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Divergent tracks: Korean Government Railways' employment and training systems under Japanese colonial rule, 1910–45

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Abstract

This study employs annual reports, time-series statistics, and internal training records of the colonial-era Korean Government Railways (KGR) to conduct a quantitative analysis of its labour management practices. It addresses the colonial characteristics associated with Japanese techno-imperialism beyond ethnic discrimination, revealing a dual-pronged labour strategy that adopted a Japanese government employee system to manage middle- and upper-level personnel and directly recruited on-site workers for the lower echelons. This deviates from the low rates of local employment in Western colonies, particularly self-governing British territories or integrated French territories. In contrast, KGR's employment practices demonstrated economic and ethnic inequalities. It predominantly made Koreans on-site labourers, whereas Japanese not only held similar roles, but also occupied upper- and middle-management positions. Worker mobility, particularly among Japanese employees, grew following the outbreak of war between Japan and the USA, leading to the mass external recruitment of Koreans and the expansion of internal education to alleviate labour shortages. Nevertheless, preferential treatment toward Japanese individuals, which had been in relative decline for promotion, wages, and admission rates to training schools, ultimately persisted. Understanding KGR's employment structure shows how colonisation mediated Korea's modernisation and imposed technical limitations on the management of local labour. National technological decolonisation thus required Koreans to further introduce external technologies after the end of Japan's imperial reign.

Keywords: internal training; Korean Government Railways; labour management

Introduction

The advent of railways revolutionised transportation with steam engines, fostering nationwide economic growth and, in some cases, extending national borders. This technological advancement simultaneously lowered and made tangible the costs of imperial domination. The dual nature of this modernisation is seen in how imperial powers began using railways to encroach on foreign territories while promoting domestic economic integration.¹ In essence, railway construction intertwined with the expansion of colonisation.²

¹ D. Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (Oxford and New York, 1981).

² Jae-Jeong Chung 鄭在貞, '20 segicho hangug munhag'in ui cheoldo insig gwa geundae munmyeong ui suyong taedo: Choe Namseon, Lee Gwangsu, Ryeom Sangseob, Lee Giyeong 20 세기초 한국문학인의

The Japanese built Gyeong'in Railway as Korea's inaugural railway, and the Governor-General of Korea (GGK) and Japanese corporations oversaw its primary and branch lines.³ Japan gained imperial status after acquiring Taiwan from Qing China in the First Sino-Japanese War (1894–95) and expanded its sphere of influence to encompass Korea, Manchuria, and Sakhalin during the Russo-Japanese War (1904–05).⁴ It also made a head start on railway construction from 1899 onwards and operated state-owned railways domestically and in Taiwan, Korea, and South Sakhalin.⁵ Prior to the Second Sino-Japanese and Pacific Wars (1937–45), Japan expanded its sphere of imperial influence alongside its railway network; Daqing Yang's notion of techno-imperialism, invoked in his analysis of Japan's telecommunications industry, also applies to its railways. The Japanese communications network of submarine cables, the wireless telegraph, and telephones, which extended into Northeast Asia and later into Southeast Asia, supported Japan's imperial expansion by facilitating its regional domination. As Yang says, it implemented the 'strategic practice of designing or using technology to advance empire-building goals'.⁶ In the era of modern imperialism, Japan and the Western powers made technological superiority the basis for maintaining colonial rule.

However, transferring technology from metropole to colony involves not only the physical relocation of equipment and methods, but also the diffusion of knowledge, including that of specific equipment or processes.⁷ In the context of railways, such diffusion involves recruiting local people as workers, implementing technical education, and disseminating academic knowledge. It also requires localisation, starting by embedding new technology into workforce operations.

The Korean Government Railways (KGR) expanded its routes as part of its 12-Year Plan (1927–38) and in the context of a series of wars.⁸ Its management also used a predominantly Japanese workforce to operate the railway. However, unlike the Western colonial railways, where hired locals formed over 90 per cent of manpower, the Japanese not only dominated KGR management, but also constituted the majority of workers, accounting for 60–70 per cent of manpower.⁹ Jun Uchida (2011) terms this a system of Japanese settler colonialism,¹⁰ but what specific employment structures were used to produce colonial-era engineers and technicians? Particularly, how did Japanese superiors facilitate the transfer of technology to their Korean subordinates?

The quantitative advantage of KGR's Japanese employees was highly unusual compared with the Western colonial railways. For example, locals in the Indian colonial railways accounted for more than 97 per cent of workers, even in middle management, except

철도인식과 근대 문명의 수용태도 : 崔南善 · 李光洙 · 廉想涉 · 李箕永 [Railroad perceptions and the acceptance of modern civilisation by Korean writers in the early 20th century], *Immun Gwahak 인문과학 [Institute for Humanities, University of Seoul]*, 7 (February 2000), pp. 163–204.

³ P. R. O'Donnell, *Seoul & Chemulpo Railroad: The First Railroad of Korea* (Hawaii, 2021).

⁴ J. P. DiMoia, 'East Asian empire and technology: imperial Japan and mobilizing infrastructure, 1868–1931', in *Empire in Asia: A New Global History; Volume Two: The Long Nineteenth Century*, (eds.) D. Brunero and B. P. Farrell (London, 2018), pp. 81–105.

⁵ Chaisung Lim 林采成, *Higashijia no naka no Mantetsu: Tetsudō teikoku no furontia 東アジアのなかの満鉄 : 鉄道帝国のフロンティア [The South Manchuria Railway in East Asia: Frontier of the Railway Empire]* (Nagoya, 2021).

⁶ D. Yang, *Technology of Empire: Telecommunications and Japanese Expansion in Asia, 1883–1945* (Cambridge, MA, 2010), p. 8.

⁷ Headrick points out that geographical technology transfer in this period required Western experts to export technology and non-Western importers to accept it. See D. Headrick, *The Tentacles of Progress: Technology Transfer in the Age of Imperialism, 1850–1940* (Oxford and New York, 1988).

⁸ Korean Government Railways in this article refers to 朝鮮国有鉄道, the colonial railway owned by the Governor-General of Korea under Japanese colonial rule.

⁹ Lim, *Higashijia no naka no Mantetsu*, pp. 558–60.

¹⁰ J. Uchida, *Brokers of Empire: Japanese Settler Colonialism in Korea, 1876–1945* (Cambridge, MA, 2011).

in accounting, engineering, and top leadership.¹¹ In contrast, very few Koreans in KGR served as middle managers. Japan's colonial approach, which differed from both Britain's policy of local autonomy and France's policy of integration,¹² was characterised by assimilation. Consequently, the analysis here assumes that the technical formation of the local population in Japanese colonies faced more difficulties. Previous studies focus only on the issue of ethnic discrimination in colonial Korea and overestimate the impact of wartime transformations. Jae-Jeong Chung, for example, argues that, despite ethnic discrimination, Koreans accumulated experience and technology on the one hand and acquired the ability to manage modern industry on the other, all while being enslaved or assimilated by Japanese imperialism.¹³ Byeong-Kwan Kim's examination of the development of colonial-era Korean engineers quantitatively demonstrates ethnic discrimination in KGR wages and salary increases.¹⁴ Only a few Korean-language works touch upon the colonial training of railway workers, such as the *Korean Government Railway College 100-Year History: 1905–2005*.¹⁵ Jae-Jeong Chung, a contributor to this volume, assesses that Koreans in the colonial railway grew their presence and skills enough to manage its operations in around 1945.

This study attempts to clarify the characteristics of KGR during the Japanese colonial period by quantitatively analysing how its labour management practices were influenced by technological imperialism and settler colonialism. This contributes to reconstructing the overall picture of railway management in the Japanese empire by relativising previous studies on the company's history. Japanese colonisation mediated modernisation in Korea, including technology transfers, which confined locals to colonial labour structures and ultimately hindered the process of technological decolonisation.

Earlier studies focus on the transformation during the Second Sino-Japanese and Pacific Wars and point out that, as the quality of the workforce continued to deteriorate, Koreans were recruited in large numbers to replace their Japanese counterparts who had been mobilised for the war. Although some received opportunities for promotion, the principle of favouring Japanese remained throughout.¹⁶ Hence, Chung neglects the wartime deterioration in the quality of the workforce and presents an incorrect historical picture of how Koreans became mid- to high-level technicians. At the time of national liberation, Koreans were not yet able to independently plan and operate the railways, and US railway units had to be deployed to direct Koreans in restarting railway operations after 1945.

¹¹ Railway Department, Government of India, *Report by the Railway Board on Indian Railways* (Delhi, 1905–38).

¹² Kanji Ishii 石井寛治, 'Mondai Teiki 問題提起 [Problem presentation]', *Shakaikeizaishigaku 社会経済史学 [Socio-Economic History]*, 51.6 (March 1986), pp. 705–19.

¹³ Jae-Jeong Chung 鄭在貞, *Ilje chimlyag gwa Hanguk Cheoldo, 1892–1945 일제침략과 한국철도, 1892–1945 [Japan's Invasion and Korean Railways, 1892–1945]* (Seoul, 1998).

¹⁴ Byeong-Kwan Kim 金秉觀, 'Ilje ha Joseon'in gisulja ui hyeongseong gwajeong gwa jonjae yangtae 日帝下朝鮮人技術者の形成過程과存在様態 [The Formation Process and Existence of Korean Technicians during the Japanese Colonial Period]' (unpublished PhD thesis, Chungnam National University, 1996).

¹⁵ E.g. Pyeonchan Wiwonhoe 한국철도대학100년사 편찬위원회 (ed.), *Hanguk Cheoldo Daehag 100 nyeonsa 한국철도대학100년사 [100 Years of the Korea National University of Railways]* (Uiwang, 2005). This book covers the century of railway education institutions from the Temporary Military Railway Supervision Command to the Korail Corporation. See also Eun-sun Bae 배은선, 'Iljegangjeonggi cheoldojongsawon yangseong-gyoyuggwa cheoldodoseogwan-e gwanhan yeongu 일제강점기 철도중사원 양성교육과 철도도서관에 관한 연구 [A study on the educational institution and library of Korean railroads before 1945]' (unpublished doctoral thesis, Graduate School, Woosong University, 2017).

¹⁶ Chaisung Lim, *Senji keizai to tetsudō un'ei: 'Shokuminchi' Chōsen kara 'bundan' Kankoku e no rekishi'teki keiro o saguru 戦時経済と鉄道運営: 「植民地」朝鮮から「分断」韓国への歴史的経路を探索 [Wartime Economy and Railway Management: Exploring the Historical Path from 'Colonial' Korea to 'Divided' Korea]* (Tokyo, 2005).

Based on these previous studies, this study uses KGR's labour management to examine the challenges that Koreans faced in acquiring technology under the conditions of settler colonialism, which showcases Japan's distinctive colonial characteristics in comparison with its Western counterparts. Using the company's annual reports, the time-series statistics of its Worker Mutual Aid Association, and graduates' records from its Worker Training Centre, this study provides a quantitative analysis that is focused on KGR's internal training programme to gauge its mobilisation of labour and the accompanying deterioration of labour-force quality. First, it analyses the colonial employment structure in terms of labour-force allocation by status, workplace, wages, and fringe benefits. Second, it examines how the labour market changed and analyses how high mobility diluted the labour force. Third, it reviews the development of internal training and the creation of engineers and technicians as solutions to workers' qualitative decline.

The colonial employment structure

As a colonial institution, KGR was mainly operated and managed by Japanese personnel, and its personnel system and labour policies were modelled on Japan's domestic government railway organisation. While highly educated Japanese people controlled senior ranks and the main administrative and technical departments, they also filled the lower echelons of fieldworkers, which differs greatly from the Western colonial railways. It also meant that the personnel system of this state-owned railway depended on mass Japanese emigration—a characteristic that also affected its wages, promotions, and other operations. However, KGR also implemented an internal training system to foster engineers. Consequently, the onset of the Great Depression (1920–39) and other economic factors severely impacted Koreans, who were treated as personnel buffers and almost certainly experienced ethnic discrimination. However, when the shortage of Japanese workers intensified during the colonial industrialisation of the 1930s and the wartime regime after the Second Sino-Japanese and Pacific Wars (1937–45), the mass recruitment of Koreans altered Japan's labour strategy, as the GGK's Railway Bureau tried to maintain power in railway operations while allowing the partial promotion and reassignment of Koreans.

Railways are required to establish a point-and-line transportation network over a wide area and carry passengers with temporal regularity. Thus, KGR hired many employees following a large-scale capital investment, increasing their number from 6,933 in 1907 to 9,592 in 1917, when South Manchuria Railways (SMR) initiated consignment management. By the time SMR ended its consignment in 1924, this figure had risen to approximately 13,000 and continued increasing thereafter. Immediately after the Great Depression, the rise slowed but regained momentum as the economy recovered, growing from approximately 30,000 during both world wars to more than 100,000 in March 1945, the end of fiscal year 1944 (Table 1). This workforce outstripped that of other factories and business establishments in colonial Korea.

Japan therefore established an internal hierarchy to manage the railways.¹⁷ KGR formed part of a colonial government employee system called the Railway Bureau of the Resident-General of Korea from June 1909 to December 1909, the Korean Railway Bureau of the Japanese Government Railways (JGR) from December 1909 to October 1910, the Railway Bureau of the GGK from 1910 to 1942, and finally the Transportation Bureau in 1943, except for SMR's management commission during 1917–24. This means that the organisational structure it adopted adhered to neither private factories nor business establishments.

¹⁷ See Part II of A. D. Chandler, Jr, 'The revolution in transportation and communication', in A. D. Chandler, Jr, *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, MA, 1977).

Table 1. Status and composition of KGR employees (unit: person, per cent)

	Senior officials		Junior officials		Foremen of junior official rank		High-ranked employees		Temporary employees		Low-ranked employees		Total	
	JP	KR	JP	KR	JP	KR	JP	KR	JP	KR	JP	KR	JP	KR
1915	57		474				1,796		4		6,903		5,918	3,316
1925	79		1,248	45	111	15	1,819	124	11		4,387	5,333	7,655	5,517
1935	99	3	1,617	89	279	15	3,579	858	68	32	6,573	7,687	12,215	8,684
1940	202	4	3,596	408	688	80	9,897	5,966	148	79	13,072	18,472	27,603	25,009
1944	342	6	7,009	2,441	1,535	149	15,374	17,407			2,915	55,078	27,531	75,081
Placement rate														
1915													100	100
1925			16	1	1	0.3			0.1		57	97	100	100
1935	1	0.03	13	1	2	0.2	29	10	1	0.4	54	89	100	100
1940	1	0.02	13	2	2	0.3	36	24	1	0.3	47	74	100	100
1944	1	0.01	25	3	6	0.2	56	23			11	73	100	100
Occupation rate														
1915													64	36
1925			97	3	88	12			94	6	45	55	58	42
1935	97	3	95	5	95	5	68	32	81	19	46	54	58	42
1940	98	2	90	10	90	10	65	35	62	38	41	59	52	48
1944	98	2	74	26	91	9			47	53	5	95	27	73

Sources: Chōsen Sōtokufu Tetsudōkyoku 朝鮮總督府鐵道局, *Nenpō* 年報 [Annual Report] (Seoul, 1915–39); Chōsen Sōtokufu Tetsudōkyoku 朝鮮總督府鐵道局, *Chōsen tetsudō jōkyō* 朝鮮鐵道狀況 [The State of Korean Railways] (Seoul, 1940–41); Senkōkai 鮮交會, *Chōsen kōtsūshi* 朝鮮交通史 [History of Korean Transportation] (Tokyo), p. 185; Naoki Mizuno 水野直樹 ed., *Senjiki shokuminchi tōchi shiryō* 戰時期殖民地統治資料 [Documents Related to the Administration of Colonies during the Wartime Period], Vol. 4 (Tokyo, 1998), p. 247.

Notes: 1. Staff hired during the Manchuria Railway consignment management from 1917 to 1924 are counted as junior officials. 2. Senior and junior officials include the respective acting officials. 3. Only paid employees are included in the category of temporary employees. 4. Statistics are based on the end of the fiscal year (i.e. the end of March of the following year) but based on October only from the 42nd to the 43rd year. 5. Lower employees include intern employees. 6. The placement rate is the ratio of statuses in a specific ethnic group and the occupation rate is the ratio of specific ethnic groups within a certain status.

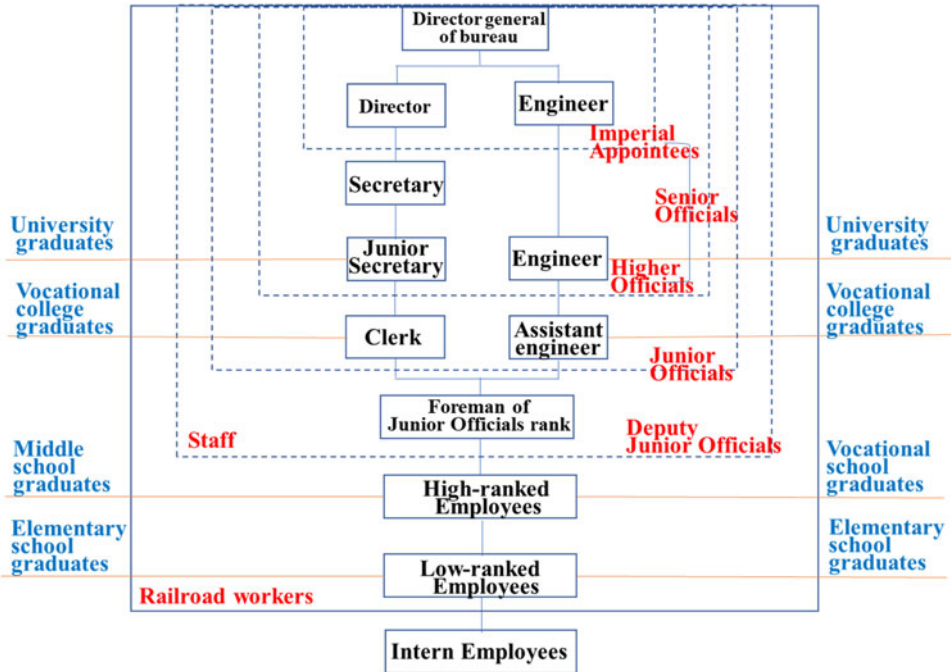


Figure 1. Employee system of the GJK-KGR Railway Bureau. Source: modified from Kim (1996, p. 142).

KGR adopted the Japanese government employee system from its upper to middle levels but allowed direct employment for lower-level workers (Figure 1). In other words, its hierarchy in each section consisted of a higher official who was an imperial appointee (*chokuninkan*) and a senior official (*sōninkan*) in top management; the senior official oversaw junior officials (*hanninkan*) in middle management, who in turn managed high-ranked (*koin*) and low-ranked employees (*yō'nin*). In the engine depot, for example, the chief of general affairs oversaw the deputy of general affairs and the driver chief; the latter in turn supervised the deputy driver chief, and the technical chief oversaw the deputy inspector and repair work assistant. Everyone below the driver chief was a junior official who came under the chief of the engine depot as a senior official. These junior officials led high-ranked employees in the following departments: general affairs, furnishings, and police affairs; engine preparations, engine drivers, engine affairs, and signals; engineers; inspections; repairs, heating, and water supply. Low-ranked employees called *kishu* occupied the bottom of this hierarchy.¹⁸ However, unlike the transport and sales sectors, railway factories introduced their own system, including provisions for journeymen, and managed their labour force accordingly. As a result, their payment of piece-rate wages and performance-based promotions differed from those of other departments and resembled those in privately owned general factories.

Status assignments in this system depended on educational background. High- and low-ranked employees were respectively drawn from elementary- and middle-school graduates; clerks and assistant engineers who were junior officials were usually professional college graduates and senior officials were university graduates, especially those who

¹⁸ Tomegorō Ōtani 大谷留五郎, *Chōsen tetsudō gairon* 朝鮮鐵道概論 [Introduction to the Korean Railways] (Seoul, 1929), pp. 125–38.

had graduated from the imperial universities. Skilled employees operated the technical system, while the junior-official assistant engineers and the senior-official engineers were equivalent to the technicians. Among fieldworkers, high- or low-ranked employees who had worked at KGR for many years and were recognised for their excellent skills received the status of a 'junior-official foreman' (*tetsudōshu*; *kōtsushu* after 1943). Railway workers' statuses were not fixed and promotions to a higher status were possible. After a certain period of service, workers had to be qualified via an exam for promotion in a system set up according to the respective sections of the railway, such as general affairs, business, train operation, and track maintenance.

However, the more highly educated an employee, the greater the number of exams he could be exempted from according to his position in the ranking system. Such workers could be promoted to higher posts earlier. Even lower-educated workers could pass the entrance examination, enter an internal training institution, and be educated for a certain period; their educational attainments would be recognised and they could be elevated to a higher status. Moreover, the main, special, and telegraph departments of the Worker Training School, later renamed the Railway Worker Training School, were open to external applicants. Short-term education courses were mainly limited to insiders, who received practical education for promotion.

In the long run, the total proportion of low-ranked employees tended to decline but consistently remained at the highest level, while that of high-ranked employees tended to rise—a big gap existed between the two (Table 1). Notably, the number of junior officials equivalent to middle management was as high as 3–4 per cent from the first to the second periods of direct management through the period of SMR consignment management. However, this number remained constant from the end of the 1920s to the onset of the Pacific War. There was also no long-term increase in the number of junior officials and deputy junior officials with long experience and outstanding control in their fields.

Considering KGR's ethnic status composition, although Koreans decreased slightly among low-ranked employees, they constituted the largest group and exceeded 70 per cent even by the end of the Pacific War. Conversely, more Koreans became high-ranked employees, but here they numbered only approximately 20 per cent at the end of the same war. In 1944, for the fiscal year ending in March 1945, the highest ratio of junior officials was 3.3 per cent; even when combining senior officials and junior-official foremen with junior officials, it was a mere 3.5 per cent. Moreover, in 1944, many junior officials were organised into a corps to prepare for a US military landing in the southern part of the Korean Peninsula.¹⁹

For Japanese personnel, the number of low-ranked employees tended to rise in the 1930s but declined rapidly during the Second Sino-Japanese and Pacific Wars, reaching 10.6 per cent in 1944. The number of high-ranked employees decreased in the 1930s but increased sharply after the outbreak of the Sino-Japanese War, reaching 55.8 per cent in 1944. However, the ratio of junior officials grew during this same period, accounting for 25.5 per cent in 1944, or more than double the low-ranked employee group. These personnel allocations stemmed from the personnel investigation committee chaired by the General Affairs Section Manager, established on 21 May 1943 for priority allocation of personnel and the deliberation of related matters. But even Japanese personnel did not form a significant proportion of deputy junior officials, who were treated as long-term employees with no educational background in Japan.

In sum, Japanese workers in Korea experienced changes in how they were ranked towards the end of the Pacific War far more drastically than their counterparts in Japan. Korean workers were mostly limited to the bottom of the hierarchy and only a

¹⁹ Lim, *Senji keizai to tetsudō un'ei*, pp. 175–80.

small proportion managed to rise to the rank of junior official or higher. If the status composition corresponded to the technical hierarchy, it was the Japanese employees who were trained as engineers.²⁰

The wage system in KGR also reflected this colonial employment structure. The inter-wage gap between Koreans and Japanese narrowed by more than 10 per cent from 1918 to the first half of the 1930s. However, in the latter half of the 1930s, it began to widen again. The higher the status, the greater the tendency towards inequality, because Japanese personnel received preferential treatment in promotion. Koreans in the colonial employment structure effectively formed a group of low-wage workers at the lower levels of railway operations and the discontent of those with higher education exploded after Korea's liberation from colonial rule in 1945.

In terms of labour composition by worksite (Table 2), the largest number of Korean personnel were engaged in physical labour in the track maintenance and architecture sections, followed by the factory, stations and trains, and then the engine operation and inspection sections. As more Koreans were hired, the ratio of construction-related (or track maintenance-related, in the case of the JGR) personnel decreased whereas their counterparts in other sites increased. In around 1935, business sites such as stations, the trains section, and the sales system had higher placement rates than factories. Before the Second Sino-Japanese War, many Japanese personnel were assigned to business sites: the stations and trains sections, followed by the engine operation and construction sections, and factories. As they oversaw railway operation management, more workers than factory personnel were assigned to headquarters, the regional bureau, and railway offices. By the end of the war, the number of available workers had shrunk. The largest number of personnel were assigned to headquarters and the ratio in the engine operation section, such as in the engine depot and car inspection, was higher than that of the business section.

In conjunction with these changes, it became difficult to hire Japanese personnel during the war, and many Korean workers were hired for business and engine operations rather than construction. Previously, the largest number of personnel had been assigned to construction in track maintenance and related sections that required physical labour. The site with the next largest number of personnel, the business section, had many points of contact with Korean customers. While the number of engine operation personnel directly connected to train operations was relatively small, it increased rapidly during the wartime period from 1937 to 1945 and eventually housed the most assigned personnel. In contrast, construction-related sections that had had the largest numbers of pre-war personnel decreased during the war.

When a wartime labour shortage occurred, KGR authorities divided their relatively small Japanese contingent into middle management and upper-level staff according to their status, worksite, operation management, planning, and use of specific technologies. The fact that Japanese elites across Korea least favoured physical work reflected the formation of a Japan-centric colonial society; in KGR's case, this backed the idea that wartime transportation could be efficiently executed by concentrating Japanese personnel in white-collar sections. Therefore, Koreans emerged as KGR's main field labour force, with only a handful allowed to rise in status compared with their Japanese counterparts and the JGR in Japan.

²⁰ Chōsen Sōtokufu Tetsudōkyoku 朝鮮總督府鐵道局, *Kōhō* 公報 [Official Bulletin] (21 May 1943); Chōsen Tetsudō Kyōkai 朝鮮鐵道協會, 'Yamada tetsudō kyokuchō kunji (yōshi) 山田鐵道局長訓示 (要旨) [Instructions from Mr. Yamada, Director-General of the Railway Bureau (Summary)]', *Chōsen Tetsudō Kyōkai Kaishi* 朝鮮鐵道協會會誌 [Journal of the Korean Railway Association] (August 1943), p. 9.

Table 2. Placement rate and occupancy rate of KGR railway workers by site

Year		1915		1925		1935		1940		1944	
		JP	KR	JP	KR	JP	KR	JP	KR	JP	KR
Placement rate	Headquarters and regional bureau	3	1	17	10	13	3	17	5	24	4
	Stations and trains	33	15	31	17	29	25	29	28	22	27
	Engine operation and inspection	18	13	21	15	23	15	28	24	23	36
	Track maintenance and architecture	28	44	19	32	16	35	10	22	10	17
	Factory	13	26	10	24	10	16	7	15	7	10
	Construction and improvement	4	1			3	1	5	2	6	2
	Others			3	2	6	4	5	3	10	4
	Occupation rate	Headquarters and regional bureau	85	15	68	32	84	16	80	20	68
	Stations and trains	77	23	71	29	62	38	53	47	23	77
	Engine operation and inspection	68	32	64	36	69	31	56	44	19	81
	Track maintenance and architecture	49	51	43	57	38	62	33	67	17	83
	Factories	45	55	35	65	46	54	32	68	20	80
	Construction and improvement	89	11			78	22	70	30	53	47
	Others			67	33	69	31	65	35	48	52

Sources: Chōsen Sōtokufu Tetsudōkyoku, *Nenpō*; Chōsen Sōtokufu Tetsudōkyoku, *Chōsen tetsudō jōkyō*; Senkōkai, *Chōsen kōtsūshi*, p. 185.

Notes: 1. 'Others' includes the electric section, electric repair shop, automobile section, and training centre. 2. The placement rate is the ratio of workplaces in a specific ethnic group and the occupancy rate is the ratio of specific ethnic groups in a specific workplace. 3. The 1915 statistics are estimated from relief union personnel data and show that the placement rates for headquarters and the regional bureau stations were extremely low.

Labour turnover

The labour market as well as factors internal to KGR influenced the abovementioned employee allocations, as the labour transfer rate in Figure 2 shows. During the 1910s, the economic boom of the First World War raised both the recruitment and retirement rates, but labour fluidisation promised stabilisation in the 1920s. However, the continuation of active railway construction, such as the implementation of a 12-year plan from the mid-1920s, meant that KGR showed a slight tendency towards increasing new hires; however, the labour turnover rate increased and then dropped sharply, reaching a record 6.6 per cent recruitment rate and 5.5 per cent retirement rate in 1930. New hires rose sharply with the post-Depression economic recovery, and so did the retirement rate after the outbreak of the Second Sino-Japanese War, gradually reaching 8.7 per cent in 1937 and then 22.4 per cent in 1940. The sharp increase in the retirement rate, especially among Japanese personnel, is attributable to military drafts, transfers to the SMR's branch office in North China, and job transfers to other industries (Figure 2).

To cope with these turnovers and the rapidly increasing volume of transportation, the recruitment rate remained higher than the retirement rate; the former sharply increased by 29.0 per cent in 1937 and 47.0 per cent in 1940. Although the labour force was fluid in both ethnic groups, the situation was more severe for Japanese than for Korean staff. In KGR's hierarchy, each worksite held numerous vacant posts and the total number of posts increased with the company's expansion (Figure 3).

Nevertheless, it became difficult to secure employment through external means during the wartime period from 1937 to 1945. The shortage of engineers was primarily filled through the internal promotion system and promotions continued to favour the Japanese even more prominently during the war. The promotion rates estimated from the *Overview of Worker Mutual Aid Association* and that estimated from the *Annual Report* differ greatly. In both recruitment and retirement, high-ranked and low-ranked employees constituted the majority; hence, the estimates based on both statistics do not differ significantly. However, the Mutual Aid Association for Working Employees does not cover the status of employees promoted to senior-official ranks. Additionally, promotions to

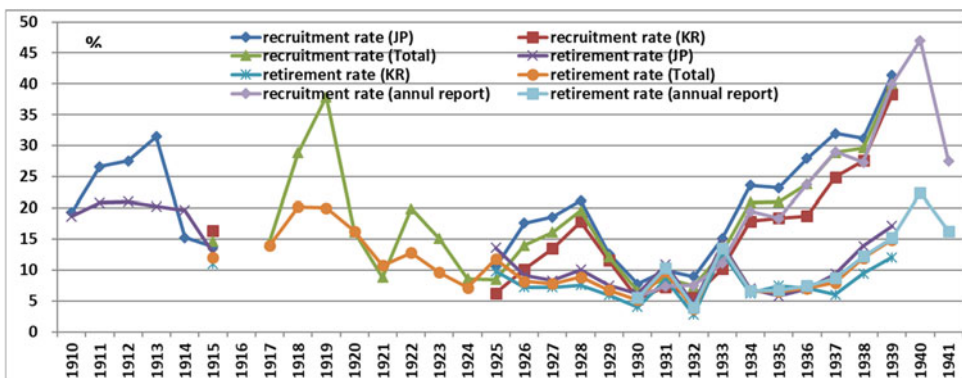


Figure 2. KGR recruitment and retirement rates (unit: per cent). Sources: Chōsen Sōtokufu Tetsudōkyoku, *Nenpō*; Chōsen Sōtokufu Tetsudōkyoku Shomuka 朝鮮總督府鐵道局庶務課, *Chōsen Sōtokufu tetsudōkyoku genyō kyōsai kumiai gaikyō* 朝鮮總督府鐵道局現業員共濟組合概況 [Outline of the Worker Mutual Aid Association of the GGR Railway Bureau] (Seoul, 1926–37).

Note: Labour turnover rates of railway workers are estimated based on the number of people at the end of the previous fiscal year from the mutual aid association membership withdrawal table. Employment rates are due to admission and employment; retirement rates are due to withdrawal and death.

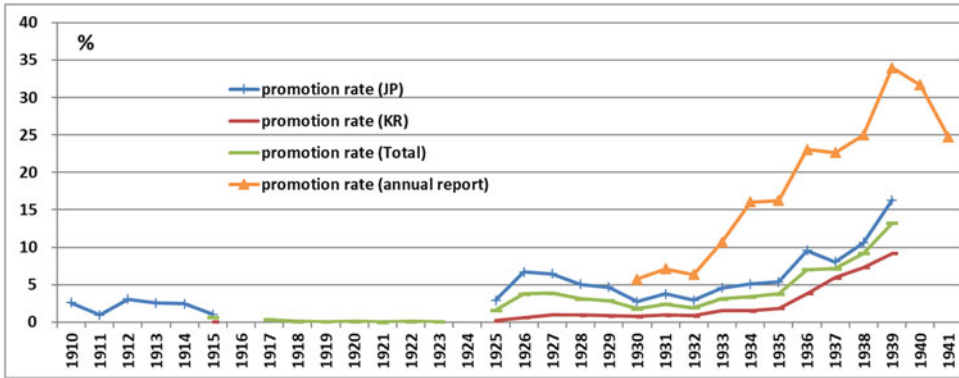


Figure 3. Promotion rates for KR railway workers. Sources: Chōsen Sōtokufu Tetsudōkyoku, *Nenpō*; Chōsen Sōtokufu Tetsudōkyoku Shomuka, *Chōsen Sōtokufu Tetsudōkyoku gengyō kyōsai kumiai gaikyō*.

Note: The promotion rate is estimated based on the number of people at the end of the previous fiscal year from the mutual aid association membership withdrawal table. Therefore, these estimates centre on high- and low-ranked employees. The promotion rate based on the *Annual Report* includes all workers in KGR, including senior and junior officials. Consequently, it is higher than the estimated value based on mutual aid association data.

junior officials were not always recorded for non-working employees, so the estimated promotion rate based on the *Overview of Worker Mutual Aid Association* may be lower than that based on the *Annual Report*, which covers all employees; nonetheless, the long-term trends are unlikely to have major errors.

Promotion rates maintained a certain level until the first half of the 1910s but plummeted during the SMR consignment management period. Notably, they increased with the reimplementing of the GGK direct management system. During the SMR consignment management period of 1917–24, KGR's status composition consisted of staff, temporary employees, high-ranked employees, and low-ranked employees (staff, temporary employees, and low-ranked employees in 1924). It had a simpler structure than the GGK, which consisted of senior officials, junior officials, foreman of junior-official rank, temporary employees, high-ranked employees, and low-ranked employees. As Manchuria Railways was not a state agency, but a joint stock company promoting national policies, it would have had a simpler hierarchy to ensure efficient labour management. Except for a small number of temporary employees, it had only three statuses (two in 1924). Therefore, promotion rates were extremely low despite rising after a slight fall due to the Depression and personnel reduction. The overall promotion rate, estimated from the *Annual Report* for this period, shows a surge from 5.7 per cent in 1930 to 25.0 per cent in 1937 and an increase to 31.7 per cent in 1940.

These trends show that Japanese had higher promotion rates than Koreans. The former were given opportunities to raise their status with reduced terms of service for promotion or extended exam exemptions, despite their obvious inexperience in age and length of service. Although the promotion rate by ethnic group is estimated from the mutual aid association membership withdrawal table, it is lower than the overall promotion rate because it focuses on working employees who had relatively few opportunities for promotion.

With one-fifth of workers gone and one-half entering, KGR was forced to confront a serious labour dilution problem in 1940, which is apparent from the employees' age and length of service during that time. As there are no historical records for time-series statistics on years of service, employee youthfulness is conspicuous (Figure 4) for the period—a phenomenon especially clear for Japanese personnel in 1939 as their age

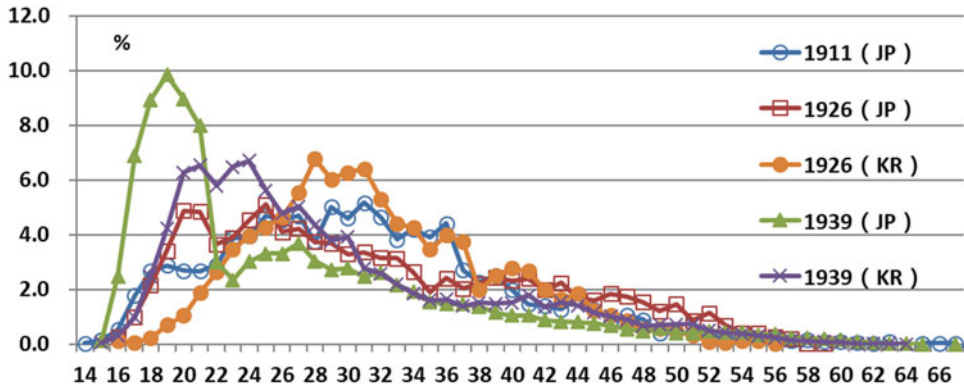


Figure 4. Age composition of KGR employees. Sources: Chōsen Sōtokufu Tetsudōkyoku, *Nenpō*; Chōsen Sōtokufu Tetsudōkyoku 朝鮮總督府鐵道局, *Kyūsai kumiai jōkyō 救済組合状況 [Situation of Relief Associations]* (Seoul, 1911); Chōsen Sōtokufu Tetsudōkyoku Shomuka, *Chōsen Sōtokufu Tetsudōkyoku gengyō kyōsai kumiai gaikyō*.

Note: Calculated from the composition by age of mutual aid association members (i.e. the ratio to the total number of association members).

composition dropped during the war compared with 1911 and 1926. Time-series data stop in 1939, but descriptive records show that this tendency grew more pronounced after the start of the Pacific War between Japan and the USA, which shortened the number of service years. In 1941, 80 per cent of all workers had under three years of service; this figure depicts the severe qualitative decline in labour compared with how nearly 60 per cent of JGR employees had worked for under five years. This decline in service years continued and, in July 1945, railway authorities were deemed to be ‘mentally inadequate ... immature young workers, [overseeing] a total of 70 per cent or more Korean workers’.²¹

Nevertheless, Chung points out the ‘quantitative and qualitative growth of the Korean workers’ and notes that ‘at the time of liberation, the fact that they had acquired, albeit imperfectly, the ability to operate the railway independently became apparent’. However, the Japanese-centric employment structure meant that the outbreak of war absorbed primarily Japanese workers, and young Koreans had to be employed in large numbers to fill vacancies. Therefore, the ‘quantitative and qualitative growth of the Korean workforce’ that Chung describes constituted a form of labour-force dilution from the perspective of KGR management, i.e. the increasing youthfulness and Korean composition of its workforce, although, to a lesser extent than their Japanese counterparts, Koreans also showed increasing recruitment and retirement rates. At the end of the Pacific War, 70 per cent of all employees were Koreans and the majority had only two years of service experience. KGR attempted to address these problems by strengthening its internal training system and providing incentives at training centres geared towards Japanese personnel.

Internal training

An internal railway training system, centred on the Railway Staff Training Centre (RSTC), was set up in March 1905 under the Temporary Military Railway Supervision Command with 40 externally hired Japanese and 40 Korean apprentices with elementary-school education. A transportation department and a training department were also established at

²¹ ‘Temporary allocation of assistant clerks and assistant technicians to the Bureau of Transportation the Government General of Korea in the event of a Greater East Asia War’, Japan Centre for Asian Historical Records (JACAR), Ref. A03010232000, Government Post, No. 23; National Archives of Japan, Government Organization, No. 23 (Government-General of Korea, No. 2), *Kobun ruishu*, 69th compilation, vol. 29 (1945).

around the same time, as well as the Transportation Office Training Centre in the Gyeongbu Railway company. In July 1905, the RSTC admitted 20 Japanese trainees, but it closed after its first batch of students graduated and was handed over to the Resident-General of Korea, after which it targeted not only railway staff, but also external recruits aged 15–24 years who had completed at least the second year of middle school. The modern Japanese education system in around 1905 comprised government-run elementary and middle schools alongside private and missionary English-language schools, but remained dominated by traditional Confucian education and overall high rates of illiteracy. Japanese authorities considered it crucial to open up internal railway education to outsiders in Korea and they also conducted a five-month telegraph education programme by establishing an April 1907 rule regarding telegraph trainees in the transportation sector. The RSTC relocated from Incheon to Yongsan in 1907 and became the Railway Worker Training School (RWTS) with the GKG's establishment. Staff members under the age of 30 with second-year middle-school education were selected and trained in the departments of work, driving, and telegraph operation. However, telegraph trainees had to be between the ages of 15 and 25 years, and Koreans could only enter as external recruits.

The following lists the numbers of apprentice graduates who received internal training in various subjects at the RSTC: 112 in transportation, 68 in train works, 76 in construction, 25 in accounting, and 17 in telegraph operation. The Telegraph Trainee Training Centre had 124 telegraph trainees and 24 transport clerical trainees, and the RWTS reportedly had 50 business department employees, 51 driving department employees, and 157 telegraph trainees between November 1910 and March 1915. Subsequently, RWTS produced a total of 485 graduates until KGR took over the SMR. External enrollees had the status of low-ranked employees, received accommodation and clothes, and drew a daily salary. After graduation, they could become KGR employees under the condition of being assigned compulsory work duties for two to three years.

Additionally, Japanese authorities established a railway night school in 1908 with not only a two-year regular course, but also specialised courses in English, Korean, and book-keeping courses for young low-ranked employees. This institution, which taught approximately 60 students each term and was later renamed the Yongsan Railway Night School in 1911, had many applicants from inside and outside the railways. One hundred and seventy-four of its graduates passed the Railway Bureau high-ranked employee and telegraph trainee examinations, and 26 who passed the junior-official cadet and civil service official examinations are recorded as engineers and technicians until March 1915. As explained above, KGR's internal training institutions were not limited to existing personnel and also trained engineers from among external students.

Under such circumstances, when SMR's consignment management began in 1917, it established a private railway school in Seoul that opened in April 1919. Aside from a main department, the departments in this institution covered telegraph works, apprenticeship, and training; a new school building was added in 1929. The main department had courses in station affairs, engine driving, and civil engineering for trainees with at least advanced elementary-school education. A three-year scholarship system was also established with a period of compulsory service. Trainees from the telegraph department had a six-month period of study and the apprenticeship department, which enrolled individuals with higher than elementary-school education, trained craftsmen at railway factories by having them work as apprentices for four years of study with provided allowances. The training department 'selected trainees from company employees and taught departments necessary skills for practical work for three to six months or more';²² finally, a special night-school three-year course provided general education to company apprentices.

²² Chōsen Sōtokufu Tetsudōkyoku, *Chōsen tetsudō jōkyō*, 15 (December 1924), p. 70.

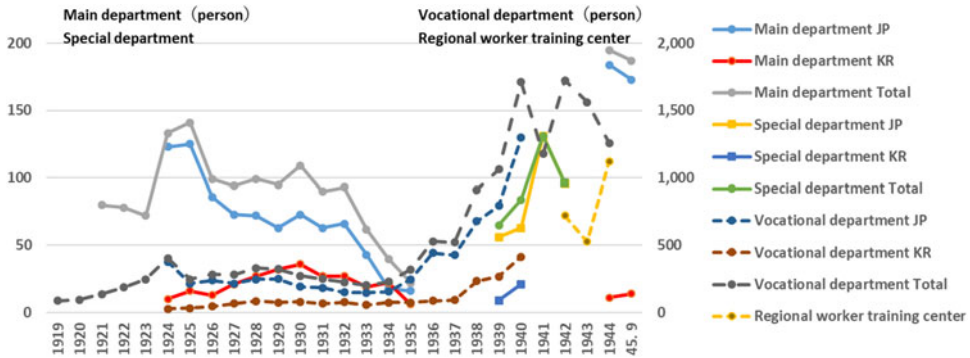


Figure 5. Graduates of KGR's Worker Training Centre.

Sources: Minamimanshūkabushikigaisha Tetsudō Keijō Kanrikyoku 南滿州鉄道株式会社京城管理局, *Tōkei nenpō* 統計年報 [Annual Statistics Report] (Seoul, 1919–24); Chōsen Sōtokufu Tetsudōkyoku, *Nenpō*, 1925–38; C. Lim (2005).

In 1921, students in the main department came under the Civilian Appointment Order and Conscription Order and Article 8 of GKG's Professional College Enrolment Examination Regulations. A fund for the maintenance of railway schools and libraries was established to support students and supplement other scholarships, which reached 388,000 yen by the end of 1924.²³ Although it is not possible to ascertain the ethnicity of successful applicants, the occupations of 347 parents of these boys in 1923 reveal 62 KR employees, 26 government officials or civil servants, 15 company employees, 78 farmers, 6 industrialists, 38 merchants, 11 civil contractors, 2 teachers, 3 transportation businessmen, 20 workers, and 86 others.²⁴ The inclusion of farmers and workers indicates that these institutions facilitated social mobility. However, many students had the financial resources and social status to support a certain level of education. From 1917 to 1925, the main, apprenticeship, and telegraph departments had a total of 740 graduates, whereas the training department had 521 in the same period, and graduates were 'assigned to the work of each department' (Figure 5).

The Railway Night School was renamed the Railway Night School Course in 1920 and its regular three-year programme of study provided supplementary education for lower-level workers with free textbooks and stationery. Graduates were awarded certificates, which were highly valued outside of the railway system, and hired as high-ranked employees. Advanced, specialised, and apprenticeship courses were also established, producing 249 graduates. Although this railway school inherited the conventional internal training system, the number of graduates in its main, apprenticeship, and telegraph departments alone exceeded the workforce of the RWTS. It grew even larger with the eventual inclusion of the training department in response to the serious labour turnover during the First World War. Instead of securing external recruits, the institution focused on training its own personnel. In Korea at the time, this railway internal training system was a pioneering effort that many companies adopted, and it had a wider impact on Korean society after the outbreak of the Second Sino-Japanese War.

When KGR returned in April 1925 under direct management, it renamed the railway school the Railway Worker Training Centre (RWTC); the apprenticeship department became the craft department, while the remaining names in the existing system were

²³ Chōsen Sōtokufu Tetsudōkyoku 朝鮮總督府鉄道局, *Chōsen tetsudō yonjūnen ryakushi* 朝鮮鉄道四十年略史 [A Brief History of Forty Years of Korean Railways] (Seoul, 1940), pp. 184–94.

²⁴ Minami Manshū Tetsudō Kabushikigaisha Keijō Kanrikyoku, *Tōkei nenpō* (1923).

maintained. RWTC was certified in September 1925 by Article 13 of the Conscription Ordinance and Article 6 of the Civilian Appointment Ordinance and, in March 1926, it received a designation by the Enrolment Examination Regulations for Professional Colleges. Thereafter, the Railway Liberal Arts Grant Foundation provided ‘scholarship and cultural assistance to students’. These developments show that SMR’s consignment management benefited KGR in terms of internal training.

However, after the economic boom that began when the First World War ended, a recession continued into the 1920s that undid KGR’s management composition. At the onset of the Depression at the end of 1929 that forced a personnel reorganisation, KGR had already stopped recruiting trainees for its internal education system due to an over-supply of educated personnel in the labour market that made it easier to hire engineers and technicians. After 1924, it cancelled student recruitment for the civil engineering course. After 1934, it terminated the enrolment of students for the business and engine-driving courses, and did the same to the craft department in 1928–29 and 1931. The telegraph department (a 30-week programme for graduates with second-year upper-elementary education) and training department (mainly for employees who had served between one month to one year) emphasised internal training exclusively. From 1925 to 1935, the main, craft, and telegraph departments had a total of 1,358 graduates and the business, engine-driving, and inspection courses produced 1,157 (Figure 5). The night-school course became the night-school department of the RWTC in 1925, with a regular three-year course and various temporary specialised courses (e.g. Chinese literature and English) to improve worker qualifications; it had 216 graduates in total.²⁵

If examining graduates by ethnic group, their majority were, unsurprisingly, Japanese and internal training supported the colonial employment structure. Specifically, the ratio by percentage of Korean and Japanese graduates from Seoul Railway School to the RWTC was 10 to 28 for the main, craft, and telegraph departments, 6 to 17 for the training department, and 11 to 25 for the night-school department. Moreover, the proportion of Koreans rose since the period of GKG direct management, particularly in the main, craft, telegraph, and night-school departments, where external admissions were permitted. The training department, which only provided short-term instruction, did so at the time of internal promotion, making its courses key for labour management. The fact that this department was mainly Japanese-run meant that it gave more opportunities for promotion to Japanese employees.

The Second Sino-Japanese and Pacific Wars catalysed further changes in internal training. When conflict between Japan and the USA escalated, the quality of the labour force severely deteriorated due to impediments in social mobility. Hence, KGR set up a technician training course in 1939 and took emergency replenishment measures such as giving middle-school graduates a year of education in mechanics, electrics, and civil engineering.²⁶ In December of the same year, it set up a new training section in the general affairs division that centralised liberal arts affairs across sections and oversaw the compilation and distribution of worker training materials; it also handled matters related to promotion examinations and the Worker Training Centre.²⁷ In April 1941, the training centre regulations were completely revised to renew the main course, add two courses in mechanical and electrical engineering, and make technician training a standalone course. Short-term courses in the telegraph and other departments were combined into a vocational department that also offered expanded training at a new night school.²⁸

²⁵ Chōsen Sōtokufu Tetsudōkyoku, *Chōsen tetsudō yonjūnen ryakushi*.

²⁶ Chōsen Sōtokufu Kōtsūkyoku 朝鮮總督府交通局, *Chōsen kōtsū jōkyō* 朝鮮交通狀況 [*The State of Korean Transportation*], 1 (November 1944), pp. 8–10.

²⁷ Chōsen Sōtokufu Tetsudōkyoku, *Chōsen tetsudō yonjūnen ryakushi*.

²⁸ Chōsen Sōtokufu Kōtsūkyoku, *Chōsen kōtsū jōkyō*, pp. 8–10.

Even so, the mass recruitment of new workers inevitably resulted in the decline of worker quality and made it difficult to optimise railway operations. In 1942, to improve work quality through worker re-education, KGR implemented on-site training sessions at every station and field worksite, and set up worker training centres in Busan and Hamhung in April the same year;²⁹ it also renamed its existing institute the Central Worker Training Centre. Although alternative land transportation of continental materials began via the Korean Peninsula and the number of employees hired had dramatically increased, it still added a Seoul centre in April 1944 for ‘rapid mass training’. As a wartime emergency measure, KGR renewed the subject content for each course in the vocational department and increased the number of trainees by shortening the training period.³⁰ It also cancelled existing on-site training sessions; simultaneously, it set up a Staff Training Centre in the main station and worksite, and conducted planned training to deal with wartime transportation. When the Railway Bureau was reorganised into the Transportation Bureau to integrate land and sea transportation systems, the company further renamed its institute the Transportation Worker Training Centre.

Along with these reorganisations, railway authorities tried to maintain the technical superiority of Japanese personnel by facilitating their acquisition of advanced technology (Figure 6). The main department had a ratio of 20–30 per cent Korean workers, which was higher than the vocational department (the telegraph and training sections mainly comprised KGR insiders) because external admission to the main department was probably permitted before the Second Sino-Japanese War. However, when the main department was reinstalled during wartime, the ratio of Koreans dropped to a mere 6–7 per cent; it was 14–25 per cent in what would become the special department at the time of the technician training course in 1939–40 but, after this change, Koreans no longer enrolled in the course. The ratio of Korean workers in the vocational department stayed in the range of 20 per cent during the war, signifying that Koreans there received certain short-term education opportunities compared with the main and special departments.³¹ The wartime training of engineers centred on Japanese youths despite their high turnover rate due to military conscription.

The lack of new Japanese hires made it impossible to maintain the Japanese-dominated labour composition. Numerous Koreans were hired and some were allowed to rise in status, making the internal training department for insiders accessible to more Koreans. While it grew difficult to externally hire engineers, the main and special departments continued to operate with a majority of Japanese personnel.

Ultimately, the ratio of Korean workers reached 70 per cent, which was much higher than the 40 per cent before the Second Sino-Japanese War, and the number of junior officials in charge of middle management and field managers increased compared with previous levels. Chung interprets this as the quantitative expansion and qualitative growth of Koreans during this period, as they actually operated the railway.³² Such an interpretation is not limited to railways, but also colours the frameworks of research into colonial economic history. However, does this notion capture the actual situation of labour in wartime? Japanese scholars frequently debate the problem of actual labour dilution during the wartime period from 1937 to 1945. Even though wartime mobilisation increased Korean hires and they partially increased their representation in the upper ranks, this is still not perceived as ‘growth’. Even at the JGR, teenagers with elementary-school

²⁹ *Ibid.*

³⁰ *Ibid.*

³¹ Guglib Cheoldo Haggyo Chongdongchanghoe 국립철도학교총동창회, *Hoewonmyeongbu* 회원명부 [Member List] (Seoul, 1997).

³² Chung, *Ilje chimlyag gwa Hanguk cheoldo*.

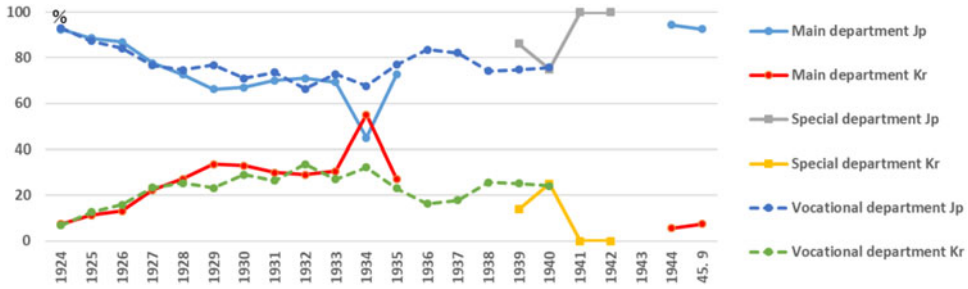


Figure 6. Composition of graduates by ethnic group at the Railway Worker Training Centre and Transportation Bureau Worker Training Centre.

Sources: Minami Manshū Tetsudō Kabushikigaisha Keijō Kanrikyoku, *Tōkei Nenpō*; Chōsen Sōtokufu Tetsudōkyoku, *Nenpō*; Lim, *Senji keizai to tetsudō un'ei*, pp. 67–77, 123–34.

Notes: 1. The main department includes the craft (apprenticeship) department; the vocational department includes courses in telegraph and training operations. 2. The special department was a technician training course in 1939–40.

education constituted the majority of the workforce, and female workers, extremely rare before the war, made up over 20 per cent of workers; however, this is also not usually regarded as ‘growth’.³³ Even with the SMR and the North China Transportation Company, whose labour forces became more localised, it cannot be concluded that local workers laid the foundation for breaking down the colonial employment structure, since this assertion does not reflect the actual situation. Needless to say, this arrangement of educational backgrounds particular to each ethnic group intertwined with promotion, enabling Japanese personnel to assume higher statuses in important departments to maintain their management of the railways. Compared with local workers on other colonial railways, such as the one in India, the technological progress for Koreans was delayed by the Japan-centric bias that prevailed during the wartime period from 1937 to 1945.

Conclusion

Yang’s notion of techno-imperialism is apparent in Korea’s railways, especially in their system of labour management. KGR developed a two-fold strategy: to manage upper and middle levels of personnel, it adopted a government employee system modelled after Japan’s government railways, while, for lower-level personnel, it directly recruited on-site workers and established a status hierarchy that reflected a technical chain of command based on individual educational background. By ethnicity, Koreans were limited to being on-site labourers, whereas Japanese were also placed in upper and middle management in a policy of assimilation that validated the latter’s settlement. Even regarding wages, the significant disparity between ethnic groups confirmed this colonial structure of employment.

This type of employment structure is characteristic of colonial railways in the Japanese imperial bloc and appeared not only in Korea, but also in Taiwan and Manchuria. As the railways were massive enterprises with the largest workforces in their respective territories, their labour management strategies are a good indicator of colonial labour measures in general. The ethnic composition of their workforces remained at 60–70 per cent Japanese and 30–40 per cent local before the Second Sino-Japanese War; the ratio of locals increased slightly at times, but Japanese workers remained dominant. This forms a striking contrast to the colonial railways of India, Burma, Malaya, and French Indochina in

³³ *Ibid.*, p. 559.

almost the same period, where locals accounted for over 97 per cent of the respective workforces.

Nonetheless, the overall employment of locals in the Japanese colonies was often extremely low—a phenomenon seen not only in the railways, but also in other governmental and private sectors such as telecommunications. The findings of this article show that Japan's colonial policy differed from the British policy of promoting autonomous local governance or the French policy of local integration. Rather, Japan practised a policy of assimilation that was implemented on the basis of settlement, as typified by its quantitative and qualitative control of railway management.

Nevertheless, the statuses of workers after recruitment could be upgraded through a minimum number of years of service and a promotion examination. Japanese authorities also established internal training institutions and attempted to train their own technicians and retrain workers to raise their statuses. In particular, when KGR was consigned to the SMR, it incorporated the latter's employee system, which expanded and enriched the scale and subject matter of its internal training. But, with the onset of the Depression, KGR faced serious financial difficulties and concentrated on cutting costs, including personnel reductions, and it also scaled back internal training. Unsurprisingly, economic disparity and inequality among ethnic groups went in tandem with the colonial employment system.

Subsequently, worker employment expanded with the progress of colonial industrialisation—a trend accelerated by the outbreak of the Second Sino-Japanese War. Labour-force mobility grew, especially among Japanese workers, particularly after the start of the Pacific War. Koreans were recruited en masse and ultimately accounted for 70 per cent of the total workforce, in response to the shortage of Japanese workers. In addition, 80 per cent of all employees worked for less than three years, leading the length of service to become extremely short; the average age also dropped, exacerbating the dilution and qualitative decline of labour. The demand-constrained economy, which drew from the labour market, had become a resource-constrained economy that could no longer do so.

As the hiring of engineers grew to be extremely difficult, KGR strengthened its internal training by setting up a tuition section and revamping its main course, establishing a separate course and local education centres, and expanding training courses and on-site teaching sessions. In the main and special departments that trained high-class engineers, it prioritised Japanese admissions in an effort to maintain the technical hierarchy. Although Koreans also received transfers of technical knowledge that included comprehensive knowledge, as Daniel Headrick describes, this was only partially implemented. During the Second Sino-Japanese and Pacific Wars, to control railway operations, KGR concentrated Japanese personnel in upper ranks by status and by workplace in operation management and technical sections; additionally, mass promotions for Japanese personnel recurred. By the end of the war, a mass promotion of low-ranked Japanese employees took place to prepare the battlefield in the Korean Peninsula. As Uchida points out, this guaranteed the predominance of settlers in the colonial railways until the end of Japanese rule.

This situation would lead to a crisis in railway operations after national liberation. Koreans' dissatisfaction with economic inequality subsequently exploded and various fields began to exclude Japanese hires. However, this exclusion created numerous vacancies in administrative and technical sections. Japanese personnel had occupied both high-ranked managerial and technical positions, while only three per cent of Koreans had positions above junior-official rank, hampering railway operations; all training operations were finally stopped. A government employee system of labour management persisted on the state-owned railway but, even after the Pacific War, the gap between Japanese

and Koreans remained unresolved, with inadequate technology transfer to the latter. In contrast, upper-class Indians made considerable inroads into the British colonial railway in India, as Headrick notes.³⁴ As a consequence of how the Japanese-centric labour system delayed the Korean adoption of technology, the USA had to deploy two additional railway battalions in Korea, and Korean management had to acquire managerial skills and advanced techniques under US occupation.

Conflicts of Interest. None.

³⁴ Headrick, *Tools of Empire*, pp. 341–42.

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