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XIONG HUEI-LAN

Path toward the Top Leadership: A Network Analysis of the Civil Service System in the Early Southern Song (1131–1164)

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Abstract This study takes a network approach to explore the career trajectories of Song officials who served in the Imperial Library from 1131 to 1164. It exemplifies how officials' career records, abundant in Chinese historical sources, can provide a trove of information that we may utilize to decipher the operations of imperial bureaucracy and the career paths of officials. "Nurturing talents in the academic institutes" was a policy that the Song dynasty developed to prepare promising junior officials for top civilian leadership. Under this "talent-nurturing" policy, "talented officials" were appointed to the Imperial Library. Such appointments were considered a launchpad for a successful career, as the appointees often soon advanced to other influential offices across diverse branches of government. As an official was transferred from one position to another, the connections between offices reveal early Southern Song bureaucratic practices. Using the career records of officials appointed to the Imperial Library in the early Southern Song, this paper constructs a directed network of bureaucratic transfers. It demonstrates that many offices held by beneficiaries of the "talent-nurturing" policy were stepping-stones towards the highest echelon of government. Their duties involved personnel administration, especially the evaluation of the character and performance of other officials. By focusing on the early Southern Song, a period in which the dynasty was embroiled in war and struggling to survive, this paper also demonstrates how political crises impacted the implementation of the "talent-nurturing" policy.

Bureaucratic Careers as a Network*

A bureaucratic system is fundamental to a functioning state. In Chinese history, the Song dynasty (960–1279) is especially famous for the complexity of its bureaucracy.¹ Though historical records on the Song bureaucracy may appear impenetrable to some modern readers, several eminent scholars have argued that they are useful for deciphering government operations and the career trajectories of its officials.² These records offer invaluable information on how government agencies were functionally connected and how officials moved from one office to another in a sequential, if puzzling, manner. Based on the connectedness between government agencies and the directedness of bureaucratic transfers, I propose that network analysis provides an innovative approach for exploiting the rich data on the officials' careers preserved in Chinese historical sources and will deepen our understanding of the political culture of Song times.

This article demonstrates the promise of this approach with a case study that investigates the revival and implementation of a Song-dynasty personnel policy known as “nurturing talents” (*yucai* 育才/材) in academic institutes, with a particular focus on the period from 1131 to 1164. The policy dates back to the founding years of the dynasty and was maintained until its end.³ Twentieth-century re-

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1 Umehara Kaoru 梅原郁, “Civil and Military Officials in the Sung: The *Chi-lu-kuan* System,” *Acta Asiatica* 50 (1986): 2.

2 For example, Deng Guangming in the 1950s called the study of bureaucratic institutions one of “the four keys to understanding history.” See Liu Pujiang 劉浦江, “Deng Guangming lüezhuan” 鄧廣銘略傳, in *Xiangnian Deng Guangming* 想念鄧廣銘, ed. Zhang Shilin 張世林 (Beijing: Xinshijie chubanshe, 2012), 25. Denis C. Twitchett, Lai Ruihe, and Charles Hartman also expressed a similar view. See Denis C. Twitchett, *The Writing of Official History under the Tang* (Cambridge: Cambridge University Press, 1992), 2; Lai Ruihe 賴瑞和, *Tangdai zhongceng wenguan* 唐代中層文官 (Beijing: Zhonghua shuju, 2011), 1–4; Charles Hartman, “Introduction: Bureaucratic Institutes and Information Networks,” 2–5.

3 Jin Zhongshu 金中樞, “Songdai guan’ge de jianzhi yu zhishi kao” 宋代館閣的建置與職始考, in *Songdai de xueshu he zhidu yanjiu jinian xuanji* 宋代的學術和制度研究紀念選集 (Xinbei, Taiwan: Daoxiang chubanshe, 2016), 339–87. For the development of the “talent-nurturing in academic institutes” throughout the Song dynasty, see Li Geng 李更, *Songdai guan’ge jiaokan yanjiu* 宋代館閣校勘研究 (Nanjing: Fenghuang chubanshe, 2006), 58–61, 74–77, and 86–90.

searchers have acknowledged the political significance of this policy, noting that a majority of top government leaders in the Song had served in these scholarly institutes early in their careers.⁴ However, the general trajectory of officials' careers under this "talent-nurturing" arrangement remains vague. Thus, by examining the bureaucratic transfers of officials who held offices in these scholarly institutes, this study aims to reconstruct the career path(s) designed to cultivate top civilian leadership in the Song government. It focuses on the period from 1131 to 1164, when the Song ruling house, struggling to survive under the threat of the Jurchens, made every attempt to legitimate its authority. One such effort was to claim that it followed the policies of the dynastic founders, including the talent-nurturing policy. These political circumstances provide a window on how the Song court in 1131–1164 upheld a tradition of personnel policy, how dynastic crises impacted its implementation, and what impacts this had on the careers of officials.

The remainder of this article is arranged as follows: the ensuing section explains the methodology and data used in this study. Section 3 gives a brief introduction to the historical context and reconstructs the career trajectories of officials recruited under the talent-nurturing policy between 1131 and 1164. It illustrates a general pattern in the career paths of these officials and identifies the major posts they held that define this pattern. Section 4 elucidates the impacts that the political circumstances of 1131–1164 had on the implementation of the talent-nurturing policy and the officials' careers. To conclude, this article will reflect on the prospects for applying network analysis to more general research on the Song bureaucratic system.

1. Methodology and Data

The imperial bureaucracy and its incumbents have long been popular subjects in Chinese studies. A traditional approach to Chinese institutional history explores governmental regulations on the selection and promotion of officials. These studies aim to elaborate the design and the operating logic of the bureaucratic system, but hardly explain the interconnectedness between different personnel decisions.⁵ Another approach focuses on the career patterns of officials who staffed the bureaucracy. For instance, Sun Guodong charts the major career

4 Umehara Kaoru, "Sōdai no kanshoku" 宋代の館職, in *Sōdai kanryō seidō kenkyū* 宋代官僚制度研究 (Kyoto: Dōhōsha, 1985), 329–422; Li Changxian 李昌憲, "Songdai wenguan tiezhi zhidu" 宋代文官貼職制度, *Wenshi* 文史 30 (1982): 109–35.

5 Edward A. Kracke, Jr., *Civil Service in Early Sung China, 960–1067, with Particular Emphasis on the Development of Controlled Sponsorship to Foster Administrative Responsibility* (Cambridge, Mass: Harvard University Press, 1957); Winston W. Lo, *An Introduction to the Civil Service of Sung China: With Emphasis on Its Personnel Admin-*

paths of officials in different periods of the Tang dynasty (618–907), calculates the length of their tenure in each office, and reveals the changing pattern of bureaucratic transfers during the three centuries of the Tang.⁶ Unlike Sun, Robert Hartwell concentrates on a particular group of officials – those in the state’s financial administration – in Song times. By tracing their careers, he shows that finance officials in the early centuries of the dynasty followed a career path that valued specialization in a specific branch of government, which was subsequently replaced by a new career pattern that emphasized generalism.⁷

In the field of network analysis, the political elite has also drawn considerable scholarly attention. Most studies treat the elites as nodes and focus on their relationships, interactions, and the power and influence they derived from their network positions.⁸ A few other studies, however, construct networks where the nodes are the positions held by the elites and the edges indicate transfers between these positions. These studies seek to understand the operational logic of the bureaucracy. Josef Woldense, for example, traces the movements of subordinates in government during the reign of the last Ethiopian emperor. The results show that by shuffling his officials frequently, this dictator successfully “reconciled the tradeoff between suppressing potential rivals and encouraging expertise for the proper functioning of the state apparatus.”⁹

Whether they adopt formal network analysis or not, studies of bureaucratic transfers and career patterns are instructive for uncovering the rationale of operation in a bureaucracy. These studies, however, are also limited in several ways. They often encounter the difficulty of determining which offices to focus on and base their decisions on current knowledge of the bureaucracy they study, at the risk of leaving out important but understudied offices. Because of the difficulty of producing a manageable dataset for analysis, these studies also find it inevitable

istration (Honolulu: University of Hawaii Press, 1987); Deng Xiaonan 鄧小南, *Songdai wenguan xuanren zhidu zhu cengmian* 宋代文官選任制度諸層面 (Shijiazhuang: Hebei jiaoyu chubanshe, 1993).

6 Sun Guodong 孫國棟, *Tangdai zhongyang zhongyao wenguan qianzhuan tujiing yanjiu* 唐代中央重要文官遷轉途徑研究 (Hongkong: Longmen shudian, 1978). See also similar studies by Lai Ruihe, *Tangdai jiceng wenguan* 唐代基層文官 (Beijing: Zhonghua shuju, 2004); *Tangdai zhongceng wenguan*; and *Tangdai gaoceng wenguan* 唐代高層文官 (Beijing: Zhonghua shuju, 2017).

7 Robert M. Hartwell, “Demographic, Political, and Social Transformations of China, 750–1150,” *Harvard Journal of Asiatic Studies* 42.2 (Dec. 1982): 394–425; “Financial Expertise, Examinations, and the Formulation of Economic Policy in Northern Sung China,” *Journal of Asian Studies* 30.2 (Feb. 1971): 281–314.

8 For a comprehensive review of this field in the past fifty years, see Franziska Barbara Keller, “Analyses of Elite Networks,” in *The Palgrave Handbook of Political Elites* (London: Palgrave Macmillan, 2018), 135–152.

9 Josef Woldense, “The Ruler’s Game of Musical Chairs: Shuffling during the Reign of Ethiopia’s Last Emperor,” *Social Networks* 52 (2018): 154–166.

to largely simplify the complicated myriad of government organs that existed in the real world. Moreover, they often take a long time span as a coherent unit of analysis and therefore lose sight of how bureaucratic practices may directly reflect the specific political and social changes during a particular period.

This study adopts a similar approach but with some improvements. I focus on a specific group of officials, namely those appointed to academic institutes (*guan zhi* 館職)¹⁰ between 1131 and 1164 under the talent-nurturing policy.¹¹ I use service experience in Song academic institutes as the criterion for defining the study population, but my scope of data collection covers the entire lifespan of each official included in this study. This practice helps avoid the pitfall of studying only the data on a predefined list of offices. To trace changes in the officials' career patterns over time and map congruent political changes, I have also preserved as much temporal information in my dataset as was available in the sources.

Appointees to the academic institutes played a unique role in the Song bureaucracy. They managed the state collection of books and maps, collated literary and classical works, and compiled official histories based on government archives. Having privileged access to state archives and knowledge resources that were typically not open to other officials, they were expected to offer policy advice on state affairs. To some extent, they served as an equivalent to modern think-tanks. More significantly, the Song personnel authorities used academic institutes as a place to foster talent and groom gifted candidates for high-ranking office. Promising junior officials were first selected to serve in academic institutes and then promoted to influential positions, either in central government agencies or in the provinces. Thus, appointment to the academic institutes gave an official the qualifications and experience necessary to reach the upper echelons of officialdom, allowing them to bypass the typical sequence of promotion that ordinary civil servants were subject to.¹² As a result, many Song officials per-

10 In Song times, the term *guan zhi* referred both to positions in the scholarly institutes and to the incumbents of these positions, while the latter was also called *guan zhi guan* 館職官.

11 Categorically called "*guan zhi*" in the historical record, posts in academic institutes include a wide range of offices that played a similar role in different periods of the Song dynasty. During the period of 1131–1164 that this study concerns, these posts were all located inside the Imperial Library. Therefore, this article uses "Imperial Library posts" interchangeably with "academic institute posts" in the following discussion. For an example of official proclamations that linked the talent-nurturing policy to the Imperial Library, see Emperor Xiaozong's edict on 1164/111/3. Xiaozong 宋孝宗, "Guan'ge geng bu li'e zhao" 館閣更不立額詔, in *Quan Song wen* 全宋文, ed. Zeng Zaozhuang 曾棗莊 and Liu Lin 劉琳 (hereafter *QSW*; Shanghai: Shanghai cishu chubanshe, 2006), 234: 5217.173.

12 Once appointments to the academic institutes became a recognized shortcut to high offices, they were inevitably abused by those in power. For contemporary criticisms of such abuses, see Li Geng, *Songdai guan'ge jiaokan yanjiu*, 76–77.

ceived appointments to the academic institutes as an important launchpad to core government positions.¹³

This article posits that the Song state paced different officials' progress along prescribed career paths so that the most talented could climb the ladder of bureaucracy more quickly than others. The talent-nurturing policy served exactly this objective. As it links offices inside and outside the academic institutes, this Song personnel strategy makes an excellent object of study for us to scrutinize the connectedness between offices in the bureaucracy and the logic behind its operations. Therefore, this study examines the talent-nurturing policy and its impacts by constructing a network of bureaucratic transfers. Each node is a post, and the transfer between any pair of posts is represented by a directed edge connecting the two nodes.¹⁴ The weight of each edge signifies the number of instances of such transfers known from the extant historical records. In constructing this network, I first identified all the appointees to academic institutes between 1131 and 1164 and then traced the careers of each appointee.¹⁵ The dataset contains 3,367 records of bureaucratic transfers, which correspond to a total of 197 appointees during this period, generating a network with 1,042 unique nodes and 2,360 unique directed and weighted edges. Two open-source programs, Gephi 0.9.2 and Visone, are employed for visualization and analysis.¹⁶

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- 13 For a discussion of the responsibilities of officials in the academic institutes, see Li Geng, *Songdai guan'ge jiaokan yanjiu*, 2006. For English scholarship on this topic, see John H. Winkelman, "The Imperial Library in Southern Sung China, 1127–1279: A Study of the Organization and Operation of the Scholarly Agencies of the Central Government," *Transactions of the American Philosophical Society (New Series)* 64.8 (1974): 5–61; Xiong Huei-Lan 熊慧嵐, "A Reservoir of Talent: An Analysis of the Career Advancement of Imperial Library Officials during the Southern Song (1127–1279)," *Journal of Song-Yuan Studies* 48 (Sep. 2019): 7–56.
- 14 The Song bureaucratic system was extremely sophisticated, consisting of several parallel components. Three of them were particularly important: "titular offices" (*guan* 官) which determined an official's rank status, "assignments" (*zhi* 職) which usually served as his additional honorary recognition, and "commissions" (*chaiqian* 差遣, or sometimes translated as "functional posts" or "duty assignments") which specified the official's actual duties. In this study, I consider only the "commissions" of an official and refer to them simply as "offices" or "positions." If an official held several commissions concurrently (*jian* 兼), each instance of concurrent appointments is coded in my dataset as a case of a "bureaucratic transfer" but marked as "concurrent" (as opposed to a "regular" transfer between two offices held in succession).
- 15 For a thorough discussion on the source which I used to retrieve these career records, see Appendix I. Regarding the technical decisions I made to process and converted the data into computer-readable data for analysis, see Appendix 2.
- 16 Bastian M., Heymann S., Jacomy M. "Gephi: an Open-Source Software for Exploring and Manipulating Networks." International AAAI Conference on Weblogs and Social Media. 2009. Ulrik Brandes and Dorothea Wagner, "Visone: Analysis and Visualization of Social Networks," in *Graph Drawing Software*, ed. Michael Jünger and Petra Mutzel (Heidelberg: Springer Heidelberg, 2003), 321–340.

Two statistical measures, modularity and current-flow betweenness centrality, are used. Modularity analysis detects the presence of distinct communities composed of densely connected nodes within a network. A higher modularity value indicates a greater distinction between these communities. Here I use this measure to differentiate groups of offices that officials held at different career stages.¹⁷ Current-flow betweenness centrality of a node measures its frequency of appearing on all the paths linking any pair of nodes in a network.¹⁸ Generally, Song civil servants moved up the bureaucratic ladder, even though the speed of promotion varied from one official to another. The top office one could hope to reach was a state councilor (*zaizhi* 宰執), which marked the peak – though not necessarily the end – of an official’s career. In such a network where lower-ranking offices are linked progressively to higher-ranking ones, a higher value of current-flow betweenness centrality principally indicates that the office played a more influential role in leading its incumbents to the top civilian leadership. In addition, in the network graphs presented below, the size of a node is proportional to its current-flow betweenness centrality, and the thickness of an edge indicates the number of observed transfers between each pair of offices. For visual clarity, all the nodes in the networks are labeled in Chinese, instead of using the lengthy English translations of Song office titles.

2. A Gateway to the Core of Governance

In 1127, the Jurchens invaded northern China and forced the Song court to relocate to the south, beginning an era known as the Southern Song (1127–1279). To secure the loyalty of intellectuals to the dynasty, the restored Song court, under the rule of Emperor Gaozong 高宗 (r. 1127–1162), made a symbolic proclamation that he would continue the policy of “nurturing talent” in academic institutes. This policy, reputedly dating back to the dynastic founders, regarded academic institutes as a training ground for fostering candidates for high-ranking court offices, or even the top government leadership. In 1131,¹⁹ Gaozong approved a collective proposal from his leading officials to reinstate “academic institute posts” (*guanzhi*)²⁰ and soon re-established the Imperial Library, which had been abol-

17 For a discussion of modularity and its application, see “Network Visualization and Analysis with Gephi,” <https://noduslabs.com/courses/network-visualization-and-analysis-with-gephi/units/section-1-quick-introduction-to-network-analysis/?try> (accessed September 18, 2020).

18 For a discussion on current-flow betweenness centrality, see M. E. J. Newman, “A Measure of Betweenness Centrality Based on Random Walks,” *Social Networks* 27.1 (2005): 39–54.

19 Years in this article are converted to the Julian calendar, but months and days, if any, follow the Chinese lunar calendar. The dates are expressed as year/month/day. Intercalary months are indicated with the letter I (e.g., I7).

20 Cheng Ju 程俱, “Lintai gushi houxu” 麟臺故事後序, in *Lintai gushi jiaozheng* 麟臺故事校證 (Beijing: Zhonghua shuju, 2000), 218–219.

ished in 1129 due to the war.²¹ Nearly all appointees to offices in the Imperial Library in the first six months of its reestablishment²² moved on to new posts in other government organs within a year of their appointment.²³ By contrast, the Imperial Library carried out limited cultural functions before 1144: it had neither a proper building nor a good collection of books.²⁴

The talent-nurturing policy remained the critical component of the Song bureaucratic practice from Gaozong's reign onwards. Gaozong and his government chose to reestablish the Imperial Library, rather than other scholarly institutes, for grooming promising officials. This decision, as well as to which offices the Library appointees were later transferred, signified how they perceived the dynastic tradition of talent-nurturing policy. These practices developed into a standard protocol for succeeding rulers and their officials of the dynasty. I have shown elsewhere that the number of officials with experience in the Imperial Library steadily increased among the top civilian leadership after 1131, and that this general trend continued throughout the Southern Song.²⁵ In the following section, I will explain which offices can be considered major posts on the career track of talent-nurturing in the tradition that Gaozong established by using a quantitative analysis of the career records of officials who served in the Imperial Library between 1131 and 1164.

2.1 The Mainstream of Career Advancement

Network A is constructed from the career records of officials who were appointed to the Imperial Library between 1131 and 1164 (Figure 1, for the complete version, see Appendix 3). It is comprised of five clusters, which are detected via the Louvain method in Gephi.²⁶ Three large clusters – colored in blue, green, and yellow – form the main body of the network, supplemented by two small com-

21 Li Xinchuan 李心傳, *Jiyan yilai xianian yaolu* 建炎以來繫年要錄 (henceforth *Yaolu*; Taipei: Academia Sinica, Scripta Sinica Database), 22.1129/4.

22 These officeholders included a Vice Director (*bishu shaojian* 秘書少監), an Assistant Director (*bishu cheng* 秘書丞), a Collator (*jiaoshu lang* 校書郎), and a Proofreader (*zhengzi* 正字), see Xu Song 徐松, *Song huiyao jigao* 宋會要輯稿 (Taipei: Academia Sinica Scripta Sinica Database, 1984; hereafter *SHY*), *Zhiguan* 職官 18.24.

23 The only exception was the proofreader, who first received an internal promotion to the collator in early 1132 and then advanced to an external position later that year. Chen Kui 陳騷, *Nan Song guange lu* 南宋館閣錄 (henceforth *NSGGL*, Beijing: Zhonghua shuju, 1998), 82, 86, 110, and 117.

24 A building was not constructed for the Imperial Library until 1143/12, under the aegis of the Fiscal Supervisorate of Liangzhe. Chen Kui, *Nan Song guange lu*, 2.9.

25 Xiong, "A Reservoir of Talent," 18–25.

26 The network has a modularity of 0.547 when the resolution is set at 1.75. A modularity of 0.4 or above usually indicates the presence of a pronounced community structure in the network. On the Louvain method, see Vincent D Blondel, Jean-Loup Guillaume, Renaud Lambiotte, Etienne Lefebvre, "Fast Unfolding of Communities in Large Net-

munities (colored in orange and pink in the complete version) at the margins. The horizontal distribution of nodes is roughly in line with the ranks of these offices, with lower-ranking offices on the left and the higher-ranking ones on the right. These clusters constitute the mainstream of the officials' career paths.²⁷

The blue and pink clusters each form a circular sector, with the nodes denoting the method of entry into government located at or near the vertices, namely “obtaining a “presented scholar” (*jinsi*) degree via regular examinations” (labeled “進士_常科”), “graduation from erudite literatus examinations” (labeled “中詞科”), “qualifications via government schools” (labeled “官學”), and “protection privilege” (labeled “恩蔭入仕”).²⁸ Graduation from the regular and erudite literatus examinations and government schools certifies a person's erudition and literary skills, and was deemed a prerequisite for an appointment in the Imperial Library. Of the 197 officials discussed in this study, only one had none of these formal qualifications.²⁹ Ten officials first entered the officialdom using the protection privilege, but they all managed to gain a *jinsi* degree or acquired equivalent qualifications through the governmental school system later on. The edges in the blue and pink clusters lead through different paths to the green cluster, where Imperial Library offices come into sight. These paths vary in length, ranging from one to three or more steps. This supports the current understanding that the speed of promotion to the Imperial Library varied from one official to another, depending on their individual scholarly accomplishments.³⁰ The top performers were appointed to the Imperial Library as soon as they had finished one term of service in the local administration, whereas others assumed office in the Imperial Library only after finishing two or more terms in local administration.

The green cluster gathers all the nodes that denote Imperial Library posts, except Vice Director, which appears in the yellow cluster. The green cluster also contains nodes that represent positions held by an official immediately preceding or following his appointment to the Imperial Library. Imperial Library offices

works,” *Journal of Statistical Mechanics: Theory and Experiment* 10 (2008): 155–68.

R. Lambiotte, J.-C. Delvenne, M. Barahona *Laplacian Dynamics and Multiscale Modular Structure in Networks*, 2009.

- 27 Besides these five clusters, in the complete version of Network A, there are also nodes that are scattered across the entire network with weak connections to one another and, sometimes, with no connections at all to any of the five clusters. This means that there are no observed transfers between these posts and those in the mainstream career path. They are evidence of the diverse career experiences of the Imperial Library appointees.
- 28 For a discussion of different methods of entry and how they are coded in my dataset, see Appendix 2.
- 29 This man was Emperor Zhezong's brother-in-law, whose appointment to the supervisory position in the Imperial Library was mainly for conferring upon him a distinguished honor, rather than actually serving there. See *Yaolu* 157.478–2 (1157/2/壬子).
- 30 Zhang Xiqing 張希清, “Songchao gongju shihe shouguan zhidu shulun” 宋朝貢舉釋褐授官制度述論, *Zhongyuan wenhua yanjiu* 中原文化研究 3 (2015): 20–28.

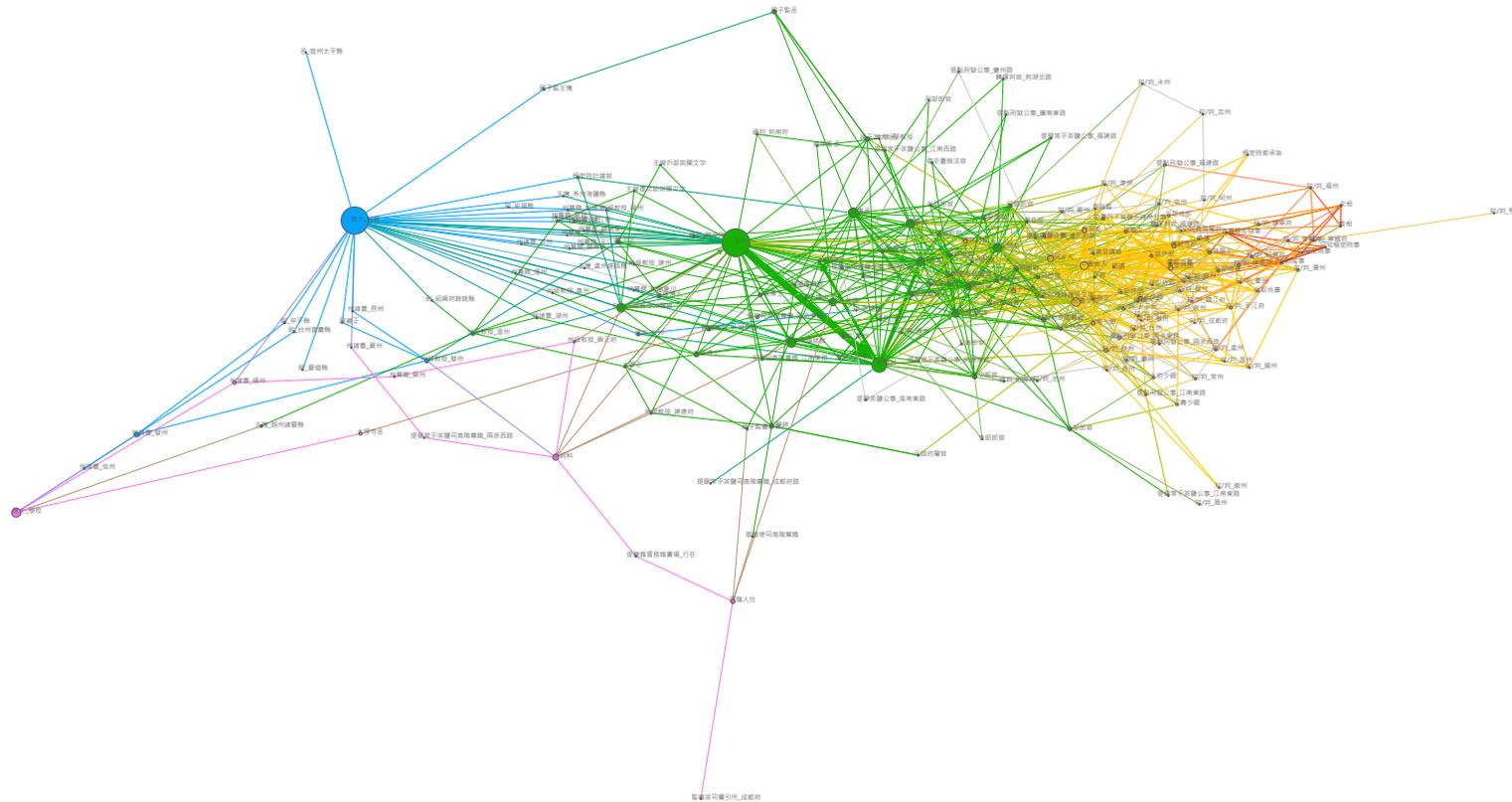


Fig. 1 Network A. For visual clarity, nodes with a lower current-flow betweenness centrality than that of the Chief Councilor (0.253%) are filtered out. The colors distinguish the communities to which a node is assigned according to modularity analysis.

have the highest scores of current-flow betweenness centrality – not only in this cluster, but also in the network as a whole – and are thus visualized as larger than the others in the graph. This phenomenon is not unexpected, because data on the 197 officials' appointments to and from the Imperial Library are more complete than the career data related to their other offices. Therefore, what truly deserves attention is the non-Library offices with a high value of current-flow betweenness centrality. These include, first of all, the Director of the Bureau of Appointments (*libu si langguan* 吏部司郎官), a leading agency in the Ministry of Personnel, and the Investigating Censor (*jiancha yushi* 監察御史). Other nodes in the green cluster are less noticeable individually, but many are directors and vice directors (collectively known as *langguan* 郎官) of the Twenty-Seven Bureaus (*ershiqu si* 二十七司) in the Department of State Affairs (*shangshu sheng* 尚書省), which were sub-divisions in the executive branch of government. Moreover, all bureaus belonging to the Ministry of Personnel appear in this cluster, but those in other ministries are much less represented.

The edges from the green cluster lead to offices in the yellow cluster, which represents the last constellation of offices in an official's career before he reached the top civilian leadership. The most prominent node, measured by current-flow betweenness centrality, is the Secretariat Drafters (*zhongshu sheren* 中書舍人). This node receives links from the Imperial Diarists in the Secretariat (*qiju sheren* 起居舍人) and those in the Chancellery (*qiju lang* 起居郎) and frequently sends links to the Supervising Secretary (*jishizhong* 給事中) and the Vice Minister of Personnel (*libu shilang* 吏部侍郎). While Ministers and Vice Ministers of the Six Ministries all appear in Network A, those in the Ministry of Personnel stand out in particular.

The orange cluster marks the peak – and sometimes also the terminal stage – of a bureaucratic career. Nodes representing positions in the State Council stand out in this cluster. They include the top government offices from both civilian and military branches, but the civilian leadership is clearly more notable.³¹ All the offices in the top civilian leadership appear in this cluster, including the Assistant Chief Councilor (*canzhi zhengshi* 參知政事), the Vice Chief Councilor (*cixiang* 次相, aka the Right Chief Councilor [*youxiang* 右相]), and the Chief Councilor (*shouxiang* 首相, aka the Left Chief Councilor [*zuoxiang* 左相]).³² By comparison, only some of the supervisory positions in the dynasty's top military lead-

31 Top leadership positions in the military branch of government were the supervisory offices in the Bureau of Military Affairs, which were nevertheless filled mostly by civilian officials in Song times.

32 The formal titles of the State Councilors changed frequently during the Song. Whatever their formal titles, they were categorically coded as Chief, Vice, and Assistant Councilors. These distinctions reflect their actual authority and their niche in the bureaucratic hierarchy.

ership – i.e., the Bureau of Military Affairs (*shumi yuan* 樞密院) – appear in the network. Moreover, officials in this study who served in the Bureau of Military Affairs often held top civilian offices concurrently or had only a brief appointment in the Bureau during an interval between two different top civilian appointments.

The aforementioned observations are made based on each node’s current-flow betweenness centrality, which adopts an electrical current model to measure the extent of the “current” flowing through a given node between any pair of nodes in the network. In this study, I interpret a high current-flow betweenness centrality as an indication of an office’s high degree of influence on the officials’ progress toward the top leadership positions.³³ It captures each node’s structural prominence in the global structure of the network. To accurately identify the major posts on the 197 officials’ career trajectories, I devised a methodology which integrates current-flow betweenness centrality with six other centrality measures for additional information on a node’s local significance. I use in-degree centrality of an office to assess how many other offices its incumbents were transferred from, and out-degree centrality to measure how many offices its incumbents were transferred into. Degree centrality of an office ignores the direction of such transfers and simply counts the number of other offices its incumbents were transferred into and out of.³⁴ To take into account the number of observed transfers in the historical records for each pair of offices, I also include the weighted versions of these three centrality measures. The current-flow betweenness centrality is calculated in Visone,³⁵ and all the other centrality scores are calculated in Gephi. This generates a total of seven ranking lists for the nodes, one list per centrality measure. Because of a significant overlap among the top-ranking nodes on these lists, this produces a list of 38 unique nodes that are ranked among the top twenty

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- 33 The calculation of current-flow betweenness centrality takes into consideration all possible paths between any pair of nodes, although it gives more weight to shorter paths than to longer ones. It therefore differs from the classical definition of betweenness centrality, which considers only the shortest path between each pair of nodes. Current-flow betweenness centrality is more appropriate for the present study because officials took different paths from one office to another in their careers, not necessarily the shortest ones. For a comparison between different betweenness centrality measures, see Newman, “A Measure of Betweenness Centrality Based on Random Walks,” 39–54.
- 34 Offices that were usually held concurrently or at the end of bureaucratic careers will have higher in-degrees and lower out-degrees. Conversely, an office with a lower in-degree and a higher out-degree centrality was usually held by officials at the start of their careers. Since available career data is incomplete for some of the 197 officials, a measure of network-wide structural prominence (i.e., current-flow betweenness centrality) may not capture the full significance of the offices they held, which makes it necessary to also include the other six centrality scores that measure the local significance of these offices.
- 35 For a discussion of Visone’s algorithm for current-flow betweenness centrality, see Michael Baur, *Software for the Analysis and Visualization of Social Networks* (doctoral dissertation, Universität Fridericiana zu Karlsruhe, 2008), 42.

on at least one of these lists.³⁶ For each of these nodes, I count the number of lists where it is ranked among the top twenty, and the results are reported in Table 1. If a node is ranked among the top twenty on four or more of these lists, it is considered a major post on the career trajectories of the 197 officials in this study.

Not surprisingly, Imperial Library offices stand out in the top-ranking nodes, in part because I have limited the scope of this study to those officials who had experience in the Imperial Library. Of these offices, the Proofreader, the Collator, and the Assistant Director were the most important, which often marked the start of an official's service in the Imperial Library.³⁷ Next to them in structural prominence are the Director and Vice Director of the Bureau of Appointments in the Ministry of Personnel, the Secretariat Drafter, the Investigating Censor, Imperial Diarists in the Secretariat and the Chancellery, the Vice Minister of Personnel, the Supervising Secretary, and the Hanlin Academician (*Hanlin xueshi* 翰林學士). Although these offices were scattered across a variety of government organs, many of their incumbents were deeply involved in the making of personnel decisions, which gave incumbents of these offices an opportunity to influence the staffing of the government and its policies.³⁸ It was precisely these offices that marked the key steps on a talented official's career path towards the top civilian leadership.

Offices responsible for enforcing discipline and conducting performance reviews are also present among the top-ranking nodes. Chief among them are the

36 See Appendix 4 for all seven centrality scores of these 38 nodes. I focus on the top twenty offices because a Song official usually held a total of ten to fifteen offices in his entire career. This estimation is based on an average career length of thirty years and a typical tenure of two years or less in each office. Wu Zhihao 吳志浩, "Songdai shiren pingjun siwang nianling kao" 宋代士人平均死亡年齡考, *Zhejiang xuekan* 浙江學刊 4 (2017): 170–181.

37 Xiong, "A Reservoir of Talent," 33–34.

38 Take appointments to the Imperial Library, for example. When a vacancy arose in the Imperial Library, the emperor would instruct senior court officials to nominate candidates. These senior officials, categorically known as the "Two Drafting Groups" (*liangzhi* 兩制) and the "Ministers-in-Attendance" (*shicong* 侍從), included the Hanlin Academicians, Secretariat Drafters, Supervising Secretaries, and Ministers and Vice Ministers, which were exactly those offices represented by the top-ranking nodes in Table 1. The nominees would then take a special examination designed by the Hanlin Academicians or other senior court officials, and the graduates from the examination would be appointed to the Imperial Library. After these appointment decisions were reviewed by State Councilors, formal appointment orders would be drafted by the on-duty Secretariat Drafter, approved by State Councilors, verified by the Department of the Secretariat, and inspected by the on-duty Supervising Secretary in the Chancellery. The Ministry of Personnel was responsible for its execution once the order was finalized. Additionally, at every stage in the above process, censors and remonstrators could step in and voice their objections, if any. By refusing to draft the appointment orders and sending them back for reconsideration, the Secretariat Drafter and the Supervising Secretary also had the power to protest against a decision they deemed inappropriate.

Nodes	正字	校書郎	秘書丞	吏部郎官	秘書郎	秘書少監	中書舍人	著作佐郎	監察御史	起居舍人	禮部郎官	起居郎	禮部侍郎	吏部侍郎	給事中	進士—常科	翰林學士	官學	樞密院編修官	侍講
Times ranked high	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	5	5	4	4	4
Nodes	詳定一司敕令所屬官	次相	參知政事	直學士院	侍讀	史館屬官	都督府高階幕職	工部侍郎	王府教授	宗正少卿	進士—特賜	中詞科	太學博士	州諸曹—婺州	殿中侍御史	太常少卿	知/判—饒州	大宗正司丞		
Times ranked high	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1	1	1	1		

Tab. 1 Summary of top-ranking nodes by seven centrality measures, indicating the number of the seven centrality measures by which the node ranks high. Major posts identified on the officials' careers are highlighted in green. Imperial Library offices are in blue.

directors of various bureaus in the Ministry of Personnel, whose duties included making appointment decisions, conducting regular performance reviews, deliberating on the use of the protection privilege, merits, honors, and promotions. Another group of top-ranking nodes represent the offices in remonstrance and censorial organs, whose incumbents were collectively known as the “speaking officials” (*yanguan* 言官).³⁹ Among them, the Investigating Censor has the highest score of current-flow betweenness centrality (1.276), followed by the Grand Master of Remonstrance (*jianyi dafu* 諫議大夫, 0.161), the Exhorter (*zhengyan* 正言, 0.152), and the Vice Censor-in-chief (*yushi zhongcheng* 御史中丞, 0.118).

While incumbents of the above offices had a direct role to play in matters pertaining to personnel decisions, the Imperial Diarists and officials in the Imperial Library were also involved in these matters, albeit in an indirect way. Imperial Diarists recorded policy discussions between the emperor and his officials (e.g., state councilors and those who were granted an audience) and among court officials themselves. Appointment decisions were a topic that frequently came up in these discussions. These records provided the sources for the writing of official histories, which was mainly the responsibility of Editors and Assistant Editors in the Imperial Library, with occasional assistance from others.⁴⁰ The routine practice of archiving personnel orders and using them for history writing may have had the effect of deterring personnel authorities from appointing unqualified candidates.

In brief, most of the major posts identified in Network A constituted an institutional chain pertaining to personnel management, ranging from nomination and appointment to enforcing discipline and conducting reviews, and to documentation and archival preservation. Although each office had its own distinct duty, the evaluation of an official’s moral character and administrative abilities was a central concern for all of these offices. This signifies that a critical part of preparing an official for civilian leadership in the Song involved cultivating and testing his ability to identify talented candidates (*shiren zhineng* 識人之能). The practice also resonates with contemporary expectations that the fundamental duty of government leaders was to choose the right people to occupy the right offices.⁴¹

This notion of good leadership was grounded in the talent-nurturing policy, making the selection of academic institute appointees particularly significant as

39 Yu Yunguo 虞雲國, *Songdai taijian zhidu yanjiu* 宋代臺諫制度研究 (Shanghai: Shanghai renmin chubanshe, 2014). Hartman, “Sung Government and Politics,” 103–112.

40 Cai Chongbang 蔡崇榜, *Songdai xiushi zhidu yanjiu* 宋代修史制度研究 (Taipei: Wenjin chubanshe, 1993). Charles Hartman, *The Making of Song Dynasty History: Sources and Narratives* (Cambridge: Cambridge University Press, 2021), 1–19.

41 Zhuge Yibing 諸葛憶兵, *Songdai zaifu zhidu yanjiu* 宋代宰輔制度研究 (Beijing: Zhongguo shehui kexue chubanshe, 2000), 142–150.

this type of post stood at the beginning of the aforementioned office-chain. As Sun Sheng 孫升 (*jinshi* of 1165), a Palace Censor in 1089, remarked, intellectual elites considered the fulfillment of talent-nurturing a key criterion for assessing a state councilor's competency:

The foundation of peace and prosperity lies in seeking out the worthy men and no attainment of state councilors is greater than recommending talents ... State councilors intent on [bringing about peace and prosperity in] the realm must give priority to [the recruitment of] talents ... Our dynastic ancestors established the academic institutes and recruited eminent men from all corners of the realm, favoring them with generous salaries and distinguished honors and appointing them to offices [more prestigious than what] their seniority qualified them for. To test them, [our dynastic ancestors] gave them weighty and demanding assignments at court and in the provinces and observed their behavior and performances. Not until their abilities and achievements were perfected were they employed in high offices. This is the foundation for achieving peace and prosperity ... When our dynastic ancestors promoted officials to the State Council, they always made them recommend several prominent scholars [for offices in academic institutes]. Judging from their recommendations, officials at court and in the provinces could tell whether the newly appointed state councilors were worthy men or not, and future generations could also evaluate the depth of their learning and visions.⁴²

Sun's remark underscores that it was not academic institute posts alone, but rather their combination with other essential posts that constituted the model track of "talent-nurturing." These offices figured prominently in the careers of the Imperial Library appointees who benefited from the talent-nurturing policy in the early Southern Song, and a similar pattern is also noticeable in officials' career trajectories in the Northern Song and the Tang (618–907).⁴³

The foregoing analysis demonstrates that the revival of the Imperial Library and the reintroduction of the talent-nurturing policy in the early Southern Song served to open the gateway to core leadership positions. In an earlier study, I argued that appointments to the Imperial Library coincided with a preference for training and employing generalists in government service.⁴⁴ The analysis in this article takes this argument a step further. It shows that cultivating good leaders in the Song meant not only developing their skills for handling the tasks in each

42 Sun Sheng 孫升, "Qizhao dachen shoujian mingshi zou" 乞詔大臣首薦名士奏, QSW 93: 2021.100.

43 Gong Yanming 龔延明 ed., *Songdai guan zhi cidian* 宋代官制辭典 (Beijing: Zhonghua shuju, 1997), 681–682. Sun, *Tangdai zhongyang zhongyao wenguan qianzhuan tujing yanjiu*, 14–142; Lai, *Tangdai jiceng wenguan*, 13–98; *Tangdai zhongceng wenguan*, 49–92, 127–206; *Tangdai gaoceng wenguan*, 125–144.

44 Xiong, "A Reservoir of Talent," 50.

specific division of government, but also involved assessing and developing their abilities to evaluate the character and competence of their fellow officials.

2.2 Through the Lens of Graph Theory

Section 2.1 reveals the mainstream career path of the 197 officials under discussion. In this section, I will turn to divergences in their careers. Based on the positions they held in the Imperial Library, these officials can be divided into three groups (Table 2). Group A, comprised of 146 officials, are those who only held subordinate positions in the Imperial Library; Group B contains 19 officials who only held supervisory positions in the Library; and Group C, consisting of the remaining 32 officials, had experience in both types of positions in the Library. There was a wide gap in rank between the supervisory and subordinate offices in the Imperial Library.⁴⁵ The Vice Director of the Imperial Library, for example, was ranked 5b, whereas all the subordinate offices were ranked between 8b and 7b.⁴⁶ This raises the question: was the career pattern of the 19 officials who held only supervisory positions in the Library significantly different from that of the other officials?

To answer this question, I partition the data used in section 2.1 into three subsets, one for each group of officials, and then construct a network of bureaucratic transfers using each subset of data. The same methods of analysis used in section 2.1 are applied to each of these networks, which allows us to identify the major posts on the career path of each group. Table 3 compares the top-ranking posts across the three networks. Several of the top-ranking posts identified on the mainstream career path for the entire population of the 197 officials remain important on the career path of each of the three subgroups. These posts include the Investigating Censor (7b), the Imperial Diarist (6b), the Secretariat Drafter (4a), the Supervising Secretary (4a), the Vice Minister of Personnel (3b), and the Vice Minister of Rites (3b). The node denoting the attainment of a *jinshi* degree in regular examinations also figures prominently on the career paths of all three subgroups.

However, these broad similarities aside, the differences are also notable. First, all of the above posts, with the exceptions of the Investigating Censor and the attainment of *jinshi* degree in regular examinations, occupy structural positions

45 Offices in the Song bureaucracy were classified into nine ranks, and each rank was further divided into two or four classes. Following the convention, I use Arabic numerals to indicate the rank (1 for the highest rank and 9 for the lowest) and letters to indicate fine gradations inside each rank.

46 The Director of the Imperial Library was ranked at 4a, but the position was left vacant between 1131 and 1164. The Proofreader and Collator were both ranked at 8b, the Secretary and the Assistant Editor 8a, and the Assistant Director and the Editor 7b.

Group	Num. of Officials	Percentage	Notes
A	146	74.11%	Officials who held only subordinate positions. 3 out of 146 served both before and after 1131; 143 served only after 1131.
B	19	9.64%	Officials who held only supervisory positions. All served after 1131.
C	32	16.24%	Officials with experience in both supervisory and subordinate positions. 8 out of 32 held subordinate offices before 1127 and were promoted to supervisory offices after 1131. 24 held subordinate and supervisory offices only after 1131.
Total	197	100.00%	

Tab. 2 Officials in the Imperial Library between 1131 and 1164 by Service Experience.

that are similar in the careers of Group A and C, but not in that of Group B. Second, although the career paths of the 197 officials sometimes overlapped, they often diverged again soon afterwards. When officials in Group B were promoted, they often moved on to posts that were very different from what officials in Groups A and C were usually transferred to. Third, top leadership offices are conspicuous on the career paths of Groups A and C but absent on that of Group B. These observations are illustrative of the different paths taken by officials who held different types of positions in the Imperial Library.

Scholars have pointed out the existence of multiple paths of career advancement in Song officialdom.⁴⁷ These studies each capture a certain aspect of the Song officials' career patterns, but we will still benefit from a more holistic perspective provided by a theoretical model of directed acyclic graphs. This model, known as "the four-continent theory," is based on the work of Serguei Dorogovtsev, et al. Albert-László Barabási describes the model as follows:

Directed networks such as the World Wide Web naturally break down into several easily identifiable continents. In the central core each node can be reached from every other node. Nodes in the IN continent are arranged such that following the

47 Focusing on the bureaucratic practices in the early Northern Song, twentieth-century historian Umehara Kaoru charted the different career paths of officials who took different routes to enter government service. Umehara Kaoru 梅原郁, "Sōdai no bunkai" 宋代の文階, in *Sōdai kanryō seidō kenkyū* (Kyoto: Dōhōsha, 1985), 10–79. Deng Xiaonan has further explicated the divergent career paths in Song officialdom using institutional records and other source materials. Deng Xiaonan, *Songdai wenguan xuanren zhidu zhucengmian*, 181–191.

Node	Bureaucratic Rank	Num. of Centrality Measures by Which It Ranks High			
		Group A	Group B	Group C	
進士_常科	Methods of Entry	5	5	5	
中詞科		1	—	—	
進士_特賜		—	3	1	
官學		5	—	—	
恩蔭入仕		—	—	1	
州諸曹_婺州		9b	1	—	—
州幕職_溫州		8b	—	1	—
州級教授_溫州		8b	1	—	—
詳定一司敕令所屬官		8b	2	1	5
樞密院編修官		8a	6	4	—
太學博士	8b	1	—	—	
正字	8b	7	—	7	
校書郎	8b	7	—	7	
辟雍博士	8a	—	—	1	
秘書郎	8a	7	—	1	
著作佐郎	8a	7	—	7	
秘書丞	7b	7	—	5	
王府教授	7b	2	—	1	
資善堂講官	7b/7a	—	5	1	
監察御史	7b	7	7	7	
殿中侍御史	7a	—	7	—	
吏部郎官	7a/6b	7	2	7	
禮部郎官	7a/6b	7	—	4	
考功郎官	7a/6b	—	7	—	
司封郎官	7a/6b	2	1	—	
祠部郎官	7a/6b	3	—	—	
戶部郎官	7a/6b	1	—	—	
屯田郎官	7a/6b	—	1	—	
左司郎官	6b/6a	—	4	—	
右司郎官	6b/6a	—	1	—	
起居郎	6b	6	7	5	
起居舍人	6b	7	4	7	
國子司業	6a	2	—	—	
太常少卿	5b	—	7	4	
宗正少卿	5b	3	6	—	

Node	Bureaucratic Rank	Num. of Centrality Measures by Which It Ranks High		
		Group A	Group B	Group C
秘書少監	5b	—	7	7
國子祭酒	4b	—	—	1
中書舍人	4a	7	6	7
給事中	4a	4	—	6
吏部侍郎	3b	7	6	7
戶部侍郎	3b	—	—	2
禮部侍郎	3b	6	7	7
兵部侍郎	3b	—	4	6
工部侍郎	3b	—	6	1
翰林學士	3a	1	3	7
吏部尚書	2b	—	7	3
兵部尚書	2b	—	—	2
參知政事	2a	2	—	2
次相	1b/1a	2	—	4
首相	1b/1a	—	—	3
史館屬官		2	—	—
國史院屬官		2	—	—
史館高階屬官		—	2	—
國史院高階屬官		—	—	2
都督府高階幕職		2	—	—
侍講		3	4	4
崇政殿說書		—	—	1
侍讀		2	3	2
直學士院		2	—	3
知/判_潭州		—	—	2
知/判_紹興府		—	7	—
知/判_宣州		—	3	—
知/判_婺州		—	2	—
提舉常平茶鹽公事_荊湖南路		—	1	—

Ranks vary, depending on officeholders' individual situations

Tab. 3 Comparison of top-ranking nodes on the career paths of officials in Groups A, B, and C. Offices in the table are arranged in ascending order of bureaucratic rank. Nodes highlighted in blue have similar levels of structural prominence across the three networks, while those in green figure prominently on the career paths of Group A and C, but not on that of Group B. The “—” sign indicates that the node is not among the top twenty by any centrality measure.

links eventually brings you back to the central core but starting from the core doesn't allow you to return to the IN continent. In contrast, all nodes of the OUT continent can be reached from the core, but once you've arrived, there are no links taking you back to the core. Finally, there (are tubes that) directly connect the IN to the OUT continent; some nodes form tendrils, attached only to the IN and OUT continents; and a few nodes form isolated islands that can't be accessed from the rest of the nodes (see Figure 2).⁴⁸

The career pattern of Song officials bears marked similarities to this model. The Song officials were classified into three tiers – “men of selection” (*xuanren* 選人), “capital officials” (*jingguan* 京官), and “court officials” (*chaoguan* 朝官) – which, in spite of how they were called, indicated not whether an official had an assignment at court, in the capital, or elsewhere, but rather functioned as markers of rank and prestige.⁴⁹ For a Song official, a promotion in rank from a man of selection to a capital official, known as a “change of status” (*gaiguan* 改官), was of critical importance to his career. An official who failed to rise into the tier of capital officials had no prospect of receiving an appointment beyond the low-ranking local positions. The change of status was also irreversible: once a man of selection became a capital official, he would retain this status and be eligible for more prestigious positions at court and in higher-level local administrations. There is a notable parallel between this practice and the “four-continent theory,” where links between nodes run unidirectionally from the “IN Continent” to the “Central Core.” Furthermore, achieving the status of capital officials was highly competitive, and those who successfully gained this status did so in different ways. As discussed in section 2.1, in the case of those men studied in this article, it was their appointments to the Imperial Library that facilitated their change of status from “men of selection” (the “IN Continent”) to “capital officials.” For other Song officials, however, the change of status could be a much tougher and more complicated process.⁵⁰

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- 48 Albert-László Barabási, *Linked: How Everything Is Connected to Everything Else and What It Means for Business, Science, and Everyday Life*. (New York, NY: Perseus Publishing, 2002; 2014 reprinted), 166. S. N. Dorogovtsev, J. F. F. Mendes, and A. N. Samukhin, “Giant Strongly Connected Component of Directed Networks,” *Physical Review E* 64.2 (2001). I appreciate Professor Albert-László Barabási for his generosity and consent to using the image of the model of the Four-Continent Theory in this article.
- 49 For a brief discussion of the Song bureaucratic system, see Charles Hartman, “Sung Government and Politics,” in *The Cambridge History of China. Vol. 5, Part Two: Sung China, 960–1279*, ed. John W. Chaffee and Denis Twitchett (Cambridge, UK: Cambridge University Press, 2015), 55–71. Hucker translated *xuanren* 選人 as the “Selectmen,” while Hartman translates it as the “men of selection.” I adopt Hartman’s translation here, which I think better captures the meaning of *xuanren* in Song times (i.e., men who were qualified for holding offices and therefore entered the pool of candidates for selection).
- 50 Hukun 胡坤, *Songdai jianju gaiguan yanjiu* 宋代薦舉改官研究 (Shanghai: Shanghai guji chubanshe, 2019), 53–81, 149–219.

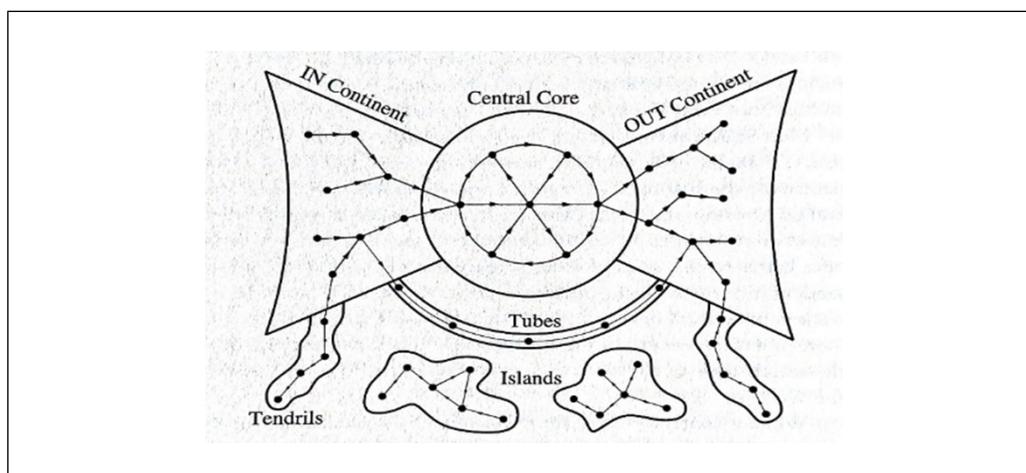


Fig. 2 The Model of the Four-Continent Theory. Image credit: see footnote 48.

A comprehensive examination of the four-continent theory and its potential for the Song bureaucratic system is beyond the scope of this study. It suffices to note that this theory is an invaluable source of inspiration for deciphering the Song bureaucratic practices. Take the talent-nurturing policy, for example. One may conceptualize the entire Song bureaucracy as a network consisting of multifarious offices ranked at different levels and located in diverse government organs. In this network, the talent-nurturing policy provided a mechanism that not only led talented officials out of the IN Continent, but also gave them a shortcut to the higher echelons of government by way of appointments to the Imperial Library. The question remains whether such appointments should best be theoretically conceptualized as a path which leads to the Central Core or as a “tube” which connects the IN Continent directly with the OUT Continent. Questions like this require further research in the future, to compare career records of officials who had experience in the Imperial Library with those who did not.

Although the four-continent theory provides a useful conceptual framework for understanding the Song bureaucracy from a network perspective, adjustments to the theory are also necessary to develop a more sophisticated model that accurately depicts the Song officials’ career paths. For example, Barabási describes the connection between the Central Core and the OUT Continent as unidirectional and irreversible, but this does not map neatly to the Song bureaucratic practices. No path seems to have existed for Song officials to leave the officialdom altogether: those who finished their tenure in the State Council could take up a position in prefectural or circuit administrations or receive a custodian sinecure, but as long as they were alive, they could always be summoned back to the court for high-ranking appointments should the need arise. That Song officials moved frequently between prestigious court appointments, including those to the Imperial Library and the State Council, and local administrative positions suggests

that it may be more instructive to conceive of the Central Core as itself composed of both core and peripheral areas. Movement between offices in these two areas depended heavily on shifting political circumstances. This is the topic to which I will turn now.

3. A Decade-Long Setback during the Qin Gui Administration (1140–1155)

Emperor Gaozong and his court revived the talent-nurturing policy to secure the support of scholar-officials for his rule. The mainstream career path charted in section 2 shows that the talent-nurturing policy was clearly in effect during Gaozong's reign and that it opened a gate for appointees in the Imperial Library toward the core leadership positions. On this career path, these appointees were involved, though in different ways, in the Song personnel administration, a practice which tested and developed their abilities to evaluate the character and competence of their fellow officials. However, the degree to which the talent-nurturing policy was implemented changed over the thirty-five years of Gaozong's reign (1127–1162) in tandem with the shifting diplomatic and domestic situations.

During the early decades of the Southern Song, military tension and the diplomatic relationship with the Jurchens posed a tough challenge. Gaozong's attitude toward these issues strongly determined his choice for the top leaders of his administration, who in turn exercised a great influence on the choice of men for other government positions. Modern scholars divide the early Southern Song into three phases.⁵¹ In the first phase, from 1127 to 1140, the Song policy towards the Jurchens wavered between war and appeasement, and the court valued collective deliberation in its decision-making process, a time-honored tradition of the dynasty.⁵² In the second phase, between 1141 and 1155/10, Gaozong finally made a resolution to sign a peace treaty with the Jurchens and granted his Chief Councillor Qin Gui exclusive authority to conduct negotiations. In this phase, Qin Gui served as the sole State Councillor with the full support of the emperor, monopolizing the central government. This phase ended with Qin's death in 1155/10. In the subsequent decade (1155/10–1164), the Song administration returned to its tradition of collective deliberation at court. For most of this decade, the Song maintained peaceful diplomatic relations with the Jurchens, but hawkish voices

51 For a discussion of the political history of the early Southern Song, see Teraji Jun 寺地遵, *Nan Song chuqi zhengzhishi yanjiu* 南宋初期政治史研究 (Taipei: Daohe chubanshe, 1995); Yu Yunguo 虞雲國, "Shaoxing tizhi yu Nan Song shi zhu wenti" 紹興體制與南宋史諸問題, in *Nandu junchen: Song Gaozong ji qi shidai* 南渡君臣: 宋高宗及其時代 (Shanghai: Shanghai renmin chubanshe, 2019), 1–36.

52 Hartman, "Sung Government and Politics," 97–102.

also emerged. War broke out again with the Jurchens in 1161, and peace was not restored until the two parties signed a new treaty in 1164.

This section examines whether the talent-nurturing policy was implemented differently in each of the above three phases. Using these phases as benchmarks, I assign two types of temporal attributes to all edges (Table 4). The first is what I call the “transition attribute,” which indicates when an observed instance of transfer between two offices took place. This attribute has three possible values: prior to 1141 (Phase One), between 1141 and 1155/10 (Phase Two), and after 1155/11 (Phase Three). The other temporal attribute is the “cohort attribute.” To give each edge a cohort attribute, I start with the nodes. I first classify the 197 officials under discussion into three cohorts based on the year of their first appointment to the Imperial Library after its revival in 1131: those first appointed to the Imperial Library between 1131 and 1140, those between 1141 and 1155/10, and those between 1155/11 and 1164.⁵³ I then give each edge the same cohort attribute as that of the official whose career the edge pertains to.

The distinction between these two types of temporal attributes is important to the following analysis. The life expectancy of Song officials was about fifty-three years and the length of their careers, measured from the time they entered government service to their retirement or death, averaged around three decades.⁵⁴ An official’s first appointment to the Imperial Library often took place in the second decade of his career, but some, by virtue of extraordinary academic achievements or out of pure luck, might land a post in the Imperial Library as early as the first decade of their careers. Therefore, some of the 197 officials had careers that spanned two or more phases. Using two temporal attributes for each edge allows us to determine when an appointment to the Imperial Library was made to which cohort of officials and therefore permits a closer examination of how the talent-nurturing policy was implemented in the early Southern Song.

Using the transition attribute, I divide my dataset into three subsets and construct a network (B1, B2, and B3) from each subset of data.⁵⁵ Each network corresponds to personnel decisions made in one of the three phases of Gaozong’s reign. Edges in each network are colored differently based on their cohort attribute (blue, yellow, and green for Cohorts One, Two, and Three, respectively). In

53 Of the 197 officials who held office in the Imperial Library between 1131 and 1164, some had already served there prior to 1129 when the Imperial Library was abolished. For simplicity, I have ignored appointments to the Imperial Library before 1129 in assigning values for the cohort attribute. Only appointments to the Imperial Library after its revival in 1131 are considered.

54 Wu Zhihao, “Songdai shiren pingjun siwang nianling kao,” 170–181.

55 Network B1 is constructed from data on appointments before 1141, Network B2 from data between 1141 and 1155/10, and Network B3 from data after 1155/11.

Attr. Type	Attr. Code	Data description
Transition Attribute	Phase One	Transferred to a new Imperial Library post prior to 1141
	Phase Two	Transferred to a new Imperial Library post between 1141 and 1155/10
	Phase Three	Transferred to a new Imperial Library post after 1155/11
Cohort Attribute	Cohort One	Officials first appointed to the Imperial Library between 1131 and 1140. Edges pertaining to this cohort are colored in blue.
	Cohort Two	Officials first appointed to the Imperial Library between 1141 and 1155/10. Edges pertaining to this cohort are colored in yellow.
	Cohort Three	Officials first appointed to the Imperial Library after 1155/11. Edges pertaining to this cohort are colored in green.

The network of bureaucratic transfers is partitioned into three based on the transition attribute of each edge:

Network B1	Contains only edges with a transition attribute of Phase One.
Network B2	Contains only edges with a transition attribute of Phase Two.
Network B3	Contains only edges with a transition attribute of Phase Three.

Tab. 4 Partition of network data based on temporal attributes.

what follows, I will compare the patterns of bureaucratic transfers in the three networks and use the mainstream career path identified in section 2.1 as a reference point for evaluating the appointments in each network. These comparisons will reveal whether political conditions in different phases of the early Southern Song (i.e., a government of collective deliberation versus a highly autocratic administration under Gaozong and Qin Gui) had different impacts on the personnel arrangements and the practice of the talent-nurturing policy.

A brief look at the data reveals that the number of officials who received their first appointments to the Imperial Library fluctuated greatly between 1131 and 1164 and that there was a pronounced deviation during the Qin Gui administration. This number started at a total of 105 between 1131 and 1140 (10 years) and declined to merely 38 between 1141 and 1155/11 (15 years) before it rose again to 52 between 1156 and 1164 (9 years). The annual number of new appointees fluctuated just as much (Figure 3): it dropped dramatically after 1141 and went all the way down to zero in some years of Qin Gui's administration. A structural analysis of the networks B1, B2, and B3 provides more details on the differences between these three phases. Using the same methods of analysis as employed in section 2, I have identified, for each network, the nodes that rank among the highest according to at least one of the seven centrality measures (Table 5). The following analysis will be based on the rankings of these nodes in each network, with par-

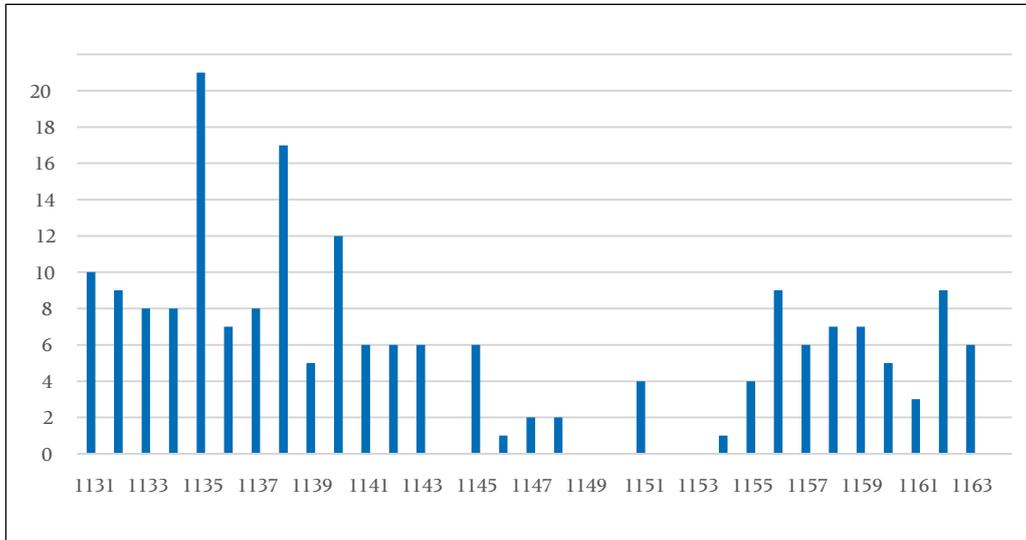


Fig. 3 Number of First-Time Appointees to the Imperial Library by Year of Appointment. The vertical axis denotes the annual number of first-time appointees, and the horizontal axis indicates the year of appointment.

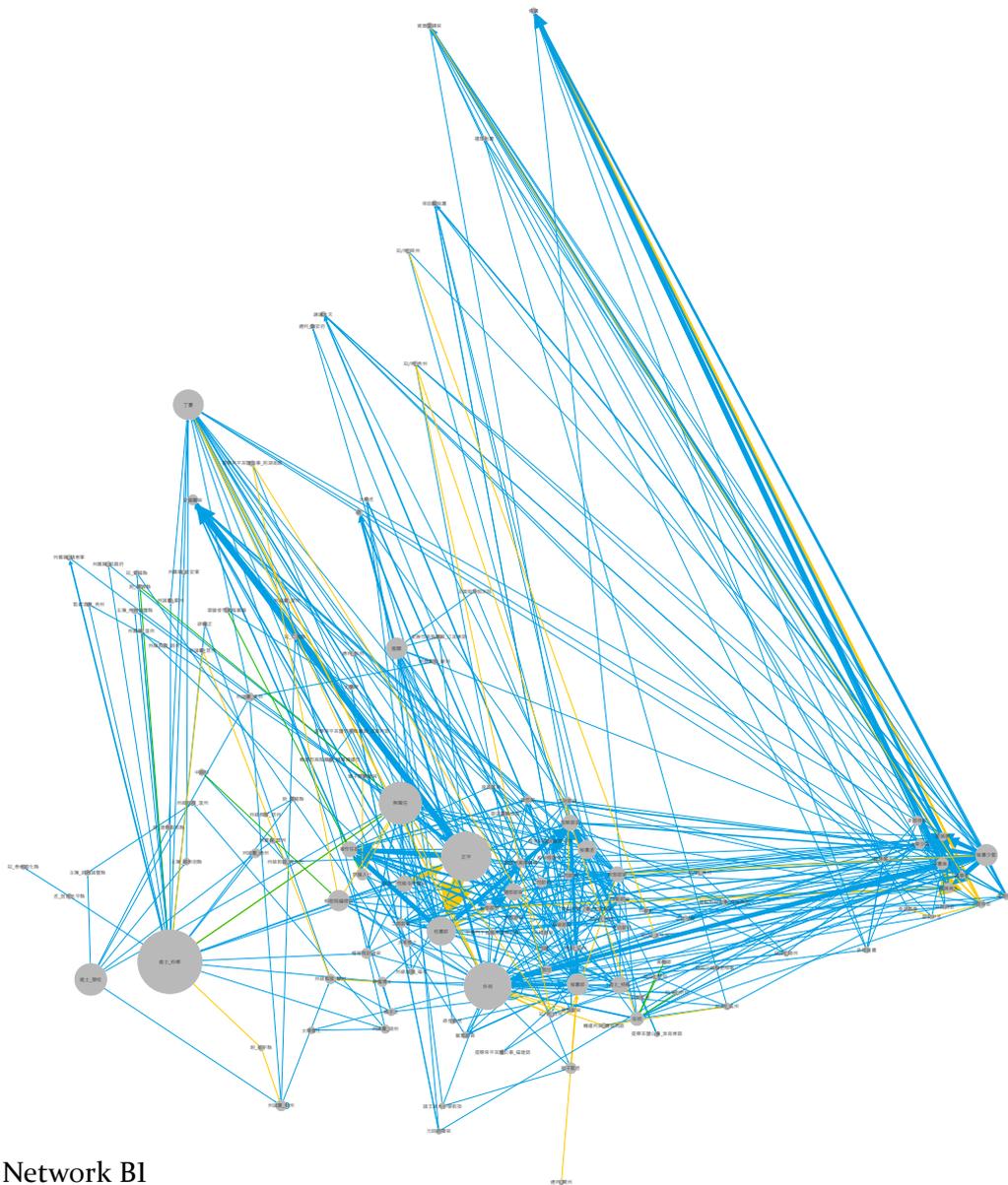
ticular attention given to their current-flow betweenness centrality values (see visualization in Figure 4).

At first glance, the three networks have a noticeable feature in common: “custodian sinecure outside the capital” (*waici* 外祠) and “inactive” (*wuzhiren* 無職任) are among the top nodes in all three networks, and their current-flow betweenness centrality scores are also among the highest. This suggests that the prospect of office-holding was unstable in all three phases of the early Southern Song. The officials in this study frequently left their then-current offices without a new duty assignment, or with merely a sinecure. Such arrangements, as explained in Appendix 1, were not uncommon but implied unusual political situations. What is also worthy of note is the location of these two nodes in each network and what other nodes they are connected to. In Network B3, these two nodes possess many outgoing links from those nodes that denote the high-ranking offices and top leadership positions. In comparison, in Networks B1 and B2, these two nodes are more often linked to nodes that represent low- and middle-ranking offices. This indicates that in Phases One and Two, the officials under discussion often encountered career frustrations at the middle stage of their bureaucratic life. Although they were “talented officials” chosen for nurturing, they failed to receive a smooth promotion to the upper echelons of government, as predicted in the mainstream career path outlined in section 2.1. Instead, they were often given a sinecure outside the capital, relieved of active duty, or appointed to local government positions. This phenomenon becomes more pronounced when transfers from central to local government positions are also taken into consideration.

Nodes	Current-Flow Betweenness Centrality Scores (%) in Each Network			Num. of Centrality Measures by Which It Ranks High		
	B1	B2	B3	B1	B2	B3
外祠	4.44	8.59	4.94	7	7	7
正字	4.69	5.55	4.10	7	7	7
無職任	3.97	5.20	3.01	7	7	7
校書郎	2.57	2.40	2.74	7	7	7
中書舍人	0.90	1.77	1.90	7	7	7
秘書少監	1.88	1.27	1.51	7	7	7
起居舍人	—	1.59	1.21	6	7	7
京祠	1.09	1.36	1.61	4	7	7
著作佐郎	1.26	1.17	1.26	7	6	4
吏部郎官	1.24	—	2.06	7	2	7
禮部侍郎	—	1.81	0.98	0	7	7
禮部郎官	1.40	—	—	7	6	0
服闋	1.83	2.06	1.39	4	5	3
監察御史	1.29	—	1.13	7	3	2
秘書郎	1.85	1.59	—	7	5	0
吏部侍郎	—	—	1.36	1	3	7
致仕	—	1.17	1.06	0	6	5
丁憂	2.73	2.97	—	5	5	1
秘書丞	1.58	—	2.03	7	3	1
樞密院編修官	1.80	1.50	—	5	6	0
逝	—	1.49	2.07	0	5	5
進士_科舉	6.16	5.49	—	5	5	0
給事中	—	—	—	3	1	5
起居郎	—	—	1.38	3	0	5
侍講	—	—	—	3	2	3
詳定一司敕令所屬官	1.35	1.12	—	3	5	0
翰林學士	—	—	—	0	2	5
參知政事	—	—	—	0	0	5
次相	—	—	0.97	0	0	5
國子司業	—	—	—	0	5	0

Nodes	Current-Flow Betweenness Centrality Scores (%) in Each Network			Num. of Centrality Measures by Which It Ranks High		
	B1	B2	B3	B1	B2	B3
中詞科	—	1.66	—	0	5	0
進士_學校	2.93	—	—	5	0	0
宗正少卿	—	—	1.10	0	0	4
直學士院	—	—	—	0	2	2
王府教授	—	—	—	0	3	1
進士_特賜	1.45	—	—	4	0	0
知/判_平江府	—	—	—	0	0	3
工部侍郎	—	—	—	0	0	3
侍讀	—	—	—	0	1	2
太學博士	—	1.26	—	0	3	0
國史院屬官	—	—	—	0	0	2
諸王宮大小學教授	—	—	—	0	2	0
史館屬官	—	—	—	2	0	0
資善堂講官	—	—	—	2	0	0
祠部郎官	—	—	—	2	0	0
樞密使	—	—	—	0	0	1
國史院高階屬官	—	—	—	0	0	1
首相	—	—	—	0	0	1
右司郎官	—	—	—	0	1	0
知/判_建康府	—	—	—	0	1	0
太學錄	—	—	—	0	1	0
司勳郎官	—	—	—	0	1	0
太常少卿	—	—	—	0	1	0
勒停/編管/限定居住	—	—	—	0	1	0
簽書樞密院事	—	—	—	0	1	0
恩蔭入仕	—	—	—	1	0	0
都督府高階幕職	—	—	—	1	0	0

Tab. 5 Top-ranking nodes in networks B1, B2, and B3. Nodes are arranged based on the number of centrality measures by which they rank among the top twenty. The “—” sign indicates that the node is not among the top twenty when ranked by current-flow betweenness centrality measure.



Network BI

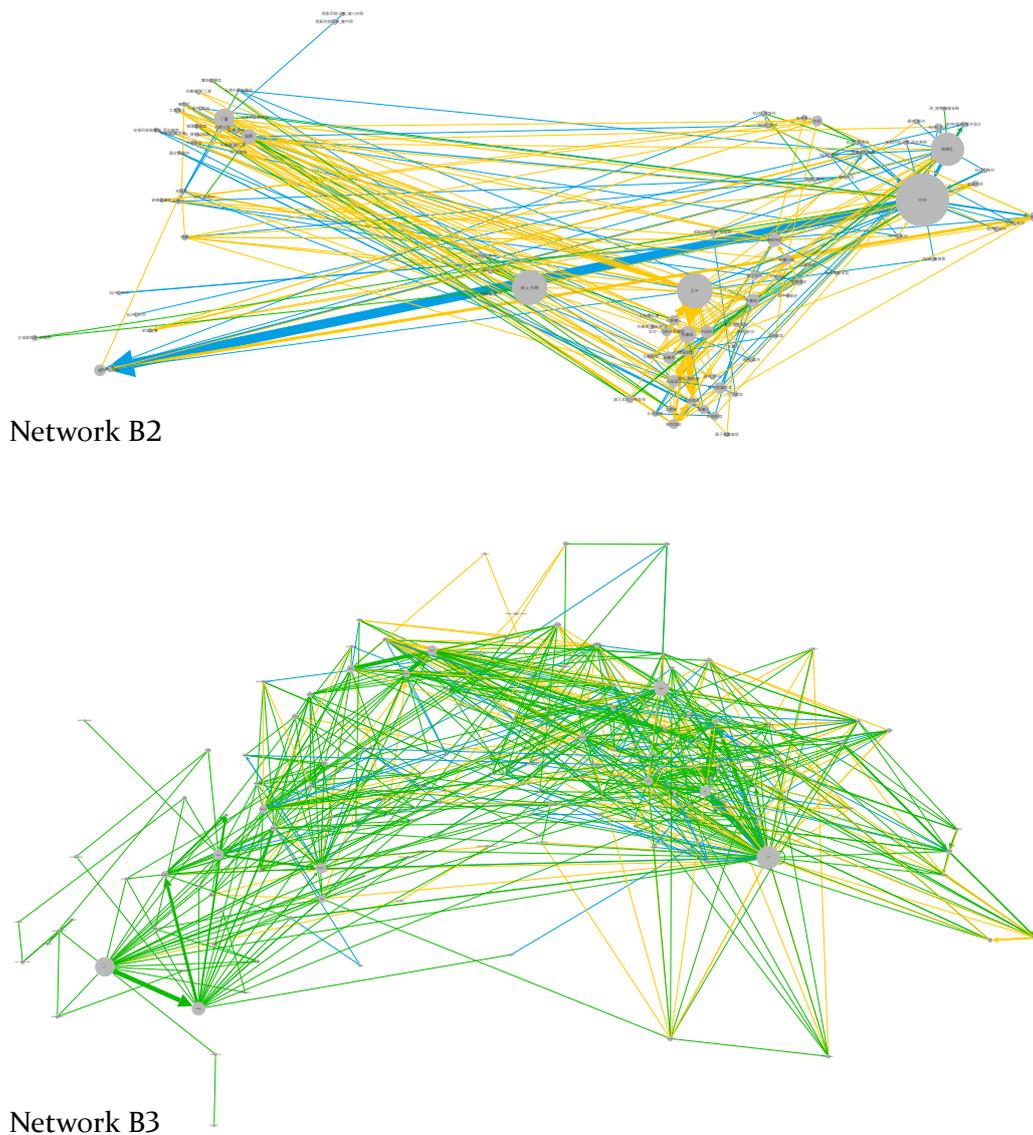


Fig. 4 Bureaucratic transfers in phases one, two, and three. The median current-flow betweenness centrality is 0.16%, 0.23%, and 0.25% for Networks B1, B2, and B3, respectively. For visual clarity, nodes with a current-flow betweenness centrality lower than the network-wide median are filtered out.

These similarities aside, the structural differences between Networks B1 and B2 also deserve attention. They demonstrate how the talent-nurturing policy was particularly obstructed in Phase Two when Qin Gui dominated court politics. Network B1 features a small cluster of high-ranking court offices, including the Secretariat Drafter and the Vice Minister of several ministries, and some middle-ranking offices in this network, such as the directors and vice-directors of the Twenty-seven Bureaus, also have relatively high values of current-flow betweenness centrality. This suggests that in Phase One, some of the officials who had served in the Imperial Library nevertheless succeeded in climbing up the bureaucratic ladder, even though others encountered career obstacles. Considering that Qin Gui had become the Chief Councilor in 1138, the structural features of Network B1 indicate that Qin's administration continued the talent-nurturing policy in Phase One. However, only some of the offices identified in section 2.1 as characteristic of the mainstream career path of Imperial Library appointees appear in B1. Part of the reason is supplied by Li Xinchuan 李心傳 (1166–1243) and other contemporary observers, who noted that policy debates on war and peace with the Jurchens led many officials to be expelled from the court between 1131 and 1140.⁵⁶ Besides, it should also be noted that a decade, from 1131 to 1140, was too short for promising officials in the Imperial Library to reach the peak of their careers and attain high-ranking court positions. Thus, even if an Imperial Library appointee encountered no major setback in his career, his promotions to high offices are not reflected in Network B1 if they came after 1141. Therefore, Network B1 does not provide a full view of the career paths taken by the beneficiaries of the talent-nurturing policy but reflects only the early stage of their careers.

In stark contrast to B1, Network B2 does not contain a cluster of high-ranking court offices at all. The twenty-five years from 1131 to 1155 should have provided sufficient time for a considerable number of Imperial Library appointees – especially those who had entered the Library in Phase One – to advance to the rank of a minister or higher. However, promotions to such offices are not visible in B2. Instead, Network B2 shows that only a few officials appointed to the Imperial Library in Phase One (whose careers are represented with blue edges), and even fewer of those appointed to the Library in Phase Two (yellow edges), successfully made it to high-ranking positions. This reveals that many Imperial Library appointees hit the ceiling in their careers during Qin Gui's administration. Of the high-ranking court offices shown in B2, the Vice Minister of Rites and the Secretariat Drafter are the two nodes with a relatively high value of current-flow betweenness centrality. Yet, no strong ties exist in B2 that link these two nodes to top leadership offices. Conversely, outgoing links from these two nodes

56 For some examples, see *Yaolu* 124.681–2 (1138/12/癸酉); 127.723–2 (1139/3/己丑); 134.801–2 (1140/10/辛卯); 137.840–2 (1140/8/壬申). See also Zhu Xi 朱熹, “Fan zhige muji” 范直閣墓記, *QSW* 253: 5685.205.

often end up, within a few hops, at nodes that denote “custodian sinecure outside the capital”, “inactive,” or local government positions. This means that, in Phase Two, appointees to the Imperial Library often only reached a certain level of the bureaucratic ladder, and were thereafter forced out of the central government.

That the appointees to the Imperial Library met a collective career setback under the Qin Gui administration finds support in another comparison between B1 and B2. As discussed in section 2.1, the directors and vice-directors of the Twenty-seven Bureaus constituted a group of middle-ranking offices by way of which many Imperial Library appointees advanced to higher-ranking court positions. Of these directorships, 19 are present in Network B1. Of these 19 nodes, 16 are among the nodes with values of current-flow betweenness centrality above the median. By comparison, in Network B2, only 12 of these directorships are present, and only seven of them are among the nodes with values of current-flow betweenness centrality above the median (Table 6). This comparison signifies that more Imperial Library appointees in Phase One than in Phase Two successfully landed a job as a bureau director in the Six Ministries of the central government and developed their careers thenceforth. It also echoes an observation from Hong Mai 洪邁 (1123–1202), who criticized Qin Gui for deliberately expelling officials from the court during his administration.⁵⁷

Intriguingly, the structure of Network B2 shows the presence of a major career impediment for all appointees to the Imperial Library, regardless of their relationship with Qin Gui. This observation implies that the Qin Gui administration not only prevented its critics from attaining influential positions in government, but may have also viewed its political allies as potential rivals and forced them out of the court once they reached certain high-level positions. What differs is, the administration’s allies and officials who avoided challenging it openly may have been able to leave the court more decently than its critics.⁵⁸ The result was that only very few officials had the chance to rise to the top leadership under the Qin Gui administration. Most of these men acted as Qin’s lackeys, not as a check on his power.⁵⁹

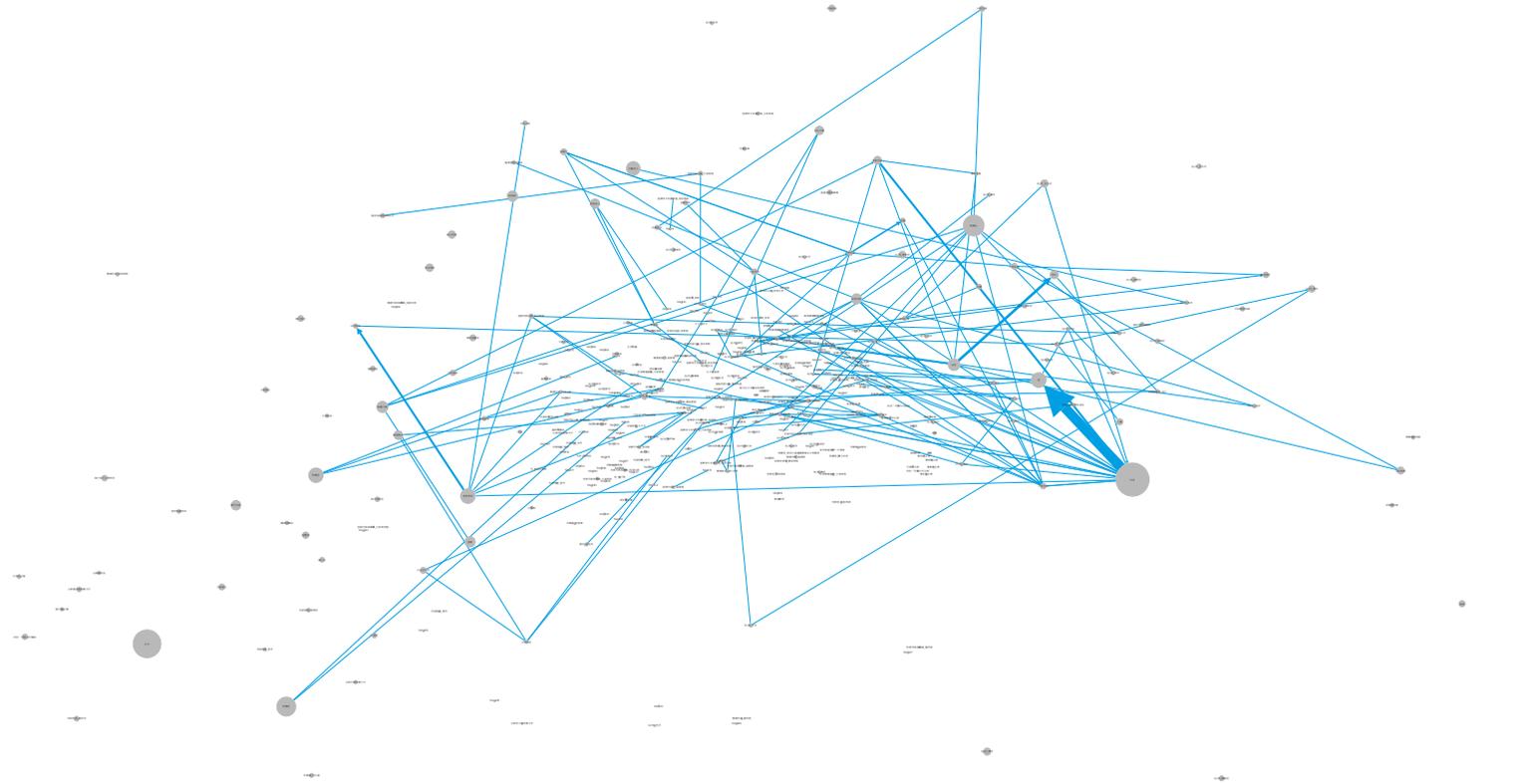
57 Hong Mai, “Langguan yuanshu” 郎官員數, in *Rongzhai sanbi* 容齋三筆 (Beijing: Zhonghua shuju, 2005), 5.484.

58 Some examples include Wang Ciweng 王次翁 (1079–1149) and Song Zhicai 宋之才 (1090–1166). Tuotuo 脫脫 et al., *Song shi* 宋史 (Taipei: Academia Sinica Scripta Sinica Database, 1984), 380.11709. Xue Jixuan 薛季軒, “Song shilang zhicai xingzhuang” 宋侍郎之才行狀, *QSW* 258: 5796.50–51.

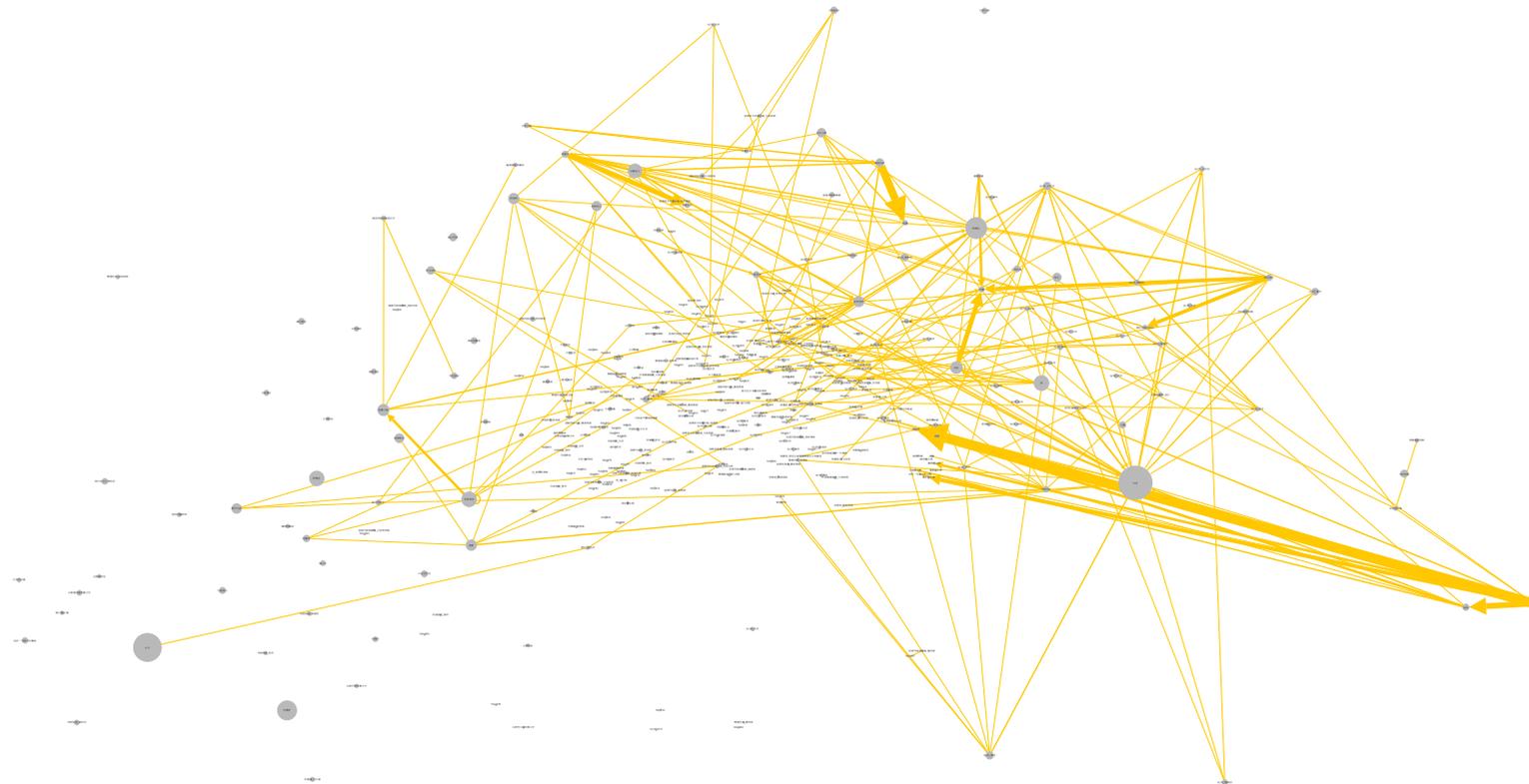
59 Teraji Jun, *Nan Song chuqi zhengzhishi yanjiu*, 299–316, 319–327.

Network B1			Network B2		
Post	Current-Flow Betweenness Centrality (Median = 0.16)		Post	Current-Flow Betweenness Centrality (Median = 0.23)	
	Value	Ranking in B1		Value	Ranking in B2
禮部郎官	1.40	14	吏部郎官	1.04	22
吏部郎官	1.24	18	禮部郎官	0.78	29
左司郎官	0.74	25	戶部郎官	0.55	40
都官郎官	0.66	32	右司郎官	0.52	45
考功郎官	0.65	33	司勳郎官	0.48	52
工部郎官	0.64	35	左司郎官	0.47	53
司勳郎官	0.61	38	司封郎官	0.47	55
祠部郎官	0.60	39	考功郎官	0.20	108
右司郎官	0.54	43	駕部郎官	0.12	144
司封郎官	0.47	49	兵部郎官	0.12	156
駕部郎官	0.38	59	祠部郎官	0.11	181
兵部郎官	0.29	76	屯田郎官	0	195
屯田郎官	0.26	85			
度支郎官	0.26	89			
刑部郎官	0.25	93			
主客郎官	0.21	109			
戶部郎官	0.13	170			
金部郎官	0.07	237			
倉部郎官	0	273			

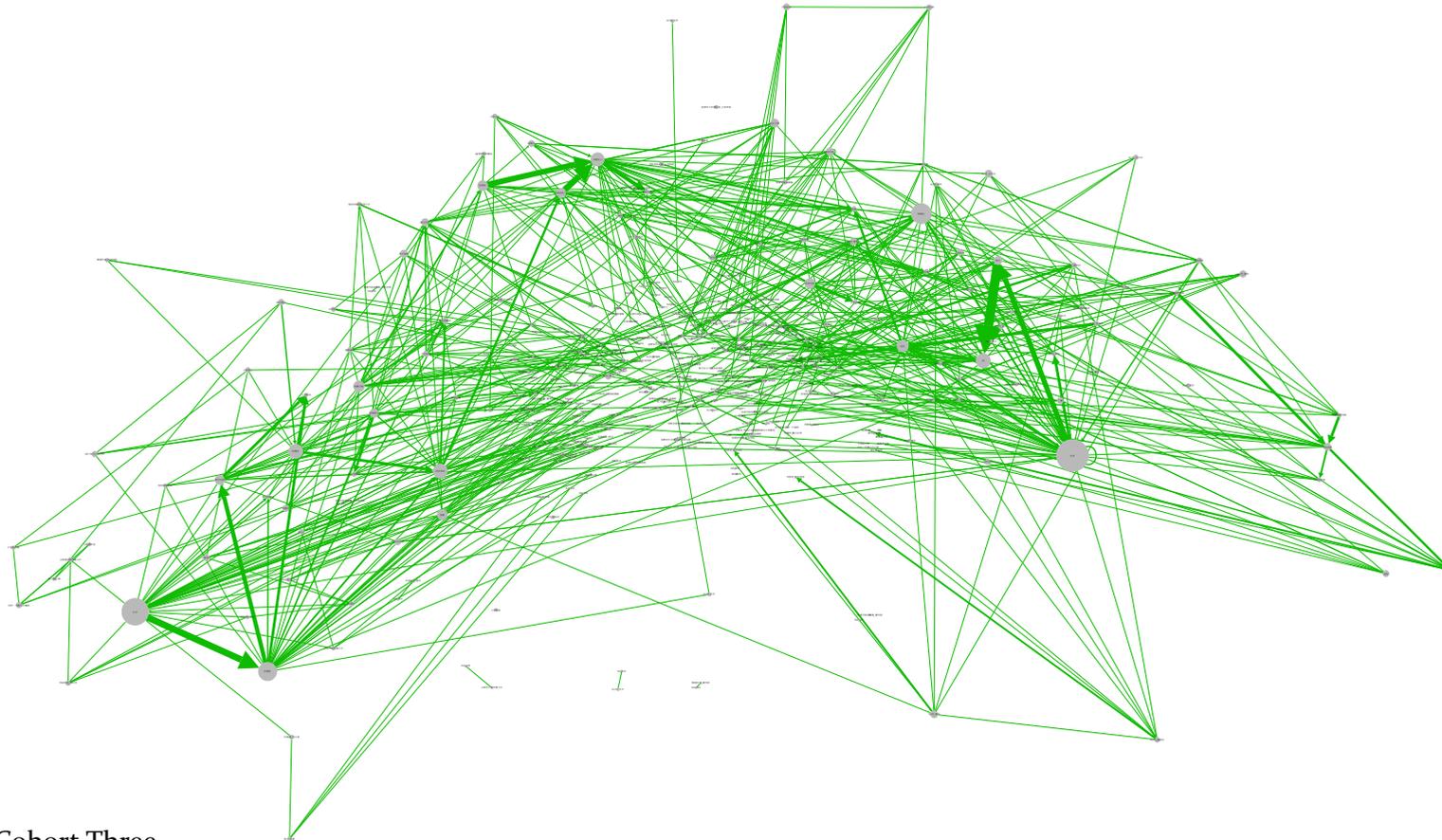
Tab. 6 Directorships/vice-directorships of the twenty-seven bureaus in networks B1 and B2. Posts with a current-flow betweenness centrality higher than the network-wide median are highlighted in blue.



Cohort One



Cohort Two



Cohort Three

Fig. 5 Comparison of bureaucratic transfers in phase three between the three cohorts. Edges are colored based on cohort attribute (blue, yellow, and green for Cohorts One, Two, and Three respectively).

These structural features of Network B2 must be considered along with two other observations. First, as Figure 3 has illustrated, the number of appointments to the Imperial Library declined significantly, sometimes down to zero, between 1144 and 1155. Second, the position of the Imperial Diarist in the Chancellery was left vacant most of the time after 1143 and when not vacant, was usually filled only with officials on probation.⁶⁰ Likewise, the Secretariat Drafter and the Supervising Secretary were also left vacant after 1147 and 1150, respectively.⁶¹ All of these suggest that the Qin Gui administration deliberately obstructed any attempt to groom promising candidates for high-ranking offices, as intended by the talent-nurturing policy discussed in section 2, to ensure Gaozong's and Qin Gui's monopoly of power and their exclusive control over personnel decisions.

The structure of Network B3 shows that career obstacles encountered by the Imperial Library appointees in Phase Two were largely removed in Phase Three, when the Qin Gui administration came to an end and the Song court returned to its tradition of collective deliberation.⁶² Compared to Networks B1 and B2, Network B3 contains more nodes that represent the top leadership positions in both civilian and military branches of the government. Of these nodes, the Assistant Chief Councilor and the Vice Chief Councilor rank among the highest, according to at least five centrality measures (Table 5). This demonstrates that more officials in Phase Three than in the two earlier phases successfully made it to top leadership positions.

In spite of the differences discussed above, officials who received their first appointments to the Imperial Library in any of three phases seem to have followed, more or less, a similar career path in Phase Three, unless their careers ended prematurely due to death or other reasons. In Figure 5, I partition Network B3 into three subgraphs based on the cohort attribute of the edges. Under the talent-nurturing policy, an appointment to the Imperial Library supposedly placed an official on a fast track to high-ranking offices. However, the graphs in Figure 5 show that as late as the third phase (1155/10–1164), there were still officials from the first two cohorts who were just beginning to receive a promotion to mid-level offices (e.g., directors and vice-directors of the Twenty-seven Bureaus); some were even reappointed back to or received internal transfers inside the Imperial Library after being ousted from the court, and continued to linger there. This also implies that after receiving their first appointments to the Imperial Library be-

60 Hong Mai, "Langguan yuanshu," in *Rongzhai sanbi*, 5.484.

61 *Yaolu* 156.197–2 (1147/12/丙辰); 172.420–2 (1156/3/己巳); 176.479–2 (1157/2/丁未).

62 The career impediments were removed upon Qin Gui's death in 1155/10, owing much to officials who made an effort and managed to regain control over decisions concerning the Imperial Library appointments. A full discussion of this will be provided in my forthcoming doctoral thesis.

tween 1131 and 1155, most of these officials saw their careers interrupted or stagnant for many years until the death of Qin Gui.⁶³

In brief, my analysis in this section demonstrates that although Gaozong and his court revived the policy of talent-nurturing, its implementation was not smooth but depended heavily on changing political conditions. The analysis also shows the positive correlation between the format of government operation and the career development of the beneficiaries of the talent-nurturing policy. The policy functioned as expected to facilitate its beneficiaries' careers when the tradition of collective deliberation prevailed at the Song court, but was disrupted when Qin Gui dominated court politics. The causal factors behind this phenomenon will be explored in future stages of this project.

4. Conclusions and Prospects

This article reports the findings from an experimental project that uses network analysis to investigate the operations of the early Southern Song bureaucracy. As officials were transferred from one office to another, such transfers established connections between these offices. This creates a network of offices, linked by the observed instances of transfers, which provides invaluable information for deciphering early Southern Song bureaucratic practices and the officials' career paths. It lends itself naturally to analysis as a directed graph. Rich documentation of the officials' bureaucratic transfers in the extant historical records also provides abundant data for such analysis.

By studying the career paths of the 197 officials who served in the Imperial Library between 1131 and 1164, this article examines the talent-nurturing policy in the early Southern Song. Allegedly a dynastic tradition, the policy was intended to prepare talented officials for the top state leadership by first appointing them to the Imperial Library. These appointments, in theory, put these talented officials on a fast track to the top leadership. By analyzing their careers, the study has identified a series of positions held by these officials after they left the Imperial Library and were on their way to the upper echelons of officialdom. It reveals that many of the posts on this fast-track career path were associated with the responsibility of evaluating the character and competence of other officials and had a direct or indirect bearing on personnel decisions at the Song court. This reflected the expectation in Song times that the top leaders of the government should pos-

63 Interruption means that an official was deprived of his rank or relieved of active duty. Stagnation means that an official did not receive promotions as quickly as would normally be expected. The graph for Cohort Two inevitably includes a few cases where the officials were appointed to the Imperial Library in the last years of the Qin Gui administration and therefore naturally started off from the middle-level offices in Phase Three.

sess the capability of “recognizing talents,” and in practice service in the Imperial Library – and later in other positions on the fast-track career path – gave these would-be leaders a marked influence on personnel decisions.

This study also compares the officials’ careers in three different periods between 1131 and 1164. The results reveal that the revival of the talent-nurturing policy in the Southern Song went through a tortuous process. With Gaozong’s support, the court steered away from it for more than a decade under the Qin Gui administration. To silence critics of its appeasement policy with the Jurchens, the Qin Gui administration created obstacles that prevented many appointees to the Imperial Library from advancing to high-ranking positions. Instead, these officials sank into a prolonged period of career stagnation that lasted until Qin Gui’s death.

This article demonstrates that network analysis, combined with a prosopographical approach, holds great promise for understanding the operations of the Song bureaucracy. Nonetheless, several questions remain unanswered and must await future research. For example, this study reports how the talent-nurturing policy was implemented in the early Southern Song, but it remains unclear whether there were notable differences between the policy in the Southern Song and its alleged precedent in the Northern Song. Meanwhile, the distinctive features of the Imperial Library appointees’ career paths under the talent-nurturing policy will only stand out in comparison to the careers of other officials who never gained experience in the Library. These questions suggest that network analysis of the Song bureaucratic practices will benefit immensely from synchronic and diachronic comparisons.

The present study also demonstrates the methodological potential of using network analysis to explore the politics and institutions in other periods of imperial Chinese history, given that bureaucracy in these periods shared many important features with that in the Song. However, this methodology also faces challenges. Network theory and relevant mathematical concepts are developed in natural and social sciences, and statistical tools in this field are devised for analyzing specific types of network activity, which have structural commonalities with the personnel flow in a bureaucracy, but nevertheless each also has its own distinctive features.⁶⁴ When network concepts and statistical tools are applied in this study, I seek to open a dialogue between network theory and history by mapping the similarities between them. I have done so by translating observed patterns of personnel transfers in a historical bureaucracy into network language and then deriving historical meanings from the results of network analysis. This study demonstrates that such dialogue between network theory and historical studies is productive. However, it requires further research to understand to what

64 Stephen P. Borgatti, “Centrality and Network Flow”, *Social Networks* 27 (2005), 55–71.

extent the network approach can help scholars capture more nuanced historical phenomena and whether it is necessary to develop more innovative analytical concepts and tools that are tailored to specific topics in history, such as the personnel flow in historical organizations.

5. Appendices

Appendix I: Sources for the Dataset

The data used in this study is collected in two steps. The first step is to identify all the officials who were appointed to the Imperial Library between 1131 and 1164. The second step is to reconstruct, as much as possible, the entire career of each of these officials based on all the appointments he had received.

The key sources used in the first step include two dated rosters of Imperial Library officials. One roster is preserved in the *Records of the Imperial Library in the Southern Song* (*Nan Song guange lu* 南宋館閣錄, hereafter NSGGL) by Chen Kui 陳騏 (1128–1203), and the other is retrieved from the *Comprehensive Survey of Song Dynasty Capital- and Court-Rank Officials* (*Songdai jingchaoguan tongkao* 宋代京朝官通考) compiled by modern historian Li Zhiliang.⁶⁵ I began with the first roster and used it to create a preliminary list of Song individuals who were recruited into the Imperial Library between 1131 and 1164. I then used the second roster for supplemental information. A total of 197 Imperial Library appointees are collected from these rosters. For each person on this name list, I built a profile using the biographical information provided in the NSGGL and the Database of Civil Service Examination Graduates in All Dynasties (*Lidai jinshi dengke shujuku* 歷代進士登科數據庫).⁶⁶

In the next step, I collected the data on bureaucratic transfers for each of these 197 officials. The types of data I harvested include: (1) the appointee's name; (2) the year when each appointment was announced or when the appointee assumed office, depending on the information available in sources; (3) the position the appointee left; (4) the new position he took up; (5) concurrent appointments, if any, given in the personnel order; and (6) reasons for the transfer, if mentioned.

65 Chen Kui 陳騏, *Nan Song guange lu* 南宋館閣錄 (Beijing: Zhonghua shuju, 1998). Li Zhiliang 李之亮, "Bishu sheng" 秘書省, *Songdai jingchao guan tongkao* 宋代京朝官通考 (Chengdu: BaShu shushe, 2003), 4: 328–588.

66 The profile for each official includes his style name, birth and death years (if known), native or resident prefecture, year and method of entry into government (*chushen* 出身), whether he was *jinshi* and/or held another academic degree (and if so, the year he received it, the subject in which he specialized, and his ranking), year of his first appointment to the Imperial Library and the office he held in the Library, and whether he has a biography or an epitaph.

When relevant data is reported in multiple sources, I prioritize what is documented in the official's biographical sources, including his account of conduct (*xingzhuang* 行狀), tomb epitaph (*muzhi ming* 墓誌銘), Spirit Path Inscription (*shendao bei* 神道碑), or his short biography (*zhuan* 傳) in the *Complete Prose of the Song* (*Quan Song wen* 全宋文, hereafter QSW) and the Database of Song Dynasty Epitaphs (*Songdai muzhiming shujuku* 宋代墓誌銘數據庫, hereafter MZK). Information collected from these biographical sources is checked against personnel orders recorded in the *Chronological Record of Important Events since the Jianyan Era* (*Jianyan yilai xinian yaolu* 建炎以來繫年要錄, hereafter Yaolu) and the *Recovered Draft of the Collected Essential Documents of the Song Dynasty* (*Song huiyao jigao* 宋會要輯稿, hereafter SHY). For those officials who do not have a biography in the extant historical record, their career data is gleaned, to the extent possible, from Yaolu and SHY. I also made use of an official's biography in the dynastic history of the Song (*Song shi* 宋史, hereafter SS) and its supplement (*Song shi yi* 宋史翼, hereafter SSY) but only when relevant information is absent in the other sources.⁶⁷ The resulting dataset is further enriched with postings data from the China Biographical Database (CBDB) 中國歷代人物傳記資料庫 and with data from rosters of officials in the digitized local gazetteers of the Song and Yuan dynasties found in the Scripta Sinica Database 漢籍電子文獻資料庫. This aggregate dataset was checked for internal consistency and duplicate data was discarded.

Appendix 2. Definition of Nodes

To convert historical records of bureaucratic transfers into network data involves judgment and interpretation. During this process, I have inevitably drawn on my knowledge of the Song institutional history, but I have tried, whenever possible, to keep this knowledge at bay so that it will not predetermine the structure of the network. Therefore, for example, I take a neutral attitude towards each bureaucratic transfer, without judging whether it was a demotion or promotion. Nevertheless, I made several important decisions in building the dataset and a full disclosure is in order.

First, to examine the impact of the methods of entry (*chushen* 出身) on an official's career under the talent-nurturing policy of the early Southern Song, I have coded each method of entry as a node in the dataset, as if it were an office in the bureaucracy. In Song times, men could enter government service by

67 Biographies in the dynastic history of the Song are heavily edited and abridged. Therefore, they are given low priority in this study. Compiled by Lu Xinyuan 陸心源 (1834–1893), *Song shi yi* collects biographies of Song people that are not included in the dynastic history. The biographies in *Song shi yi* provide fewer details than what one typically finds in a person's account of conduct or epitaph, but modern scholars agree that these biographies are more reliable than those in the dynastic history. See Wu Boxiong 吳伯雄, "Qianyan" 前言, in *Song shi yi* 宋史翼, ed. Lu Xinyuan (Huzhou: Zhejiang guji chubanshe, 2017), 1–24.

Groups	Num. of Officials	% of Total	Num. of Officials in the group with fewer than nine* appointment records
Having biographical materials in both QSW/MZK and SS/SSY	32	16.2%	4
Having biographical materials in QSW/MZK but not in SS/SSY	10	5.1%	0
Having biographical materials in SS/SSY but not in QSW/MZK	46	23.4%	0
Nine or more appointment records in <i>Yaolu</i> and/or <i>SHY</i> , but no biographical materials in both QSW/MZK and SS/SSY	45	22.8%	0
Fewer than nine appointment records in <i>Yaolu</i> and/or <i>SHY</i> , and no biographical materials in both QSW/MZK and SS/SSY	64	32.5%	44
Total	197	100%	48

* The criterion of “nine appointment records” comes from the interquartile range (IQR) of the distribution of the 197 officials’ appointment record amounts, which falls between 9 and 23, by applying the box-and-whisker plot for observation. A box-and-whisker plot is a standardized way of displaying the distribution of data based on a five-number summary (“minimum”, first quartile (Q1), median, third quartile (Q3), and “maximum”). The first quartile (Q1/25th Percentile) means the middle number between the smallest number (not the “minimum”) and the median of the dataset while the third quartile (Q3/75th Percentile): the middle value between the median and the highest value (not the “maximum”) of the dataset. Thus, the term “interquartile range (IQR)” refers to the 25th to the 75th percentile, which is approximately the same as the middle 50% of a nearly normal distribution. The interquartile range can be used to an indicator of the majority situation, compared to individual instances. This definition is cited from Michael Galarnyk, “Understanding Boxplots,” posted on the website of “Toward Data Science,” <https://towardsdatascience.com/understanding-boxplots-5e2df7bcbd51>, retrieved on 17 April 2020.

Tab. 7 Sources of biographical data for the present study. Officials in this table are grouped by the sources that contained their biographical data.

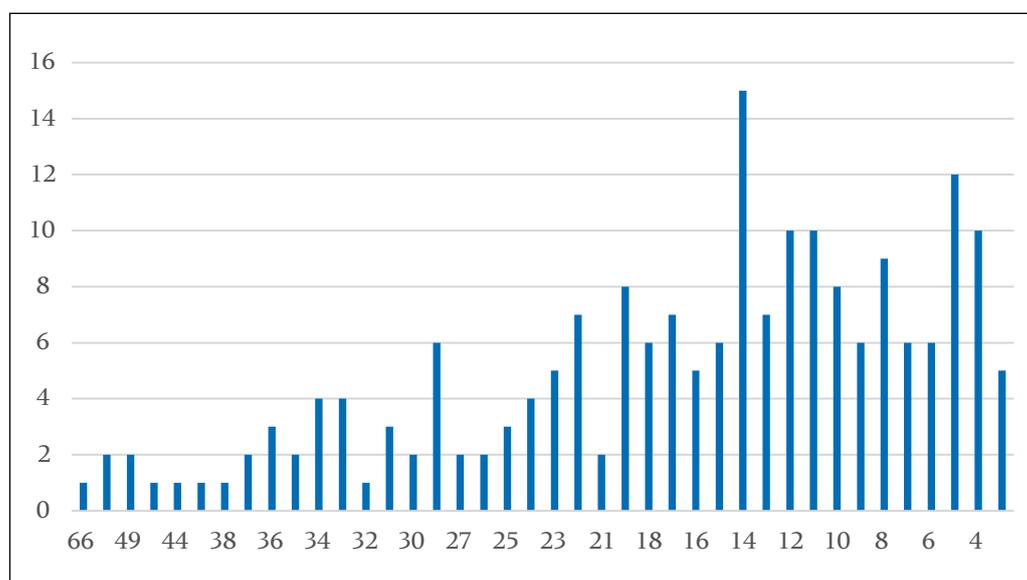


Fig. 6 Number of officials by the number of surviving appointment records. The horizontal axis indicates the number of extant appointment records, and the vertical axis denotes the number of officials with a given number of surviving appointment records.

different methods, among which the most important were obtaining a “presented scholar” (*jinshi*) degree from the civil service examinations (*keju* 科舉), passing the erudite literatus examination (*cike* 詞科),⁶⁸ graduating from government schools (*guanxue* 官學), and using the protection privilege (*enyin* 恩蔭), which allowed officials above a certain rank to sponsor their relatives for appointment to low-ranking offices. Those who took the first three routes were considered men with “formal qualifications” (*you chushen* 有出身) for government service,⁶⁹ which were conventionally regarded as a prerequisite for an Imperial Library post. In rare cases, when prominent scholars without such qualifications

68 Guan Qin 管琴, *Cike yu Nan Song wenxue* 詞科與南宋文學 (Beijing: Peking University Press, 2018), 104–115. Although men who passed the erudite literatus examination were also granted a *jinshi* degree, this study codes graduation from the erudite literatus examination separately from the attainment of a *jinshi* degree in the regular civil service examination.

69 The historical records distinguish between a variety of degrees awarded in the civil service examinations and government schools, including “metropolitan graduates with honors” (*jinshi jidi* 進士及第), “regular metropolitan graduates” (*jinshi chushen* 進士出身), “associate metropolitan graduates” (*tong jinshi chushen* 同進士出身), “graduates with honors from the Upper Hall” (*shangshe jidi* 上舍及第), “regular graduates from the Upper Hall” (*shangshe chushen* 上舍出身), “associate graduates from the Upper Hall” (*tong shangshe chushen* 同上舍出身). My dataset ignores these fine distinctions.

(*wu chushen* 無出身) were considered for appointment to the Imperial Library, they were often conferred a *jinshi* degree, by imperial grace, prior to the appointment. In the dataset, I labeled five kinds of methods of entry observed in the 197 officials' biographies, include obtaining a *jinshi* degree in regular examinations (labeled “進士_常科”), obtaining a *jinshi* degree by imperial grace (labeled “進士_特賜”), graduation from erudite literatus examination (labeled “中詞科”), graduation from government schools (labeled “官學”), and protection privilege (labeled “恩蔭入仕”).

Second, the career of an official could be disrupted or ended in two scenarios. In one scenario, an official could leave officialdom, temporarily or permanently, due to mourning obligations (*dingyou* 丁憂), punishment, retirement, or death.⁷⁰ In the other scenario, an official remained in the officialdom but without a substantive commission. Some of them were given a custodian sinecure at a Buddhist or Daoist temple (*ciguan* 祠官).⁷¹ Others were not even given custodian sinecures, and they are labeled in my dataset simply as 無職任 (*wu zhiren*, lit. “inactive”).⁷² These scenarios could occur at any stage of a Song official's bureaucratic life, disrupting his career or ending it altogether. Given that the first goal of this study is to reconstruct the mainstream career path for the Imperial Library appointees and identify the major posts they passed through toward top leadership, I have treated these scenarios as “noise nodes” and left them out of my analysis in section 3.⁷³ In section 4, however, these nodes are included in the analysis be-

70 Temporary leaves caused by punishment included suspension of official status (*leting* 勒停), imposition of residential restriction (*juzhu* 居住), surveillance (*bian'guan* 編管), and so on. Permanent leaves were those due to retirement (*zhishi* 致仕), expungement (*chuming* 除名) from the officialdom as a severe punishment, or death. Although these “permanent” leaves usually marked the end of an official's career, it was possible for those in retirement or those expunged to return to the officialdom on the emperor's order.

71 The temples were scattered across the country. Categorically, those located in the capital were called *jingci* 京祠 while others in the provinces *waici* 外祠. However, since these officials were not required to be physically present at these temples, the actual locations of these temples do not matter. Therefore, I only make a distinction between capital sinecures from provincial ones.

72 Song officials might become “inactive” by choice or on government orders due to administrative remissness, criticisms from remonstrance organs, and political strife. The difference between a custodian sinecure and an inactive status was that holders of the sinecures had a salary while inactive officials did not. Historical sources use a variety of terms for officials who became inactive, such as *ba* 罷, *chu* 黜, *quguan* 去官, and so forth, but my dataset does not distinguish between these terms. It should be noted that this study ignores the period when an official spent awaiting his next appointment (*daique* 待闕), because this was a common phenomenon in the Song officialdom. As the number of officials increased but the number of vacancies in government did not increase in tandem, the waiting period was sometimes as long as several years. This study does not consider an official-in-waiting as “inactive.”

73 In total, 37 unique nodes and 244 unique edges are filtered out.

cause the goal of this section is to understand how court politics disrupted the careers of the Imperial Library appointees.

Third, in a few cases, offices with different titles are lumped together and coded as a single node, because they had similar ranks and duties and were often mentioned without distinction in Song sources. For example, the director (*langzhong* 郎中) and vice director (*yuanwailang* 員外郎) in each of the twenty-seven bureaus of the Department of State Affairs are coded simply as *langguan* 郎官 of that bureau. Likewise, functionary assistants (*muzhi* 幕職) in each circuit administrations⁷⁴ are grouped into two categories – the senior (*gaojie muzhi* 高階幕職) and the ordinary (*shuguan* 屬官) – and each category is treated as a single node in the network graph, regardless of their specific duties and exact titles. This preserves the ambiguity in the historical record and also avoids unnecessary complexities in the dataset. This affects only about 5% of a total of 3367 edges and therefore has only limited influence on the structure of the network.

Fourth, I code offices with the same title but in different administrative divisions as different nodes. For instance, the prefect of Lin'an (*zhi Lin'an fu* 知臨安府) and that of Fuzhou (*zhi Fuzhou* 知福州) are treated as two different nodes in the dataset. Two considerations are behind this decision. To begin with, these offices, despite having the same title, were handled differently in the Song bureaucratic practices. The Song government divided its territory into three administrative levels (i.e., circuits, prefectures, and counties), and the prefectures were further classified into four types (*fu* 府, *zhou* 州, *jun* 軍, *jian* 監) and several different grades according to their administrative functions and importance. Counties were likewise classified into several grades according to the size of their population. The type and grade of a prefecture or county were an important consideration of the Song personnel authorities when they made appointment decisions. Officials who were held in high regard and had a good performance record, for example, were more likely to receive an assignment in the more highly ranked places.

Moreover, the Song bureaucratic system had a pyramidal structure, with more offices with the same titles (e.g., prefects) at the bottom and fewer such offices (e.g., ministers) at the top. In 1208, for instance, there were 295 prefects across the country but only six ministers in the central government. If one counts all offices with the same title as a single node, regardless of the places they administered, and calculates, say, their degree centrality in the network of bureaucratic transfers, the node denoting the prefect would almost inevitably have a much

74 Each circuit in the Song was governed by four intendancies: fiscal, military judicial, ever-normal granaries, headed by a commissioner, a vice commissioner, and in some cases an assistant commissioner, who led a group of functionary assistants with diverse titles but overlapping duties.

higher centrality score than the node denoting a minister. A graph like this (Figure 7) may provide a useful illustration of institutional features of Song bureaucracy, because it reveals the hierarchy of offices (with lower-ranking offices on the left-hand side and higher-ranking ones on the right-hand side) and the sequence of offices that officials went through in their careers. However, this is not the topic under discussion in this article.

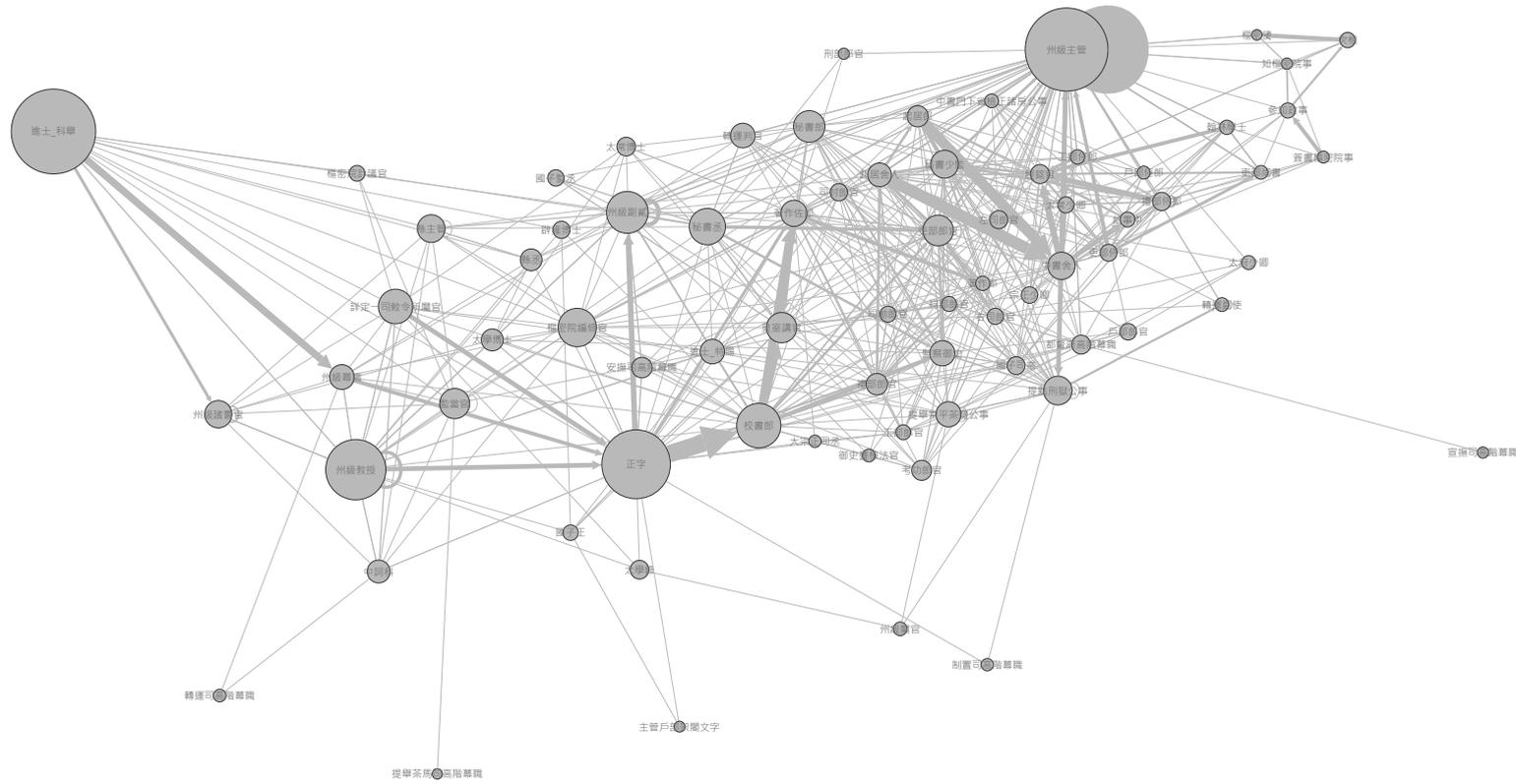
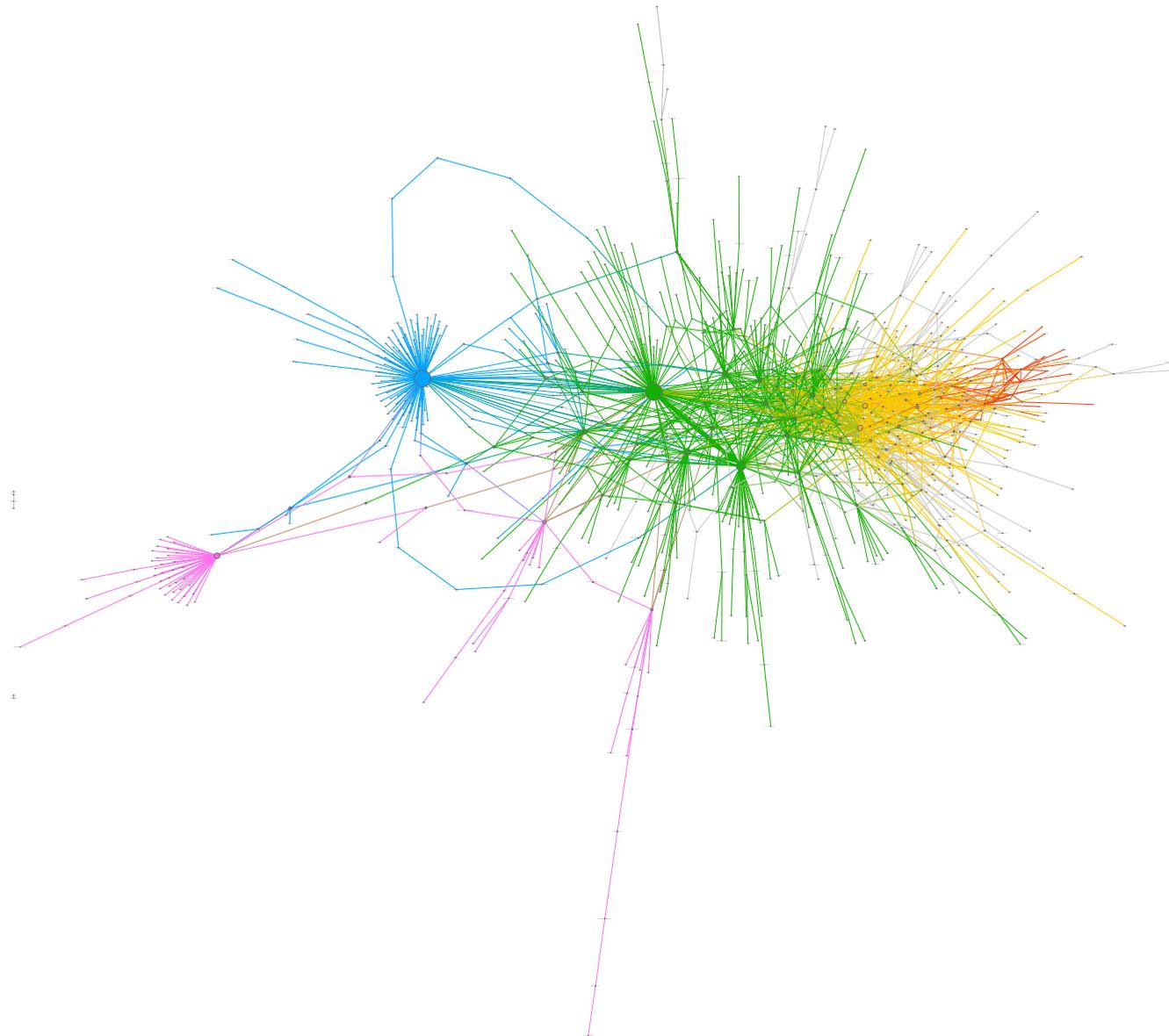


Fig. 7 Network Z. Nodes with a current-flow betweenness centrality below the median are filtered out for visual clarity.

Appendix 3: Complete Graph of Network A



Appendix 4: Centrality Scores for the Thirty-Eight Top-Ranking Nodes

The “—” sign indicates that the node is not among the top twenty when ranked by the relevant centrality measure.

Nodes	In-degree	Out-degree	Degree	Weighted In-degree	Weighted Out-degree	Weighted Degree	Current-Flow Betweenness (%)	Num. of Centrality Measures by Which It Ranks High
正字	64	40	104	87	108	195	5.52	7
校書郎	28	37	65	71	103	174	2.83	7
秘書丞	23	18	41	26	38	64	1.83	7
吏部郎官	25	30	55	43	55	98	1.61	7
秘書郎	18	23	41	24	36	60	1.57	7
秘書少監	36	27	63	48	60	108	1.56	7
中書舍人	25	35	60	84	84	168	1.44	7
著作佐郎	14	27	41	46	57	103	1.40	7
監察御史	19	19	38	45	40	85	1.28	7
起居舍人	20	24	44	42	64	106	1.05	7
禮部郎官	15	20	35	30	29	59	1.04	7
起居郎	15	19	34	30	51	81	0.78	7
禮部侍郎	15	24	39	33	50	83	—	7
吏部侍郎	19	22	41	33	40	73	—	7
給事中	—	15	28	28	33	61	—	6
進士_常科	—	130	132	—	134	136	5.40	5
翰林學士	—	16	28	—	34	52	—	5
官學	—	41	41	—	41	—	1.67	4

Nodes	In-degree	Out-degree	Degree	Weighted In-degree	Weighted Out-degree	Weighted Degree	Current-Flow Betweenness (%)	Num. of Centrality Measures by Which It Ranks High
樞密院編修官	18	15	33	—	—	—	1.60	4
侍講	18	—	—	63	—	66	—	4
詳定一司敕令所屬官	18	—	27	—	—	—	1.51	3
次相	—	—	—	—	36	46	—	3
參知政事	—	—	—	26	—	46	—	3
直學士院	15	—	—	44	—	—	—	3
侍讀	14	—	—	33	—	—	—	3
史館屬官	14	—	—	—	—	—	—	2
都督府高階幕職	14	—	—	—	—	—	—	2
工部侍郎	—	—	—	—	25	—	—	2
王府教授	—	—	—	41	—	—	—	2
宗正少卿	—	15	—	—	—	—	—	2
進士_特賜	—	—	—	—	—	—	1.27	1
中詞科	—	—	—	—	—	—	1.00	1
太學博士	—	—	—	—	—	—	0.80	1
州諸曹_婺州	—	—	—	—	—	—	0.80	1
殿中侍御史	—	—	—	—	—	—	—	1
太常少卿	—	—	—	—	—	—	—	1
知/判_饒州	—	—	—	—	—	—	—	1
大宗正司丞	—	—	—	—	—	—	—	1

References

Databases and Visualization Tools

- Academia Sinica 中央研究院. *Scripta Sinica Database* 漢籍電子文獻資料庫. Taipei: Academia Sinica, 1984. <https://hanchi.ihp.sinica.edu.tw>
- Bastian M., Heymann S., Jacomy M. *Gephi*, 2008. <https://gephi.org/>
- Brandes, Ulrik et al. *Visone*. 1996. <https://visone.ethz.ch/>
- Gong, Yanming 龔延明, Database of Civil Service Examination Graduates in All Dynasties (*Lidai jinshi dengke shujuku* 歷代進士登科數據庫), 2016. <http://examination.ancientbooks.cn/docDengke/>
- Harvard University, Academia Sinica, and Peking University. *China Biographical Database*, 2018. <https://projects.iq.harvard.edu/cbdb>
- Zhonghua shuju 中華書局. *Songdai muzhiming shuju ku* 宋代墓誌銘數據庫, 2016. <http://inscription.ancientbooks.cn/docShike/>

Primary Sources

- Chen, Kui 陳騏. *Nan Song guan'ge lu* 南宋館閣錄. Beijing: Zhonghua shuju, 1998.
- Cheng, Ju 程俱. *Lintai gushi jiaozheng* 麟臺故事校證. Beijing: Zhonghua shuju, 2000.
- Hong, Mai 洪邁. *Rongzhai suibi* 容齋隨筆. Beijing: Zhonghua shuju, 2005.
- Li, Xinchuan 李心傳. *Jiyanan yilai xinian yaolu* 建炎以來繫年要錄. Taipei: Academia Sinica Scripta Sinica Database, 1984.
- Lu, Xinyuan 陸心源. *Song shi yi* 宋史翼. Beijing: Zhonghua shuju, 1991.
- Tuotuo 脫脫 et al. *Song shi* 宋史. Taipei: Academia Sinica Scripta Sinica Database, 1984.
- Xu, Song 徐松. *Song huiyao jigao* 宋會要輯稿. Taipei: Academia Sinica Scripta Sinica Database, 1984.
- Zeng, Zaozhuang 曾棗莊, and Liu Lin 劉琳 eds. *Quan Song wen* 全宋文. Shanghai: Shanghai cishu chubanshe, 2006.
- Zhonghua shuju 中華書局 ed. *Song Yuan fangzhi congkan* 宋元方志叢刊. Taipei: Academia Sinica Scripta Sinica Database, 1984.

Secondary Sources

- Barabási, Albert-László. *Linked: How Everything Is Connected to Everything Else and What It Means for Business, Science, and Everyday Life*. New York, NY: Perseus Publishing, 2002; 2014 reprinted.
- Bastian M., Heymann S., Jacomy M. "Gephi: an Open-Source Software for Exploring and Manipulating Networks." International AAAI Conference on Weblogs and Social Media, 2009.
- Baur, Michael. *Software for the Analysis and Visualization of Social Networks*. Doctoral dissertation, Universität Fridericiana zu Karlsruhe, 2008.

- Blondel, Vincent D, Jean-Loup Guillaume, Renaud Lambiotte, and Etienne Lefebvre. "Fast Unfolding of Communities in Large Networks." *Journal of Statistical Mechanics: Theory and Experiment* 10 (2008): 155–68. DOI: 10.1088/1742-5468/2008/10/P10008
- Borgatti, Stephen P. "Centrality and Network Flow." *Social Networks* 27 (2005): 55–71. DOI:10.1016/j.socnet.2004.11.008.
- Brandes, Ulrik and Dorothea Wagner. "Visone: Analysis and Visualization of Social Networks." In *Graph Drawing Software*, edited by Michael Jünger and Petra Mutzel, 321–340. Heidelberg: Springer Heidelberg, 2003. DOI: 10.1007/3-540-45848-4_47.
- Cai, Chongbang 蔡崇榜. *Songdai xiushi zhidu yanjiu* 宋代修史制度研究. Taipei: Wenjin chubanshe, 1993.
- Deng, Xiaonan 鄧小南. *Songdai wenguan xuanren zhidu zhu cengmian* 宋代文官選任制度諸層面. Shijiazhuang: Hebei jiaoyu chubanshe, 1993.
- Dorogovtsev, S. N., J. F. F. Mendes, and A. N. Samukhin. "Giant Strongly Connected Component of Directed Networks," *Physical Review E* 64.2 (2001). DOI:10.1103/PhysRevE.64.025101.
- Galarnyk, Michael. "Understanding Boxplots," posted on the website of "Toward Data Science," <https://towardsdatascience.com/understanding-boxplots-5e2df7bcbd51> (accessed April 17 2020).
- Gong, Yanming 龔延明 ed. *Songdai guanzhi cidian* 宋代官制辭典. Beijing: Zhonghua shuju, 1997.
- Guan, Qin 管琴. *Cike yu Nan Song wenxue* 詞科與南宋文學. Beijing: Peking University Press, 2018.
- Hartman, Charles. "Introduction: Bureaucratic Institutes and Information Networks," *Journal of Song-Yuan Studies* 48 (Sep. 2019): 1–6. DOI: 10.1353/sys.2019.0014
- Hartman, Charles. "Sung Government and Politics." In *The Cambridge History of China. Vol. 5, Part Two: Sung China, 960–1279*, edited by John W. Chaffee and Denis Twitchett, 19–138. Cambridge, UK: Cambridge University Press. DOI: 10.1017/CHO9781139193061.003
- Hartman, Charles. *The Making of Song Dynasty History: Sources and Narratives*. Cambridge: Cambridge University Press, 2021. DOI: 10.1017/9781108877176
- Hartwell, Robert M. "Demographic, Political, and Social Transformations of China, 750–1150," *Harvard Journal of Asiatic Studies* 42.2 (Dec. 1982): 365–442. DOI: 10.2307/2718941
- Hartwell, Robert M. "Financial Expertise, Examinations, and the Formulation of Economic Policy in Northern Sung China," *Journal of Asian Studies* 30.2 (Feb. 1971): 281–314. DOI: 10.2307/2942916
- Hucker, Charles O. *A Dictionary of Official Titles in Imperial China*. Stanford: Stanford University Press, 1985.
- Hu, Kun 胡坤. *Songdai jianju gaiguan yanjiu* 宋代薦舉改官研究. Shanghai: Shanghai guji chubanshe, 2019.

- Jin, Zhongshu 金中樞. “Songdai guan’ge de jianzhi yu zhishi kao” 宋代館閣的建置與職始考. In *Songdai de xueshu he zhidu yanjiu jinian xuanji* 宋代的學術和制度研究紀念選集, 339–387. Xinbei, Taiwan: Daoxiang chubanshe, 2016.
- Keller, Franziska Barbara. “Analyses of Elite Networks.” In *The Palgrave Handbook of Political Elites*, edited by Heinrich Best and John Higley, 135–152. London: Palgrave Macmillan, 2018. DOI: 10.1057/978-1-137-51904-7_11
- Kracke, Edward A. Jr. *Civil Service in Early Sung China, 960–1067, with Particular Emphasis on the Development of Controlled Sponsorship to Foster Administrative Responsibility*. Cambridge, Mass: Harvard University Press, 1957.
- Lai, Ruihe 賴瑞和. *Tangdai gaoceng wenguan* 唐代高層文官. Beijing: Zhonghua shuju, 2017.
- Lai, Ruihe 賴瑞和. *Tangdai jiceng wenguan* 唐代基層文官. Beijing: Zhonghua shuju, 2004.
- Lai, Ruihe 賴瑞和. *Tangdai zhongceng wenguan* 唐代中層文官. Beijing: Zhonghua shuju, 2011.
- Lambiotte, R., J.-C. Delvenne, and M. Barahona. “Laplacian Dynamics and Multiscale Modular Structure in Networks,” *IEEE Transactions on Network Science and Engineering* 1.2 (2015): 76–90.
- Li, Changxian 李昌憲. “Songdai wenguan tiezhi zhidu” 宋代文官貼職制度, *Wenshi* 文史 30 (1982): 109–135.
- Li, Geng 李更. *Songdai guan’ge jiaokan yanjiu* 宋代館閣校勘研究. Nanjing: Fenghuang chubanshe, 2006.
- Li, Zhiliang 李之亮. *Songdai jingchao guan tongkao* 宋代京朝官通考. Chengdu: BaShu shushe, 2003.
- Liu, Pujiang 劉浦江. “Deng Guangming lüezhuan” 鄧廣銘略傳. In *Xiangnian Deng Guangming* 想念鄧廣銘, edited by Zhang Shilin 張世林, 21–26. Beijing: Xinshijie chubanshe, 2012.
- Lo, Winston W. *An Introduction to the Civil Service of Sung China: With Emphasis on Its Personnel Administration*. Honolulu: University of Hawaii Press, 1987.
- Newman, M. E. J. “A Measure of Betweenness Centrality Based on Random Walks,” *Social Networks* 27.1 (2005): 39–54. DOI: 10.1016/j.socnet.2004.11.009
- Nodus Labs. “Network Visualization and Analysis with Gephi,” <https://noduslabs.com/courses/network-visualization-and-analysis-with-gephi/units/section-1-quick-introduction-to-network-analysis/?try> (accessed September 18, 2020).
- Sun, Guodong 孫國棟. *Tangdai zhongyang zhongyao wenguan qianzhuan tujing yanjiu* 唐代中央重要文官遷轉途徑研究. Hongkong: Longmen shudian, 1978.
- Teraji, Jun 寺地遵. *Nan Song chuqi zhengzhishi yanjiu* 南宋初期政治史研究. Taipei: Daohe chubanshe, 1995.

- Twitchett, Denis C. *The Writing of Official History under the Tang*. Cambridge: Cambridge University Press, 1992. DOI: 10.1017/CBO9780511572678
- Umehara, Kaoru 梅原郁. "Civil and Military Officials in the Sung: The Chi-lukuan System," *Acta Asiatica* 50 (1986): 1–30.
- Umehara, Kaoru 梅原郁. *Sōdai kanryō seidō kenkyū* 宋代官僚制度研究. Kyoto: Dōhōsha, 1985.
- Winkelman, John H. "The Imperial Library in Southern Sung China, 1127–1279: A Study of the Organization and Operation of the Scholarly Agencies of the Central Government," *Transactions of the American Philosophical Society* (New Series) 64, no. 8 (1974): 5–61. DOI: 10.2307/1006199
- Woldense, Josef, "The Ruler's Game of Musical Chairs: Shuffling during the Reign of Ethiopia's Last Emperor." *Social Networks* 52 (2018): 154–166. DOI: 10.1016/j.socnet.2017.07.002
- Wu, Zhihao 吳志浩, "Songdai shiren pingjun siwang nianling kao" 宋代士人平均死亡年齡考. *Zhejiang xuekan* 浙江學刊 4 (2017): 170–181. DOI:10.16235/j.cnki.33-1005/c.2017.04.022
- Xiong, Huei-Lan 熊慧嵐. "A Reservoir of Talent: An Analysis of the Career Advancement of Imperial Library Officials during the Southern Song (1127–1279)." *Journal of Song-Yuan Studies* 48 (2019): 7–56. DOI: 10.1353/sys.2019.0015
- Yu, Yunguo 虞雲國. *Nandu junchen: Song Gaozong ji qi shidai* 南渡君臣: 宋高宗及其時代. Shanghai: Shanghai renmin chubanshe, 2019.
- Yu, Yunguo 虞雲國. *Songdai taijian zhidu yanjiu* 宋代臺諫制度研究. Shanghai: Shanghai renmin chubanshe, 2014.
- Zhang, Xiqing 張希清. "Songchao gongju shihe shouguan zhidu shulun" 宋朝貢舉釋褐授官制度述論, *Zhongyuan wenhua yanjiu* 中原文化研究, no. 3 (2015): 20–28.
- Zhuge, Yibing 諸葛憶兵. *Songdai zaifu zhidu yanjiu* 宋代宰輔制度研究. Beijing: Zhongguo shehui kexue chubanshe, 2000.