961 he was president of the Gray Manufacturing Co. of Hartford, Connecticut. See Dietz with Bevins, *Learn by Doing*, 101.

²⁰ The manual was issued as *Bulletin 36, Federal Board for Vocational Education, 1919*. For biographical information on Kane, see the one-page typescript in National Archives, College Park, Md. (NA2), RG 211, War Manpower Commission Records, Entry 229, Training Within Industry Records: Records of George Jaquet, 1941-45, Box 2, Folder: "Kane, M.J. 1940-1942." After spending World War II working with TWI, in the postwar period, Kane became the director of industrial relations for the National Association of Manufacturers. In 1946, he became a trustee of the TWI Foundation and was also vice president in charge of research. See Dietz with Bevins, *Learn by Doing*, 101.

corporate hierarchy were little short of phenomenal." Anxious to preserve stable labor relations, personnel managers were instrumental in developing internal labor markets in American industry as a *means* of combating and deflecting union pressure. American industry became increasingly bureaucratized as the drive system was slowly replaced with formal rules, operating procedures, and hierarchical checks on first-line supervisors. The power to hire and fire, to promote and to train was increasingly moved away from the factory floor to the office of the personnel manager. The era of World War I had been an intoxicating period for the development of personnel work: the period from 1933 to 1945 was another period "when companies confronted challenges from unions and government that their traditional employment systems were unable to resolve. They responded to those pressures by giving greater resources and power to their personnel managers."²¹

The Four Horsemen combined a wealth of practical experience in the industrial mobilization during World War I, three of the four had been deeply involved in the government's industrial training program, with formidable backgrounds in personnel work at several of the largest, most sophisticated corporations in the United States. Their companies, particularly Western Electric, had been among the most innovative in developing personnel work during the interwar period. Indeed, the Western Electric Company had sponsored the famous Hawthorne experiments between 1924 and 1932 in an effort to probe worker motivation.²² The human relations approach that emerged from the Hawthorne experiments was eventually incorporated into the TWI wartime program, but that process proved to be surprisingly difficult and protracted. The initial responses of the leaders of TWI reflected, instead, their World War I experiences and a scientific management approach to the problem of industrial training.

Building the Organization

In order to promote its program, TWI immediately set about building a nationwide field organization of twenty-two districts based in the major industrial centers. A special conference of industry representatives from across the country was held in Washington in early October 1940 to set up the field organization. Each representative returned to his district and, "after consultation with interested organizations such as manufacturers' associations, chambers of commerce, labor groups, personnel associations, etc...," nominated one or two candidates for TWI district director. The specific qualities of district directors were described as follows: "[o]rganizational ability, standing in the community, active identification with industry with no strong affiliation with specific groups." The last qualification was obviously intended to block the nomination of violently antilabor candidates. All nominations had to be acceptable to local labor and management organizations and to the Washington office.²³ The district directors were volunteers and served without federal salary: in essence, they were borrowed from industry.

Once appointed, the first task of the newly appointed TWI district representative was to nominate four members of an advisory panel, two from management and two from labor (one each from the rival American Federation of Labor [AFL] and the Congress of Industrial

²¹ Jacoby, *Employing Bureaucracy*, passim. Direct quotes on pp. 10-11, 281-2.

²² See Gillespie, *Manufacturing Knowledge*.

²³ Advisory Commission to the Council of National Defense, Training Within Industry, "Field Service Organization Conference, 8, 9, 10 Oct. 1940: Conference notes" (s pp.), 4. NA.2, RG 211, Entry 241, Box 1, Folder: Conferences-1940."

Organizations [CIO]). These nominations were then scrutinized by Hillman and the TWI head office before being accepted, and successful candidates were notified of their appointment directly by Hillman. Once the advisory panel was organized, the district representative established a panel of ten or more part-time training consultants "borrowed from local industries and selected on the basis of expertness in apprentice training, industrial relations, and personnel."²⁴ William Conover commented, in March 1941, that "industrial engineers who have had a lot of analytical experience, who have been successful in dealing tactfully with the unions and workers, are very good prospects."²⁵ The number serving on the panels varied: in Ohio there were around fifty, whereas in some areas panels had less than ten. By September 1942, there were 647 training consultants "drawn almost entirely from industry (generally part time) who serve[d] without compensation" attached to TWI. In addition, there were 79 full-time training consultants on the TWI payroll, together with a clerical force of 100. The number of full-time paid staff expanded steadily: in July 1941 there were 53 paid staff members; three years later there were 415.²⁶ However, TWI remained a very decentralized organization: the entire head office, in September 1942, consisted of only 34 individuals. The organization was clearly management oriented but with union representation and, at least in Washington, a strong emphasis on union involvement.

The arrival of the Four Horsemen in Washington during August and September 1940 did not mean that they came with a clear blueprint for action in mind. In fact, the initial TWI program, outlined in the first TWI bulletin in September, was a fumbling mixture of strategies that drew largely on the World War I experience. The bulletin proposed a national inventory of existing skills in the workforce (covering both employed and unemployed), which would be undertaken by government and industry in cooperation. Workers were to be encouraged to take courses at public and private vocational and trade schools, at engineering colleges, and through government agencies such as the National Youth Administration, the Works Projects Administration, and the Civilian Conservation Corps; eventually, industry would be encouraged to take responsibility for its own training programs. Given the shortage of available skilled workers, TWI assumed from the beginning that "job simplification"-breaking skilled jobs down into a sequence of semi-skilled tasks-would be necessary. Consciously avoiding the term "dilution," TWI promoted the idea of "job progression," whereby inexperienced workers would start at the less skilled tasks and be gradually "upgraded" to more complex jobs as they gained skill.²⁷ At the same time, TWI encouraged industry to foster trade apprenticeships to develop a limited number of all-round, skilled mechanics. More supervisors would be needed, and they would require careful selection and training.

²⁴ Richard J. Purcell, *Labor Policies of the National Defense Advisory Commission and the Office of Production Management, May 1940 to April 1942* (Washington, D.C., 1946) [Historical Reports on War Administration: War Production Board Special Study No. 23], 118. The district advisory panels paralleled the TWI National Advisory Committee, which had been established when TWI was organized. It consisted of six national labor leaders and six senior personnel managers from major American firms.

²⁵ William Conover, "The Defense Commission Training Program, in *Papers Presented at the Fourth Annual Stanford Industrial Relations Conference, March 24 to 28, 1941* (Palo Alto, Calif., 1941), 133.

²⁶ Quote is from the War Manpower Commission (WMC), Training Within Industry (TWI). "Progress Report, Sept. 1942" [typescript, 6 pp.]. 1. NA2, RG 211, Entry 231, Box 4, Folder "Documents 115-20." See also *TWI Final Report*, 14.

²⁷ See especially the speech of Dietz in *Report of Seventh Annual Mid-West Conference on Industrial Relations, University of Chicago, Friday, November 15, 1940* (mimeo), 18-26.

In all this activity, the role of TWI was to provide "specific *ADVISORY ASSISTANCE [sic]* to defense industries in inaugurating programs which they will carry on within their own plants at their own expense."²⁸ There was to be no coercion associated with the program: TWI would only visit a plant if requested to do so.

Early TWI tactics assumed that industry recognized the impending labor-market crisis. In fact, industry proved to be quite obtuse and very reluctant to assume the burden of industrial training. At the end of 1940, eighty-four skilled occupations were already plagued by labor shortages, and these were in occupations whose training period normally required about two years. However, most companies refused to start training programs and were even unwilling "to spare highly skilled mechanics as supervisors of apprenticeship instructions when they vaguely feared but as yet did not face a sharp labor shortage." Industry was still relying on the pool of unemployed workers, which had seemed inexhaustible during the preceding depression decade. In January 1941, Dooley reported that large numbers of manufacturers in the key industrial areas had no plans for training and were assuming that "there will be plenty of skilled labor available as their needs develop." The shipyards had adopted a similar attitude.²⁹ There was an urgent need to shake industry out of its complacency.

The reluctance of management to adopt the TWI program was in sharp contrast to organized labor's willingness to accept it. From the very beginning, TWI made a considerable effort to ensure that organized labor supported its program. An advisory committee, composed of six labor and six management representatives, was established in Washington. This group met five times to decide on major policy issues in the first twelve months after TWI was established. Each district office had a similar advisory body: although the exact size of such district committees varied, the minimum membership was always four, which permitted two management representatives and one CIO and one AFL representative. The headquarters organization took pains to include labor organizations on the mailing list for the distribution of publicity about the manpower situation. In addition, TWI representatives addressed hundreds of meetings of both labor and management groups. The fundamentals of the TWI approach appealed to labor: Dooley constantly stressed the importance of upgrading and promoting workers already in the factories, of sound and intensive instruction methods, of promoting the apprenticeship program, and of sensible personnel programs and procedures.³⁰ Shortly after arriving in Washington, Dooley made clear that he was seeking "a fair shake" for the unions.³¹ A meeting of the TWI advisory committee held in Washington on September 24, 1940, unanimously approved a statement of "fundamental purpose" guiding the development of TWI programs. It reflected the very broad approach adopted by the early TWI as it sought to find the most appropriate means of developing industrial training. The statement, encouraging each worker "to make the fullest use of his best skill up to the maximum of his individual ability," was felt to be "mutually advantageous to both employee and employer and [was] in line with the American emphasis on individuals taking full

²⁸ C. R. Dooley, director of TWI, The "Training Within Industry Program," Bulletin # 1 (24 Sept. 1940) mimeo, 3 pp., 1-2. The "upgrading" plan grew out of "many discussions among representatives of progressive industries and labor unions" under the auspices of the TWI unit and was based on detailed examination of the methods already used in leading optical, toolmaking, and other establishments. See press release, 25 Sept. 25, 1940, found in NA2. RG 211. Entry 241. Box 1. Folder "Conferences-1940."

²⁹ Purcell, Labor Policies, 122-3. The Dooley quote is from C. R. Dooley to W. S. Knudsen, 9 Jan. 1941, which is quoted in Purcell on p. 123.

³⁰ Training Within Industry, Labor Division, Office of Production Management, "First Annual Progress Report, Sept. 1940-Sept. 1941" (Washington, D.C., 1941) [6 pp. typescript + 19 pp. appendices, 3, 6, 8.

³¹ Business Week (21 Sept. 1940), editorial, 52.

advantage of opportunities."³² A press release designed to publicize this unanimous agreement between organized labor and management was then circulated to the media. The "upgrading plan" was described as the result of "many discussions among representatives of progressive industries and labor unions" that had been organized by Dooley and Dietz. The release suggested that the new "upgrading plan" would enhance employee advancement: a "top notch mechanic" would be able to devote all of his time to the most skilled part of his work, while the less skilled part would be subdivided into its component functions, each of which would be assigned to a semiskilled worker. Workers would be given the opportunity to learn different operations and then transferred upward from less complicated to more complex tasks. A small, carefully selected group of apprentices would acquire all-round skills, which would qualify them "for assignments demanding more versatility." TWI would assist management by developing a nationwide field organization that would draw on personnel experts and training specialists from both private industry and government agencies in order to "create training procedures 'custom built' to each individual plant's requirements."³³

It was an ambitious program that relied heavily on the cooperation of organized labor. That cooperation was readily given. The labor members of the national advisory committee of TWI were wholeheartedly behind the program, and the international union leadership was supportive. In December 1940, addressing a meeting of the New Jersey Chamber of Commerce, Dooley stated that organized labor had been "enthusiastic in their approval of the training-within-industry program" and had been "particularly happy" with the emphasis on upgrading workers. Three months later, Bill Conover, one of the Four Horse-men, described his recent luncheon in Detroit with Walter Reuther, a member of both the executive committee of the United Automobile Workers and the TWI national advisory committee, when Reuther had stated: "Bill, if you can sell employers on doing a decent upgrading job alone, you don't need to discuss the rest of your program; we are with you a thousand percent."³⁴ In 1946, one commentator noted: "The acquiescence of the unions in this scheme of training and upgrading was in fact one of organized labor's greatest concessions."³⁵

³² Advisory Commission of Council of National Defense, Training Within Industry Division, "Meeting of Advisory Committee, 24 Sept. 1940," (mimeo), 4-5. NA2, RG 211, Series 241. Box 1. Folder "Conferences -1940." A press release embodying the essentials of what was agreed upon at the meeting was then released. See New York Times, 25 Sept. 1940.

³³ For a copy of the press release, see "National Defense Advisory Commission, PR 125, September 25, 1940- Immediate Release" (mimeo, 2 pp.). NA2, RG 211, Entry 241, Box 1, Folder "Conferences-1940." See also New York Times, 25 Sept. 1940. The representatives of management and labor that were present at the meeting were W. G. Marshall, Vice President Westinghouse Electric and Manufacturing Company, Pittsburgh; E. J. Robeson, personnel manager, Newport News Shipbuilding and Dry Dock Company, Newport News, Va.; K. F. Ode, personnel manager, Falk Corporation, Milwaukee, Wisc.; R. Randall Irwin, industrial relations manager, Lockheed Aircraft Corporation, Burbank, Calif.; M. F. Burke, United Aircraft Corporation, Pratt & Whitney Aircraft Company, East Hartford, Conn.; John Green, president, Industrial Union of Marine and Shipbuilding Workers of America; Clinton Golden, regional director of the northeastern region, Steel Workers Organizing Committee; Michael Collier, general president, Operative Plasterers' and Cement Finishers' International Association; Walter Reuther, executive board member, United Automobile Workers of America.

³⁴ William Conover, "The Defense Commission Training Program," Papers Presented at the Fourth Annual Stanford Industrial Relations Conference, March 24 to 28, 1941 (Division of Industrial Relations. Graduate school of Business. Stanford University. California. 1941), 139. Some labor representatives, although willing to cooperate with TWI wanted greater labor representation at all levels of the organization. See Proceedings of the Office of Production Management on In-Plant Training, Washington, D.C., March 17-18, 1941. U.S. Apprenticeship Training Service, Technical Bulletin No. 60A mimeo, 83 pp.1. 30-2 (speech of Robert Watt. American Federation of Labor).

³⁵ Conover, "The Defense Commission Training Program," 127. Purcell also notes that there were some difficulties "with highly specialized and unionized artisans who did not look favorably on an increase of apprentices or the up-grading of the semi-skilled workers in their shops. The shortage of aluminum and steel forgings that embarrassed the Office of Production Management in the fall of 1941. for example. was largely due to a shortage of die-sinkers and to their unwillingness to permit other craftsmen to

Job Instruction and Job Methods Training

The development of job instruction training reoriented the agenda of TWI and established its distinctive approach to industrial training. The program was designed to address the problem of training the enormous influx of unskilled workers flooding into defense-related industries. By 1942, approximately 6,000 new workers were being hired and 400 new supervisors were being appointed each day. Yet industry's methods for dealing with the problem were haphazard. As one commentator re-marked: "Eventually new men learned, but with plenty of breakage, cuss words and accidents. When war broke out, such slipshod methods were intolerable.... The war might have been lost while they floundered in the school of hard knocks."³⁶ The solution to the problem came not from the Washington office but from the recently established TWI field organization. In New Jersey, the TWI district director was Glenn Gardiner of the Forstmann Woolen Company in Passaic. Gardiner had long been interested in the problems of factory management, supervision, and foremanship and had authored a number of articles and books on the topics.³⁷ Recognizing that the task of training new workers would have to be done by industry itself, he developed an intensive program of five two-hour sessions designed to assist foremen. "The program cast aside previous theories and practices and stripped the content to barest essentials." After trials in New Jersey, the program, known as "job instruction training" (JIT), was adopted by the TWI national headquarters in early August and was available across the country by November 1941.³⁸

The program created a format that was repeated in subsequent TWI courses. Each TWI course consisted of a standard "package" of ten hours of instruction (five lessons of two hours each) given to groups of ten individuals. The groups were deliberately kept small in order to give all members the opportunity to discuss how to apply the method to a current problem they faced and to receive feedback from both the instructor and the group. There had been experiments with similar types of instruction in the 1930s but no attempt to develop a standardized "package." Adoption of the JIT program also reoriented the strategy of TWI and gave it a clear and distinctive mission: henceforward, it would concentrate solely on instruction aimed at supervisors rather than individual workers.

make parts of dies. These difficulties were ironed out in conferences, however, and in general it remained true, as Hillman had told the Truman Committee in April [1941], that the voluntary training program was not restricted or obstructed by labor " Purcell, Labor Policies, 127.

³⁶ Stuart Chase, "Show-How: A Revolution in Management," Readers Digest 43 (Oct. 1943). 79. For the statistics on new workers and supervisors, see TWI Final Report, 36.

³⁷ See entry in *Who Was Who in America*, vol. 4, p. 345; New York Times, 8 Aug. 1962, 31 (obit.). Born in 1896, Gardiner graduated from the University of Wisconsin in 1917. He had worked for Forstmann Woolen Company since 1927 and became vice president for personnel in 1944. He had edited a weekly bulletin on management information since 1926. At the time of his appointment to TWI, he had published *Practical Foremanship* (1925), *Management in the Factor* (1926), *Practical Office Supervision* (1929), *Foreman's Management Library* (1930), and *Better Foremanship* (1941). He continued to publish on the topics after the war. During the war he was also an associate member of the War Labor Board. In 1942, he was awarded the Gilbreth medal for achievement by the Society for the Advancement of Management. Gardiner was a life member of the Conference Committee of the Silver Bay Industrial Relations Conference, a president of the New Jersey State Chamber of Commerce, and a vice president of the American Management Association. A Republican and a Congregationalist, he died in 1962.

³⁸ On the role of Gardiner and the New Jersey district, see TWI Final Report. 192-3: New Jersey State Chamber of Commerce. *The First Million: The Story of the Training Within Industry Service* (Newark, N.J. 1944). [pamphlet. 17 pp.]. Copy found in NA2, RG 211, Entry 231, Box 5, File "History of TWI-1944;" New Jersey District, TWI, "Evolution of District #5 [New Jersey] (20 June 1945)" [typescript, 8 pp.], NA2, RG 211, Entry 231, Box 2, File "District Histories (#5)."

By the end of the war, over one million supervisors had been instructed in how to break in workers on new jobs through the JIT program.³⁹

The TWI leadership went to considerable lengths to ensure labor's continued cooperation. In May 1941, TWI secured "the full-time services of a member of organized labor" to act as a direct liaison with union members in explaining the TWI program, particularly JIT.⁴⁰ Leonard A. Gappa was a member of the Milwaukee local of the International Brotherhood of Electrical Workers (AFL) who had been active in union affairs and in the Wisconsin apprentice-training scheme. Dooley believed that Gappa's "engaging personality had made friends for TWI and for himself wherever he has gone." By early 1943, he had attended the AFL national convention in Seattle and AFL state conventions in thirteen states. At a number of them, he conducted demonstration JIT training sessions to acquaint union members with the TWI program. At several gatherings, resolutions supporting TWI's objectives and training programs were approved. Gappa also convened a weekly meeting in Washington of labor leaders in government.⁴¹ In April 1943, he commented: "JIT is now so universally accepted that it no longer needs special attention with respect to Labor's attitude."⁴²

Glenn Gardiner's New Jersey group did not rest on its laurels. Gardiner became convinced that new supervisors would need assistance and training in breaking down job sequences to make it easier to use semiskilled workers. He began to plan such a course in the fall of 1941 and presented the new program, called "job methods training" (JMT), to a national conference of TWI district directors in May 1942. After various refinements were incorporated, it was launched as a national program in the fall of 1942. Organized as a standard ten-hour "package" like the earlier job instruction program, the JMT program encouraged groups to separate the various steps of a specific job and then try to combine, rearrange, or simplify those steps. One contemporary described the new course as "a kind of midget course in scientific management, humanized."⁴³ In the emphasis on job analysis, the course obviously drew on ideas associated with Frederick Taylor, but it also reversed current industrial practice. From the time of Taylor, the task of improving production methods had been assigned to a professionally trained engineer. American industry had not attempted to enlist supervisors or workmen as collaborators in the task. In that sense, JMT was a radical innovation. However, like the other TWI programs, the

³⁹ TWI Final Report, 192. For detail on the content of the JIT program, see pp. 33-4. Job instruction was the first of four training courses developed by TWI during World War II. The others were: job methods, job relations, and program development.

⁴⁰ Training Within Industry, Labor Division, War Production Board, "Progress Report, Sept. 1941-Mar. 1942." mimeo. 7 p.1. 6. NA2, RG 211, Entry 231, Box a, File "Documents#15-20."

⁴¹ Gappa had been a member of the executive board of his union branch (Local 494) and its assistant business manager. He had been a delegate to the Federal Trades council, to the Buildings Trades council, and to both state and national labor conventions. Interested in training issues, he had chaired the local's Apprenticeship Training Committee and served as secretary of the Management- Labor Apprenticeship Training Joint Committee for the State of Wisconsin. See C. R. Dooley to All TWI District Directors, memo re "Labor's Approval of TWI Objectives and Programs: Leonard A. Gappa's Report," 14 Apr. 1943 [Circular Letter No.277]. NA2, RG 211, Series 229, Box 4, Folder "Ball Bearing Industry."

⁴² Len Gappa to C. R. Dooley, memo: "Labor's Approval of TWI Objectives and Programs," 12 Apr. 1943. Memo attached to C. R. Dooley to All TWI District Directors, memo: "Labor's Approval of TWI Objectives and Programs: Leonard A. Gappa's Report," 14 Apr.1943 [Circular Letter No. 277]. NA2, RG 211, Series 229, Box 4, Folder "Ball Bearing Industry.*"

⁴³ Stuart Chase, "To Do It Easier and Do It Better," Readers Digest 43 (Nov. 1943), 108. TWI Final Report, 223, 230-2. Gardiner first wrote to Diet about the proposed course on 6 Oct. 1941. See Gardiner to Dietz, 6 Oct. 1941, NA2, RG 211, Entry 235, Box 3, File "History Oct. 1941"

motivation remained always to assist the supervisor to produce greater quantities of quality material in less time, "making best use of manpower, machines, and materials now available."⁴⁴

Again, in developing and promoting the program, special care was taken to secure both union and management support. The unions naturally tended to be suspicious of anything associated with Taylorism. In July 1942, the national Labor Management Committee of the War Manpower Commission, to which TWI had recently been transferred, held a meeting specifically to secure the approval of management and particularly of union representatives for the job methods program. Before the national launch of JMT, Dooley ensured that it was reviewed carefully by national union leaders "to prevent any feeling that it was 'efficiency engineering' or a 'speedup'".⁴⁵ Then, in individual cities, Gappa organized meetings with the local labor groups in order to ensure that their leaders had "a full understanding of the program" and to prevent the spread of "distorted stories." Twenty-five such meetings were held between October 1942 and April 1943. In New York City, both the CIO and the AFL gave "full approval" to the program; in Indianapolis, although attendance was rather small, the representatives requested that a special session be given to the Central Labor Union, which represented about 100 different unions. In Cincinnati, both AFL and CIO representatives were enthusiastic and stated that it "was the first time they really understood what TWI was trying to do." They then requested special meetings to explain JIT and JMT. At their meeting in Detroit the United Automobile Workers (CIO) gave the program their endorsement and "agreed to make a man available for cooperative work..." There were similar positive reactions to the program in Chicago and Pittsburgh.⁴⁶

Deliberate steps were taken to enlist the cooperation of workers and to disassociate the JM method from any idea of a speedup.⁴⁷ At a war plant in Connecticut, the chief supervisor admitted that the workers were initially wary of job methods: "They were suspicious at first, remembering the stop-watch boys and the speed-ups. You can't blame them. But we go over every new plan with them, ask them to make suggestions, get them in on it. The more they feel it is their plan the better it clicks. We don't have any trouble."⁴⁸ In fact, organized labor showed very little opposition to the introduction of the program.

By contrast, TWI had considerable difficulty in getting industry to adopt job methods. Far from seizing the opportunity to compartmentalize jobs and, at least theoretically, to gain greater control over the production process, most managers were reluctant to adopt it. In the fall of 1943, a year after JMT had been introduced, an internal TWI report complained: "For some reason we are not reaching the big units with job methods, .. the industrial field is almost untouched."⁴⁹ A statistical survey in the summer of 1943 indicated clearly that JMT was the least popular of the TWI courses with management and appeared "to be TWI's #1 problem."⁵⁰

⁴⁴ TWI Final Report, 37 (quote), 223.

⁴⁵ C. R. Dooley, "Training Within Industry in the United States," *International Labour Review* 54 (Sept.-Oct. 1946): 173.

⁴⁶ Len Gappa to C. R. Dooley, memo: "Labor's Approval of TWI Objectives and Programs," 12 Apr. 1943. Memo attached to C. R. Dooley to All TWI District Directors, memo re "Labor's Approval of TWI Objectives and Programs: Leonard A. Gappa's Report." 14 Apr. 1943 [Circular Letter No. 2771. NA2. RG 211. Series 220. Box 4. Folder "Ball Bearing Industry.

⁴⁷ TWI Final Report. 37. 230, 233.

⁴⁸ Chase, "To Do It Easier," 111.

⁴⁹ George Jaquet to William Conover, memo: "Trend of JM Institutes," 7 Sept. 1943. NA2, RG 211, Entry 229, Box 1, File "Conover, William -1943.

⁵⁰ Jaquet to Conover, memo: "Lack of Job Methods Progress," 31 July 1943. NA2, RG 211, Entry 229, Box 1, File "Conover, William 1943." The reluctance of management to embrace the JM program during World War I has interesting parallels with management attitudes toward scientific management in the interwar years. See: Daniel Nelson. "Scientific Management and the

Origins of Job Relations Training

If the job methods program emphasized an approach derived from Frederick Taylor in the pre-World War I era, the third program developed by TWI reflected developments in industrial psychology during the interwar period. Indeed, one historian has stated that TWI's job relations program was "a direct outgrowth of the Hawthorne experiments."⁵¹ The job relations program—the name was derived from "human relations"—was suggested early but took two years, and ten different experimental versions before it was ready for mass application in industry. The idea for the program originated with Dooley and Dietz. In November 1940, Dietz had been invited to discuss with the Committee on Work in Industry of the National Research Council what he felt to be the pressing needs of training in industry and a possible role for the NRC in addressing them. He expressed concern about management's complacency and emphasized the problems of developing appropriate training methods within industry. He added that Dooley and he were "most concerned about getting this human side of the management problem more into the fore." Dietz wanted more attention given to the problem of teaching and greater emphasis on the "importance of teaching first-line supervisors how to teach and analyze work processes from a learning not just a production point of view." The committee suggested making a formal request to the NRC for assistance. Dooley promptly wrote to Hillman, explaining the desirability of obtaining "the assistance of a competent group to make a thorough and comprehensive contribution to the basic knowledge about supervision, especially right at the work level." He enclosed a draft letter to the National Academy of Sciences requesting assistance, which Hillman then signed.⁵² The letter sought the National Academy's assistance in answering the question, "What can be done to increase knowledge and improve understanding of supervision at the work level?"

The National Academy forwarded the request to the NRC's Committee on Work in Industry, which appointed a subcommittee composed of Professor Walter S. Hunter of Brown University, Professor J. Douglas Brown of Princeton University, and Professor Fritz Roethlisberger of Harvard University, to make proposals on how to respond to the request. The subcommittee met on April 12 at Harvard and formulated three sets of recommendations for discussion by the parent committee. In late May, on the basis of those recommendations, the Committee on Work in Industry submitted a report urging that particular attention be paid to developing the human relations skills of supervisors in order that they might better handle "the human situations under their charge so as to secure maximum cooperation." More than a summary of best current practice was needed. The committee recommended that TWI be given additional personnel "for the purpose of rendering specific advisory assistance in the application of science and trustworthy, orderly knowledge to defense industries regarding problems of supervision."⁵³

Workplace, 1020-1935." in *Masters to Managers: Historical and Comparative Perspectives on American Employers*, ed. Sanford M. Jacoby (New York, 1991), 74-89.

⁵¹ Gillespie, *Manufacturing Knowledge*, 235.

⁵² See "National Research Council: Meeting of Committee on Work in Industry, Washington, D.C., 25 Nov. 23 1940. Transcript of discussion" [verbatim transcript, 40 pp.]. This file also contains copies of related correspondence. NA2, RG 211, Entry 235, Box 3, File "History--Jan. 1941.

⁵³ For copies of the letters and accompanying reports, see TWI, "The Job Relations Training Program" (1 Oct. 1943) [mimeo, 50 pp.]. NA2, RG 211, Entry 235, Box 4, File "History-1943." The committee also urged that "key men in the direction of group effort" in industry should be exempted from the draft. On the work of the subcommittee, see Fritz Roethlisberger to Walter Dietz, 24 Apr. 1941. [The three sets of recommendations of the subcommittee are attached to this letter.] NA2, RG 211, Entry 235, Box 3, File "History-April, 1941."

Hillman then asked TWI to formulate a training plan. In mid-June 1941, TWI called a special conference, chaired by Bill Conover, to consider how to approach the problem of supervision. Fritz Roethlisberger and Elton Mayo, colleagues in the Graduate School of Business Administration at Harvard University, attended.⁵⁴ After the meeting, Walter Dietz of TWI asked Roethlisberger to devise "a method of attack and plans for experimental work."⁵⁵

In 1941, Roethlisberger was forty-three years old. Born in New York, he had studied science as an undergraduate at Columbia, then switched to engineering administration at MIT. Unhappy with engineering as a career, he began graduate work in philosophy at Harvard but lost interest in this subject as well. At this point he came under the spell of Elton Mayo of Harvard Business School and, once more, changed his career. He was employed as Mayo's research assistant and eventually became Mayo's colleague on the faculty at Harvard. In 1931, he spent the summer at the Hawthorne plant conducting interviews with supervisors. Subsequently, both he and Mayo published books that popularized the Hawthorne experiments, emphasizing human relations and the importance of the work group. The Hawthorne experiments were immensely influential in the management literature of the 1940s and 1950s, which stressed the importance of human relations in the workplace.⁵⁶

In mid-July, Roethlisberger responded to the request from Dietz. He wanted to get an overview of the problems faced by supervisors in rapidly expanding defense industries and to see if those problems could be "diagnosed and analyzed in terms of specific training requirements." More specifically, he wanted to find out the particular problems faced by supervisors, the methods used to select and evaluate supervisors, and the type of training given to them. As a preliminary step, Roethlisberger wanted to assess the level of cooperation he could expect from industry by making a formal, government-sanctioned survey of a number of defense plants. A final research program could then be drafted that would involve selecting five or six plants in the East and a similar number in the Midwest and Far West. Teams would then be sent to each plant to interview supervisors, new workers, and managers responsible for hiring and training supervisors. Out of this investigation, Roethlisberger hoped that some useful generalizations would arise.⁵⁷ He had outlined a very broad approach.

⁵⁴ Harvard Business School would subsequently become deeply involved in offering on-campus management courses to assist the war effort. See Jeffrey L. Cruikshank, *A Delicate Experiment: The Harvard Business School, 1908-1945* (Boston, 1987), ch. 5. However, Cruikshank makes no mention of the role played by the Business School in the development of the TWI job relations program. Roethlisberger makes only very brief mention of his involvement with TWI. See F. J. Roethlisberger, *The Elusive Phenomena: An Autobiographical Account of My Work in the Field of Organizational Behavior at the Harvard Business School* (Boston, 1977), 87-9.

⁵⁵ Walter Dietz, "The Job Relations Training Program: Report to the National Academy of Sciences" (1 Oct. 1943), 1, in TWI, "The Job Relations Training Program" (1 Oct. 1943) [mimeo, 50 pp.], NA2, RG 211, Entry 235, Box 4, File "History-1943*"; [Roethlisberger], "Stages in the Development of a Study on Problems of Supervision in Connection with the Training Within Industry Branch of the Office of Production Management" [n.d.; n.s.; 2 pp.], Baker Library, Harvard University, Roethlisberger Papers, Carton 3, File "32: Training Within Industry-Survey." At the end of June 1941, Dietz spent two days with Roethlisberger, at Harvard, discussing details of the project. This document also makes clear that Roethlisberger was careful to keep Dean Donham, Elton Mayo, and other senior colleagues in the Graduate School of Business Administration fully informed of his activities.

⁵⁶ See Jacoby, *Modern Manors*, esp. 220-8. On Roethlisberger's intellectual development, see Gillespie, *Manufacturing Knowledge*, 134-5.

⁵⁷ Roethlisberg to Dietz, 18 July 1941 (quote). NA2, RG 211, Entry 235, Box 3, File "History-July, 1941"; "Meeting on Development of TWI Program on Supervision" (29 July 1941) [2 pp.], Baker Library, Harvard University, Roethlisberger Papers, Carton 3, File "32: Training Within Industry- Survey."

For the initial survey, Roethlisberger visited some fourteen plants in New England. With few exceptions, he found management uninterested and uncooperative. However, he was struck by the array of problems facing plants that had expanded from around 500 employees to over 1,000. At the beginning of October, Roethlisberger reported that he wished to spend the next three months studying the human problems associated with the rapid expansion of such medium-sized defense plants, which involved a shift from a familial structure to a more rational and formal organizational structure. He also wanted to confine the study to the New England area. His aim was now to investigate and report on the whole area of human problems arising from such expansion, "regardless of their immediate and direct application to questions of selecting and training supervisors."⁵⁸

The Struggle Over Job Relations Training

While willing to encourage the broad research program proposed by Roethlisberger, the desirability of a short, intensive course for supervisors and foremen remained uppermost in Walter Dietz's mind. On August 28, he had written to Roethlisberger, asking him, in addition to his more general study of supervision, to "turn over in your mind" the possibility of developing "a ten-hour intensive course of instruction for lead men, gang bosses and foremen." Diet wanted to develop a short course that would follow on from the TWI job instructor-training program recently adopted by TWI national headquarters. He suggested that this could be an opportunity "to work in some of the case material on supervision for green supervisors that you and I have talked about." Dietz concluded by saying that, in his personal view, much of the TWI material released to date had overemphasized technical aspects: "Now let's see what we can do to catch up on the human relation side of supervision."⁵⁹

Roethlisberger, who was actively engaged in the early phase of the projected survey of defense industries, did not reply for over a month. However, in early October, drawing on the case-study method embedded in the teaching practice of Harvard Business School, he suggested a course organized around ten realistic case studies "of human situations with which a foreman in his daily normal activities has to deal." He stipulated that the cases should be prepared by people familiar with both the work situation and the language of the factory and that they should cover certain basic routines and eventualities: selection and placement of new workers; transfer, promotion, or upgrading of individuals; handling of grievances; adaptation to major changes in the plant; the conduct of company organization and policies; and occasions that required the foreman to "size up the situation." The emphasis was to be on thinking in terms of particular situations rather than on abstract words, on persuading people to talk about issues that were important to them, and on listening carefully to what people said. The course needed to encourage the foreman to analyze not just the technical aspects of a problem but the "hopes, fears, sentiments" that a worker brings to the job "because of his past experiences and conditioning," together with the "social demands" the job placed on the individual. In his conclusion, Roethlisberger commented: "it would be important that the 10 cases would be taught

⁵⁸ Roethlisberger to Dietz, memo: "The future for the next three months" (1 Oct. 1941, and attached "Summary Reflections Underlying our Proposed Study" [1 p. J). NA2, RG 211, Entry 235, Box 2, File "Harvard University." See also: Roethlisberger to Dietz, memo: "Progress, 26 Sept. 1941 [5 pp.], 3. NA2, RG 211, Entry 235, Box 2, File "Harvard University." See also Roethlisberger, *The Elusive Phenomena*, 88

⁵⁹ Dietz to Roethlisberger, 28 Aug. 1941. NA2, RG 211, Entry 235, Box 2, File "Harvard University."

with a breadth of understanding and not in a parrot-like fashion.”⁶⁰ On October 13, 1941, at a meeting with Dietz and Conover, Roethlisberger and John B. Fox, his assistant, spent the afternoon discussing plans for a course designed "to deal primarily with helping first line supervisors to obtain the maximum amount of cooperative effort from the employees working under them."⁶¹

At this point, chance intervened. In late October, Roethlisberger, who had begun work on the projected foreman's training course, became ill and was advised by his doctor to take a month of complete rest.⁶² John Bayley Fox, a thirty-five-year-old member of the research staff at Harvard Business School who had been working with Roethlisberger in the defense-plant survey, contacted Dietz and offered to complete the assignment. He had Roethlisberger's support and added that he could enlist the help of other members of the department. Dietz accepted his offer. Roethlisberger, whose doctor had also advised him to reduce his workload once he recovered, subsequently became a consultant for the project. Thus the burden of developing the course fell on Fox. The two remained in touch, as Fox continued to solicit advice from Roethlisberger and to keep him apprised through regular reports.⁶³

The initial course (Version I), which Fox produced, reflected the human relations approach: it emphasized that employees were human beings, that they were all individuals, and that it was important to discover how they felt about issues. Paired case studies illustrated situations that were handled well and poorly by supervisors. Dietz was aware of disagreement within the TWI organization about what the course should cover. However, he decided to gamble on the acceptance of a course that mainly reflected the Harvard group's academic orientation.⁶⁴

Opposition was not long in forming. At a meeting in Washington, on December 8 and 9, 1941, as the nation reeled from the Pearl Harbor attack, Fox presented his first draft of the "Foreman Training Course" to a group of senior TWI officers. Mike Kane, one of the Four Horsemen, was bitterly opposed to the proposed course. Fox noted that Kane's response to the draft proposal was quite personal, as he stated that it "was not the way he handled people and sometimes saying that no foreman handled people that way." Kane objected to the case material because it did not

⁶⁰ Roethlisberger to Dietz, memo: "10-hour course of instruction for foremen," 3 Oct. 1941. NA2, RG 211, Entry 235, Box 2, File "Harvard University." On the development of the case method at the Harvard Business School see: M. P. McNair, ed., *The Case Method at the Harvard Business School: Papers by Present and Past Members of the Faculty and Staff* (New York, 1954).

⁶¹ [John B. Fox], "Summary of Conferences October 13 and 14, 1941" (2 pp.), Baker Library, Harvard University, Roethlisberger Papers, Carton 3. File "32: Training Within Industry-Survey." The same document, with a covering note from Fox to Diet dated 21 Oct. 1941, is contained in NA2, RG 211, Entry 235, Box 2, "Harvard University."

⁶² In his autobiography, Roethlisberger refers to a nervous breakdown. In 1942, he spent April to September at a farm in Vermont, "a half-way house for mentally ill persons." and returned to Harvard fully "cured." See Roethlisberger, *The Elusive Phenomena*, 89-92.

⁶³ John B. Fox to Dietz, 29 Oct. 1941; Roethlisberger to Dietz, 28 Nov. 1941. NA2, RG 211, Entry 235, Box 2, File "Harvard University." John Bayley Fox was born in 1906 and came to the Business School in the late 1930 as a graduate student. Mayo had obtained a special grant from the Rockefeller Foundation to cover his fellowship. See Gillespie, *Manufacturing Knowledge*, 244. He subsequently became a member of the research staff and, in 1944, was an instructor in industrial research in the Business School. He served as assistant dean and was later director of overseas relations. See Melvin T. Copeland, *And Mark an Era: The Story of the Harvard Business School* (Boston, Mass., 1958), 352; Roethlisberger, *The Elusive Phenomena*, 76. See the Roethlisberger Papers, Baker Library, Harvard University, for the progress reports made by Fox.

⁶⁴ For example, at a meeting of TWI district representatives in November, there was talk of developing a course "concerned with handling people." However, there was no consensus on the focus of such a course: suggestions ranged from a "Dale Carnegie for the foreman" to "how to handle emotions." See [John B. Fox], "Meeting of District Representatives Washing. ton. 11 Nov. 1941 n.d.: n.s.: 2 DD. . Baker Library. Harvard University. Roethlisberger papers. Carton 3. File "29: Training Foremen-10 hour course -1941." On Version I of JRT, set TWI Final Report. 210.

conform with his own particular experience and therefore "must be untrue."⁶⁵ The following week, Fox returned to Washington to discuss the course with Conover, who had not been at the earlier meeting. When he arrived, he discovered that a second version of the course had been written "to meet the objections of Kane." This version was then presented to a small group of senior TWI officials, who criticized it as "flimsy" and lacking in structure. Fox thought the new version was unworkable. However, there now existed two versions of the proposed course: the Cambridge version and the Washington version. It was an inauspicious beginning. Fox returned to Harvard somewhat depressed "but with the suggestion [from Dietz] that I try out the Cambridge version ... as soon as possible."⁶⁶

In January 1942, Fox tried out the Cambridge version of the course at the Simplex Wire and Cable Company in Cambridge. The trial group was composed of fourteen experienced foremen who met for five two-hour sessions over a two-week period. Four of the five sessions followed the revised Cambridge outline. The case material worked well and, in the fourth session, Fox experimented by asking the foremen to bring in cases of their own. This innovation was a great success. The foremen were very enthusiastic, and Fox concluded his report to Dietz with the comment: "It works!" Some minor changes were suggested for the case material, but no major revisions were needed.⁶⁷ Fritz Roethlisberger, who had attended some of the sessions at Simplex, was also impressed and wrote to Dietz expressing his own clear preference for the Cambridge version.⁶⁸ Dietz then arranged to have another six TWI trainers (who had already given the job-instruction course) try out the course in various plants around the country. He sent them both the Cambridge and the Washington versions and urged them to present both. A meeting of trainers was scheduled for February 26 to finalize the course. The February conference revealed substantial disagreement about the new course. One trainer, who had taught the material at the North American Aviation Company, wanted the focus to be on a few basic principles that the foremen taking the course would be drilled in constantly. What supervisors needed in the present circumstances, he felt, were "a few concrete pointers on just what to do [sic] when situations come up." This view had a lot of support: during the conference, participants insisted that the course should instruct "how to size up situations" and should give foremen practice in dealing with large numbers of "quickies," or simple problems designed to elicit a straightforward, predictable reply.⁶⁹ Fox wanted to use longer, more open-ended case studies that gave beginners an opportunity to see "how someone else handled a situation and [permitted them to criticize or praise] the method used."⁷⁰ He opposed telling foreman exactly how to respond to situations, for fear that spelling out instructions would result in nothing more than "meaningless rituals" that

⁶⁵ [John B. Fox], "Report on Washington Trip, December 8-9, 1941," [n.s., n.d.; 3 p.]. Baker Library, Harvard University, Roethlisberger Papers, Carton 3, File *29: Training Foremen 10-hour course -1941.

⁶⁶ John B. Fox]. "Report on Washington Trip, December 14-16, 1941" [n.s., n.d., 1 p.]. Baker Library, Harvard University, Roethlisberger Papers, Carton 3, File 29: Training Foremen 10-hour course- -1041. For the comments on the second version. see Fox to Frances Kirkpatrick 20 Dec. 1041. NA2, RG 211, Entry 235, Box 2, File "Harvard University." Copy also in Roethlisberger Papers.

⁶⁷ Fox to Dietz, 4 Feb. 1942 (quote); [John B. Fox], "Report on Washington Trip, February 9 and 10, 1942* [2 pp.], 1. Baker Library, Harvard University, Roethlisberger Papers, Carton 3, File "29: Training Foremen 10-hour course-1941." The management at Simplex was also enthusiastic about the course. see: K .R. Boles. Personnel Director. Simplex Wire a Cable Co., to John B. Fox, 7 Feb. 1942 [copy], NA2, RG 211, Entry 235, Box 2, File "Harvard University.

⁶⁸ "Fritz" [Roethlisberger] to Dietz, 25 Feb. 1942. NA2, RG 211, Entry 235, Box 2, File "Harvard University."

⁶⁹ H. Musgrave, "Some Observations on the Job Relations Training Conference held in Washington, February 26-28, 1942" (1 Mar. 1942). Attached to: [Fox], "Washington Trip, February 26-27, 1942" [4 pp.]. Baker Library, Harvard University, Roethlisberger Papers, Carton 3, File "29: Training Foremen 10-hour course--1941.

⁷⁰ Fox to Kirkpatrick, 4 Mar. 1942. NA2, RG 211, Entry 235, Box 2, File "Harvard University."

would not assist him "along the road to treating his employees as human beings."⁷¹ As a result of suggestions made at the conference, a third version of the course (Version III) was produced. Fox worried about the direction the course had begun to take. "Originally, it seemed to me, we were working on a course which was to help the foreman gain the co-operation of the men under him. We now seem to be working on a course that is essentially trying to teach the foreman 'how to size up situations,' and [only] incidentally bringing people into the picture."⁷² A trial of the third version, in which Fox participated, was then held in Chicago at the beginning of April. With some relatively minor amendments, this became Version III Revised, which Fox was prepared to accept.

A conference of senior TWI trainers, including Dietz, Kane, and Conover, was then convened in Chicago to analyze the results of the try-out. However, there was little analysis of Version III Revised. On the afternoon of the first day, Conover spent the whole time "writing furiously," and at 5:00 P.M. he presented the meeting "with a new outline [Version IV] for the foremen's training course," which reflected a more didactic method. This became the major topic of discussion. However, the new version failed to generate any consensus within the group. One TWI district representative, who lined up behind Conover, felt that "there could be no combining without losing the benefits of [the Conover] approach." Fox, who was completely exasperated, stated that "any attempts to combine the two approaches would be abortive and ... you would wind up with a mess that would be neither fish nor fowl." Dietz, who espoused Fox's more academic view, was unable to override his colleagues, Kane and Conover.⁷³ The meeting ended with no resolution of the problem.

Fox believed there were a number of reasons for the opposition shown by Conover and Kane. Despite their long experience in industrial training, neither had been consulted in the early stages, when the job relations course was being developed, which must have rankled. Both men emphasized practice, rather than theory. Conover made no attempt to hide his conviction that there was "too much 'ology in the Cambridge course and not enough 'horse sense.'⁷⁴ On the other hand, Fox believed that neither Kane nor Conover could cope with the case-method approach. Kane, he felt, could talk for hours about the content of the case studies but, when he generalized, "it was always one of the well-worn generalizations that sometimes was applicable and sometimes not. In short, the capacity to generalize in terms of the material that was submitted in the cases the foremen brought in, or in terms of the cases in the course itself, was completely lacking."⁷⁵ As far as Fox could see, the resistance shown by Kane and Conover was based on

⁷¹ Fox to Dietz, 3 Mar. 1942. NA2, RG 211, Entry 235, Box 2, File "Harvard University."

⁷² Fox to Kirkpatrick, 11 Mar. 1942. NA2, RG 211, Entry 235, Box 2, File "Harvard University."

⁷³ [John B. Fox], "Chicago Trip (Training Within Industry) March 29 to April 7 [1942]" [4 pp.], 4 (quote); [John B. Fox], "Notes on Baltimore Trip. April 14 to April 18, 1942" [6 pp.], Baker Library, Harvard University, Roethlisberger Papers, Carton 3. File "29: Training Foremen 10-hour course -1941"

⁷⁴ [John B. Fox], "Chicago Trip (Training Within Industry) March 29 to April 7 [1942]" [4 pp.], 4. Baker Library, Harvard University, Roethlisberger Papers, Carton 3, File "29: Training Foremen 10-hour course 1941." Fox added that he thought that part of that resistance was just "anti-Harvard" He had detected in Kane's earlier attacks on the Cambridge version a resentment at something which "had been ... cooked up entirely at Harvard." See [John B. Fox], "Report on Washington Trip, December 8-9, 1941," 1. Baker Library, Harvard University. Roethlisberger Papers. Carton 3. File "29: Training Foremen 10-hour course - 1941."

⁷⁵ [John B. Fox], "Notes on Baltimore Trip, April 14 to April 18, 1942" [6 pp.], 6. Baker Library. Harvard University, Roethlisberger Papers, Carton 3, File 29: Training Foremen 10-hour course--1941."

their belief that there was "no contribution that research or 'science' can make in the foreman training area."⁷⁶ Such an attitude left little room for compromise.

Unexpectedly, the stalemate was broken by events in New Jersey. Glenn Gardiner, the TWI district representative for New Jersey who had pioneered the job-instruction and job-methods programs, had also written his own draft version of a job-relations course, which he had just tried out at the Picatinny Arsenal. As Fox commented, "This meant that the pressure was really on to turn out something from Washington."⁷⁷ Dietz persuaded Fox to return to the capital to produce a version of the course to which all could agree. When Fox arrived in the city in late April, he was greeted with a *fait accompli* in the form of Version V. His colleagues applied considerable pressure to persuade him to agree to it.⁷⁸ Although willing to accept the concluding three sessions, which still contained "some of the original case material," Fox refused to endorse the first two. The new course, he felt, was attempting to do too much: instead of developing "a few simple skills ... [it] attempts the communication of a variety of techniques at a number of levels," with the result that the viewpoint being expressed lost all consistency.⁷⁹ Realizing that there was no point in remaining at the conference, he decided to leave, despite pleas from Dietz and from his assistant, Frances Kirkpatrick. The Washington office pressed ahead with field trials of Version V over the following two months. Fox was so concerned about its contents that he even debated whether to sever the connection between the university and TWI altogether, because the new course "seemed to do violence in many respects to our own conceptual scheme." He did, however, agree to participate in the final evaluation meeting to be held after the trials.⁸⁰

In May, a special conference of TWI district directors met to evaluate Version V. Once again, there was no agreement. Some directors favored a "standardized procedure approach-where, in five two-hour sessions, five separate common problems would be discussed and specific rules for handling them would be presented. Topics might be induction, wages, safety, complaints and grievances, discipline." Other members of the group wanted to retain the original Cambridge design and emphasized a "skill approach-which, when acquired through practice, would be useful to the supervisor in sizing up everyday situations and getting a basis for steps to take in working with people he supervises." The only real agreement arising from the conference was that "the confusion which now seems to result from the attempt to use both the procedure and the skill methods in the same ten-hour unit will have to be eliminated." Although a majority of the conference participants favored a course based on "standardized rules rather than a method," division over the issue was so intense that Dietz was able to get the attendees to agree that the course would not be released until it was endorsed by TWI headquarters.⁸¹

⁷⁶ [John B. Fox], "Chicago Trip (Training Within Industry) March 29 to April 7 [1942]" [4pp.], 4. Baker Library, Harvard University, Roethlisberger Papers, Carton 3, File "29: Training Foremen - 10-hour course - 1941."

⁷⁷ [John B. Fox], "Notes on Washington Trip of April 22 to April 25 [1942]" [4 pp.], 1, 3. Baker Library, Harvard University, Roethlisberger Papers, Carton 3, File "29: Training Foremen - 10-hour course - 1941."

⁷⁸ A fourth version of the course had been produced incorporating Conover's suggestions and had been tried out in Baltimore. The tryout had shown that the course needed substantial overhauling, but there was no agreement on how to proceed.

⁷⁹ John B. Fox, "Memorandum on Controlling Volunteer Cases Brought in by Foremen (April 27, 1942)" [4 pp.], 1.NA2. RG 211. Entry 23s. Box a. File "History-April 1942." See also [John B. Fox], "Notes on Washington Trip of April 22 to April 25 [1942]" [4 pp.], 1, 3. Baker Library, Harvard University, Roethlisberger Papers, Carton 3, File "29: Training Foremen 10-hour courses - 1941."

⁸⁰ [John B. Fox], "Notes on Washington Trip of April 22 to April 25 [1942]" (4 pp.), 1-2. Baker Library, Harvard University, Roethlisberger Papers, Carton 3, File "29: Training Foremen - 10-hour course - 1941." Frances Kirkpatrick was a graduate of Ohio State University who had experience in publicity work for Procter & Gamble in Cincinnati before coming to Washington. She worked in the TWI headquarters staff throughout the war years. See Dietz with Bevens, *Learn by Doing*. 102-3

⁸¹ TWI Final Report, 214.

Dietz was determined to produce an acceptable, and workable, job-relations program. In June 1942, he convened a meeting of selected members of the headquarters staff and a few industrial representatives to review the latest version of the course. The group reduced the number of case studies to three (one for each of the first three sessions, with the remaining two sessions open for problems presented by supervisors themselves) and produced a new card outlining four "steps" and five "key points." The new course was then tried out in Chicago in August and in Indianapolis in September. Three subsequent versions [Versions VIII-X] incorporated minor amendments, including one that required the supervisor to state what he hoped to accomplish before the particular problem he wished to introduce could be discussed. As the TWI Final Report commented: "This 'lifts the sights' for many supervisors who have been thinking in terms of 'How can I discipline him?' instead of 'How can I keep him on the job?'" In December 1942, the final version (Version X) was ready for release. Dietz officially launched the job-relations program in February 1943 at the Chicago meeting of the personnel division of the American Management Association.⁸²

The final program represented a clear victory of the Cambridge approach to job relations (JR). At the official launch, Dietz commented that the members of the TWI senior group, whose experience with industrial training went back to World War I and even earlier, had "Learned more about training in the last two years than we did in the previous years of our lives." He then discreetly acknowledged the Harvard group's contribution by remarking that the most innovative of the new forms of industrial training was a fresh "skill approach" to the problem of supervisory training, which was reflected in the new JR program.⁸³ Eight months later, in a formal report to the National Academy of Sciences, which had assisted in the early phase of the program's development, Dietz was more direct. He clearly outlined the basic philosophy of the final version:

No rules or standard answers are suggested, and neither the Trainer nor any members of the group gives a supervisor the answer to his problem or makes decisions for him. Instead, the ten hours are spent on learning and using a method by which answers can be found by the supervisor concerned. He develops confidence in his own skill and resourcefulness in using it.⁸⁴

Roethlisberger and Fox would have applauded that statement. The course provided no simple, rote answers to problems facing foremen. In late 1942, when Fox was shown the penultimate version of the job-relations program, he was agreeably surprised and pronounced it "an excellent job."⁸⁵ The strategy advocated by both Roethlisberger and Fox had ultimately prevailed. In April 1943, Dietz singled Fox out for his important part in developing job relations and for the social science concepts he had contributed, particularly the ideas drawn from the Hawthorne experiments.⁸⁶

Moreover, Dietz managed to achieve consensus on the final program without rupturing relations within the TWI group. Mike Kane, who had attended the official launch of the JR

⁸² Ibid., 215 (quote), 206.

⁸³ Walter Dietz & M. J. Kane, "Presentation of Job Relations Training" (American Management Association, Palmer House, Chicago, 12 Feb. 1943), [transcript, 29 pp.], 2, 3. NA2, RG 211, Entry 235, Box 1, File "American Management Association."

⁸⁴ Dietz, "The Job Relations Training Program: Report to the National Academy of Sciences, October 1, 1943," 26. A virtually identical description of the basic philosophy is also included in TWI Final Report, 218.

⁸⁵ Fox to Kirkpatrick, 24 Nov. 1942. NA2, RG 211, Entry 235, Box 2, File "Harvard University."

⁸⁶ Dietz to Fox, 24 Apr. 1943. NA2, RG 211, Entry 235, Box 2, File "Harvard University." This letter was solicited by Fox for a reference. See Fox to Dietz, 4 May 1943, in same file.

program in February, even demonstrating it to the audience, made clear his support for the final version. He generously described the new program as "just a simple little profound method" designed to force supervisors "to think more clearly, evaluate more soundly, and check their own actions." Bill Conover, who was also at the official launch, publicly admitted his negative contribution to the development of JR: "I had no constructive suggestions, but I was sure that something in it was not right." However, like Kane, he had been converted to the JR program: "In the last few weeks I have had an entire change of point of view."⁸⁷ Dietz, in a reference to the bitter internal struggle, acknowledged that the JR program had encountered intense criticism throughout its evolution, from both acknowledged "experts" with "hands-on" experience in industry and from theorists. However, he believed that the critical factor in deciding what was to be included or rejected in the program had been "what proved to be really helpful to the first-line supervisor."⁸⁸ Feedback favoring the Cambridge methods from the extensive tryouts across the country had been, he suggested, the dominant influence in shaping the final version and in persuading Kane and Conover to go along with it.

Job relations proved to be much more popular with management than job methods. Dietz, himself, was surprised at its popularity. In October 1943, he commented: "The ready acceptance of both the content and the method came as somewhat of a surprise but gave further evidence of a widespread need."⁸⁹ By February 1944, after a full year of operation, 250,000 supervisors had received basic instruction in job relations. However, the most popular of the TWI programs with management remained job instruction. Given the continuous influx of new workers into industry throughout the war, any course that assisted supervisors with training inexperienced people to carry out skilled operations quickly was obviously valuable. By the end of the war, over one million job instruction certificates had been issued.

Job relations was the next most popular program, with just under half a million certificates issued. Job methods was the least popular, with less than a quarter of a million supervisors obtaining certificates. During the war, TWI serviced over 16,000 plants: of that total, 60 percent used only one program (usually JIT), 22 percent used two programs, and only 14 percent used all three programs.⁹⁰ Moreover, taking an individual TWI course did not necessarily guarantee management's commitment to the promise of greater efficiency and productivity. TWI was alarmed to discover managements reverting to their previous practices after the initial enthusiasm engendered by a TWI course had waned. Indeed, TWI headquarters was eventually forced to reorganize its entire approach to industry in order to keep pressure on management to utilize fully the promise of TWI programs.⁹¹

Job relations also proved to be very popular within the union movement. Shortly after JRT was launched nationally in the winter of 1943, union leaders began to see its potential value for shop stewards and other union officers. In the fall of 1943, union stewards at the Follansbee Steel Corporation in West Virginia were included with supervisors in the JR training session. The experiment was so successful that the plant manager urged TWI headquarters to promote the program for union use. In January 1944, TWI made the JR program available to union

⁸⁷ Dietz & Kane, "Presentation of Job Relations Training," 18 (Kane), 27-8 (Conover).

⁸⁸ Dietz, "The Job Relations Training Program: Report to the National Academy of Sciences (October 1, 1943)," 6. See also TWI Final Report, 206.

⁸⁹ Ibid., 4-5.

⁹⁰ TWI Final Report, 219-21, 127-33.

⁹¹ Ibid., esp. 60-75, 166-71.

stewards.⁹² In March 1944, the United Automobile Workers gave permission for TWI to publicize its endorsement of the program.⁹³ Although some union representatives liked the idea that union stewards were getting exactly the same program as management's supervisors, others felt that this factor would damage the program's appeal. TWI responded by developing a special union job-relations program, which removed all references to supervision and management and focused on problems facing stewards.⁹⁴ By August 1945, six thousand union stewards had taken the training course in either job relations or union job relations.⁹⁵ The Independent Union of Marine and Shipbuilding Workers of America (CIO) even hired one of the TWI trainers as its full-time staff man to train and follow up the work of the union stewards.⁹⁶

Conclusion

The development and implementation of various TWI programs, particularly the job-relations program, clarifies a number of points.

First, the impetus behind the TWI programs did not come from management, but from representatives of the new profession of personnel administration. Without the drive and cohesion of this group, it is likely that industrial training during the war would have languished, with very serious effects on industrial production. As Sanford Jacoby has argued, in the early twentieth century personnel managers had aspired to a role whereby they would represent "neutral forces for change within the firm." That vision had receded by the 1950s as personnel managers came to think of themselves as part of management. The TWI program in World War II was the last spasm of that earlier aspiration. It embodied the best attributes of that early twentieth-century ideal "of a scientific, neutral approach to personnel management" and reflected "the independent profession that Brandeis and the Taylorists had hoped it might prove to be."⁹⁷

Second, far from embracing either the deskilling potential or the manipulative possibilities in the TWI programs, it is abundantly clear that management was largely unenthusiastic, remaining lukewarm and unresponsive until virtually forced to participate. The job-methods program, which, in theory offered management significantly more control over the work process, met with a lukewarm reception. By contrast, the overwhelming majority of the unions, which might have been expected to denounce the TWI programs, embraced the training, in part because they recognized its very positive aspects.

Third, there is a puzzling disjuncture between the attitude of contemporaries toward the "human relations" thrust of TWI's job-relations program and the subsequent interpretation placed upon it. At the close of the war, TWI programs were very popular: they had permeated large sections of

⁹² C. R. Dooley to Arthur Jacobs, ed., Executives' Labor Letter, 10 Aug. 1945. NA2, RG 211, Entry 235, 9, File "Unions-1945." The United Automobile Workers of America (AFL) incorporated UR into their international plan, which was adopted in June 1945.

⁹³ Results of First All-Labor Institute on ~. R. held at Flint [Michigan] from March 20 through March 26 [1944]" (typescript, 4 pp.; n.s.) NA2, RG 211, Entry 235, Box 4, Folder "History-1944.

⁹⁴ "Additional Job Relations History" [typescript, 1 p.; n.s., NA2, RG 211, Entry 235, Box 4, Folder "History-1944." See also Training Within Industry Report, 1940-1945, 220-1

⁹⁵ C. R. Dooley to Arthur Jacobs, ed., Executives Labor Letter, 10 Aug. 1945. NA2, RG 211, Entry 235, Box 9, File "Unions-1945." The United Automobile Workers of America (AFL) incorporated UJR into their international plan, which was adopted in June, 1945.

⁹⁶ "History of District One, TWI" [New England District], [typescript, 17 pp.; n.s., n.d.], 13-14. Attached to: H. K. Bragle to C. R. Dooley, n.d. [mid-1945?]. The history was a response to Dooley's circular letter of 31 May 1945.

⁹⁷ Jacoby, *Employing Bureaucracy*. 274. For a critique of the scientific pretensions of "human relations" approach embodied in the JR program, see Jacoby, *Modern Manors*. 220-8

industry, the defense forces, and public service. In 1945, Dooley and Dietz were both awarded the initial prize given by the Society for the Advancement of Management for their work in promoting human relations in the TWI program, "a sign of the widespread acceptance among industrial managers of the need for supervisory training in human relations."⁹⁸ Some cutting-edge firms, like Sears, began to market their own internal training programs in human relations to industry. Kodak, which had experimented with foreman training programs in the 1930s, produced a series of eight training films for sale to other companies in the late 1940s, which were essentially "an extension of the War Manpower Commission's highly successful Training Within Industry ... plan." In addition, a number of private consulting firms, including some that were established by academic behavioral scientists who retained their connection with their universities, moved into the business of selling "human relations" services to industry.⁹⁹

However, in the 1950s there was a backlash against the popularity of the human relations approach. Unions were suspicious of management's motives in applying behavioral science to the workplace.¹⁰⁰ Fears about liberty and democracy and suspicions about the totalitarian tendencies of the human relations approach in industry provoked a broader critical reassessment among liberals.¹⁰¹ Daniel Bell, in an essay published in 1947, criticized the approach for its conservative acceptance of the industrial system, "for psychologizing the worker while ignoring the institutional and power relationships of industry," and for assuming the existence of a community of interest between worker and management, rather than a system of conflicting interests. C. Wright Mills pointed to the manipulative aspects of human relations. Mayo was attacked for his elitist and antiunion views.¹⁰² In 1960, Loren Baritz, in his very influential historical survey of the social sciences in American industry, emphasized the manipulative aspects of their methods, arguing that personnel counseling could result "in labor losing control of the nature and condition of work" and unions becoming irrelevant. Echoing the worst fears of the critics, Baritz argued that management had now found "a most devastating weapon to employ in its continuing struggle for power."¹⁰³

Yet, in the documentary record of the protracted wartime struggle within the TWI organization over the job-relations program, there is no mention of the program's manipulative possibilities that featured so prominently in the critiques of the 1950s and 1960s. The bitter internal struggle of that earlier time revolved around how the course was to be taught-whether it was to be a

⁹⁸ Gillespie, *Manufacturing Knowledge*, 235. TWI was one of a number of ways in which "the federal government helped the behavioral sciences become an acceptable instrument for administering modern bureaucracies." Probably the most widespread application of the behavioral sciences in the postwar period was the application of selection tests in industry. Although World War I had been important, the World War II experience had more lasting influences. See Jacoby, *Modern Manors*, 225-7.

⁹⁹ Jacoby, *Modern Manors*, 225. In the late 1930s, Kodak had developed a series of training films in association with the Vocafilm Company. When initially established, TWI experimented with using those films as part of its program but decided, mainly on technical grounds, not to pursue the idea.

¹⁰⁰ See, for example, the clash between Walter Reuther, president of the UAW, and General Motors in 1947 and again in 1955. Jacoby, *Modern Manors*, 245-6.

¹⁰¹ The world of social science in the 1950s and 1960s was much influenced by concepts such as power elites, conformity, and hidden psychological manipulation, which were thought to characterize American society. Sociologists, in particular, popularized many of these ideas. See, for example, David Riesman et al., *The Lonely Crowd* (New Haven, 1950); C. Wright Mills, *The Power Elite* (New York, 1956); William H. Whyte, *The Organization Man* (New York, 1956); Vance Packard, *The Hidden Persuaders* (New York, 1957); idem., *The Status Seekers: An Exploration of Class Behavior in America and the Hidden Barriers That Affect You, Your Community, Your Future* (New York, 1959).

¹⁰² For discussion, see Gillespie, *Manufacturing Knowledge*, 257-61. Gillespie notes that there was an element of defending disciplinary turf in some of the critiques. Economists and sociologists were the most vocal critics; social psychologists and applied anthropologists were the most vehement defenders.

¹⁰³ Baritz, *Servants of Power*, 116.

program built around rote memorizing of standard answers or around learning a genuine skill. In the end, the more academic Cambridge "skill" approach prevailed over the more "practical" approach initially favored by Kane and Conover and most of the TWI district representatives. The academic approach presumed that industrial workers were capable of more than mere rote learning. However, if there was some disagreement within TWI over the appropriate pedagogical methodology, there was none about the overall objective. Both sides saw the job-relations program not as a tool designed to manipulate the worker but as a powerful weapon in the struggle both to increase war production and to reform the workplace. Union leadership, more than management, recognized this reform potential in the programs. At the height of the war effort, during the official launch of the JR program, on February 12, 1943, Dietz caught this reformist thrust when he concluded his speech, somewhat rhetorically, with the statement: "Let us put down Lincoln's Birthday, 1943, as the time when we resolved to do something definite and specific to free this democratic spirit in our own plants, and to help make this country worth fighting for."¹⁰⁴ The job-relations program was a small step toward industrial democracy, but it was a giant step away from the "drive" system and toward a more human workplace. Later critics emphasized the potential for abuse; contemporaries saw the reality of reform. In seeking to interpret the World War II experience, historians should be careful to try to understand the past on its own terms and not through the fears of a later generation.

¹⁰⁴ Dietz & Kane, "Presentation of Job Relations Training," 29.