

Research Article

Spatial Character and Backflow Pattern of High-Level Returned Talents in China

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Attractions of overseas high-level returned talents have become a widely practiced talent policy, and the spatial structures of city-related interactions are drawing the attention of researchers from various fields. China is particularly an interesting case in point, as it has moved toward an innovation-oriented economy. Based on the movement trajectories of 2,846 returnees in a program entitled “Young Thousand Talents Plan” during 2011–2016, this paper identifies three city types in China: national core city, regional excellent city, and regional special city. Subsequently, this paper employs spatial visualization and qualitative interviews. This paper also goes on to show that the national core cities that possess dense research resources that coincide with premium life conditions and have objectively more favorable conditions, wider opportunities for attracting highly qualified specialists. Moreover, the backflow pattern can be divided into circle route and linear route, which is driven by social proximity and innovation context.

1. Introduction

The world has progressed from competition among firms for markets and the workforce to cities for creative professionals [1]. The huge gap in talent demand makes many of countries turn their eyes abroad, recruiting overseas high-level talents worldwide with attractive policies and salaries [2, 3]. A global city rises in response to the time and conditions. These are the strategic migration destination of overseas high-level returned talents and are interconnected in the dynamic process of knowledge production, innovation accumulation, and network extension [4]. Since the 1980s, the transnational flow of high-level talents has become a hotspot in the study of population migration in academics [5].

With the acceleration of globalization and the improvement of China’s economic development, China is expanding and gradually developing into an innovation-oriented economy that depends not only on foreign technology input but also on domestic knowledge building and improvement of innovation performance [6]. Increasing input in science, technology, and R&D [7, 8] is fueled by public and private investment from multinationals [9]. In this context, China is no longer the world’s largest brain drain, but the most desirable

innovation destination, remolding competitive abilities in international situations [8, 10]. Corresponding with the booming innovation outcomes and the competitiveness of the Chinese economy, there are a number of major urban centers, characterized by resource hubs for managing multiple flows of global capital, multinational firms, human resources, and innovation knowledge. These major urban centers are becoming global cities [11, 12]. Considering the dominant advantages of global cities as premium choices of employment, it should come as no surprise that most returnees choose them as their relocation destinations [13, 14]. The degree of attraction of high-level talents can be a direct reflection of the status of a particular city in the world economic and urban system [15, 16].

In this context, the Chinese overseas high-level returned talents have increasingly been the subject of scholarship aimed at understanding talent flow, migration, Chinese cities, and innovation systems [17]. Concerning existing literature, there has been a very limited concrete empirical assessment of circular migration [18], and the results are somewhat ambiguous and contradictory in some respects due to the methodological differences. One important difference relates to the source of data investigated. For example, the data of

countries at the provincial level may lead to results that have disagreements with those obtained from data of city levels, while similar differences also occur in the level of data aggregation and analysis. Spatial analyses are usually carried out at the level of either province or city, and in these cases, the meaning of “regional” versus “national” characteristics is obviously different. A second important divergence concerns the interactive mechanism between skilled international migration and cities [19]. Questionnaire surveys, in-depth interviews, and qualitative analysis have been widely adopted. The data derive from representative samples, in-depth accounts of specific universities, and/or firms involving senior overseas returnees [11, 20], which is mainly concentrated in the fields of pedagogy and demology [21]. The research on backflow structure and pattern is inadequate and especially scarce from a geographical perspective.

In order to examine the purpose of the backflow structure and pattern of China high-level returned talents, it is necessary to select a database with strong involvement of high-level overseas talents and domestic backflow organizations, including research institutes, universities, and state-owned and privately owned firms. The results will contribute to a better understanding of the spatial structure of China in particular and of emerging economies in general. This paper thus focuses on the migration trajectories of recruits in the “Young Thousand Talents Plan” (1000 plan, in short), which provides the most interesting case for the proposed analysis. First, in line with a plan to prevent China’s brain drain, the 1000 plan is represented by a group of highest-qualified overseas human capital. Second, the selected candidate and its relocation decision is a process shaped by political goals and the economic process in China, reflecting the enormous structural situation in the country.

By examining graphical mapping and social analysis on the backflow structure of China overseas high-level talents in the 1000 plan, this paper addresses the following research questions: (1) What are the backflow structural characteristics of China overseas high-level returned talents? (2) What are the backflow patterns and their driving forces?

This paper provides a visualization and mechanism analysis of a backflow structure based on the complete data provided by the official website of the 1000 plan. It is organized as follows: Section 2 describes the framework that drives the empirical analysis. Section 3 provides a brief introduction to the research design and data source. Section 4 then focuses on the empirical analyses testing the backflow structure and provides a reasonable explanation of the results. Finally, in Section 5, conclusions and implications for further research are discussed.

2. Spatial Configurations

In the competition for talent resources, overseas high-level returned talents can be viewed as a crucial process. The return location does matter for the agglomeration and circulation of talents. These selected cities in turn increase their competence in high-level areas and experience economic growth. Particularly, the overseas high-level returned talents and the already involved interplay of domestic and

foreign players in multispatial scales are an important process of both contemporary globalization and innovation [22, 23]. They are generally embedded in a broader network at various spatial scales, evolving sociospatial relations through individual education, career trajectories, and personal relationships [24]. It can be clearly seen that concentrated returnee talent and the cross-city movement can improve the connectivity of a city.

To help introduce a simple typology, this study proposes a combination of two spatial logics: the territorial approach (cities as industry agglomerations and/or bases) and the innovation theory (cities’ hierarchy in China national innovation system). Figure 1 presents three types of cities in the process of relocation decisions: (1) national core city (expressed in “1” in Figure 1) that occupies central positions within a city network, which possess the key characteristics of a knowledge hub and has the potential to disseminate knowledge internally through different channels and to stimulate learning; (2) regional excellent city (expressed in “2” in Figure 1) is a regional centered model that has well-functioning transportation and communication infrastructures for international flows of people and ideas, which occupy the second tier in the Chinese science and technology system and/or urban administrative system, and (3) regional special city (expressed in “3” in Figure 1) that host China’s strongest industrial agglomeration and/or research organizations but occupies peripheral positions in China’s hierarchical science and technology system and/or urban administrative system. It is no doubt that the return-migration decision of overseas high-level talents is due to the combination of a dynamic interface of professional and personal factors, that is, the result of rethinking the social advantages versus professional benefits from living in different cities. This mainly involves two driving factors: (1) innovation context and (2) social proximity.

2.1. Innovation Context. Context is the economic and institutional environments that may or may not affect the behavior of an individual in the process of making and fulfilling decisions. Understanding the context in which decisions are made has attracted much scholarly attention in the field of economic geography. There are numerous factors behind context and location choices of overseas high-level talents [21], which are often positively correlated with China’s hierarchical science and technology system.

During the last fifty years, China has reformed its science and technology system, which was once designed in accordance with the Soviet concept and has been transformed to meet the expectations of a modernized economy. To be specific, in the early 1980s, public research institutes carried out R&D, while universities were restricted to education. State-owned enterprises were then expected to collaborate with research institutes that coincided with their technological needs [25]. With the reform of China’s scientific sector, significant restructuring of public research institutes, and a broadening of functions for universities, the former patterns of technological advancement have undergone

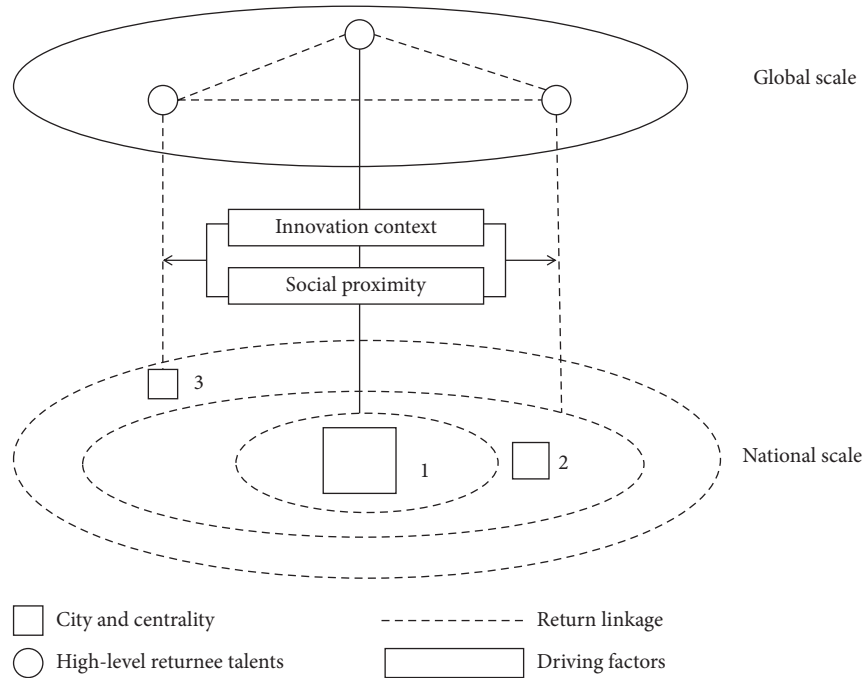


FIGURE 1: A typology of hierarchical cities driven by China overseas high-level returned talents.

considerable changes [26]. Thus, China has built up leading research universities that are capable of carrying out basic as well as complex R&D. Moreover, recent research has pinned one vital notion that concerns the spatial character of China's science and technology system. That is, it has a strong hierarchical order, with Beijing and a handful of other cities/regions in the medium ranks, dominating the national system [7].

Generally speaking, due to the positive correlation with the availability and thickness of resource endowment, the city hierarchy in China's science and technology is a crucial factor and is expected to influence the backflow potential of their city being chosen by talented returnees. These cities have a highly positive correlation with better life quality, ample resources, premium research organizations, prospective R&D resources, technological policy, and career platform [21].

2.2. Social Proximity. From a cultural perspective in China, especially in terms of kinships, alumni (schoolmates or classmates), birthplace, and so on, social proximity is likely to constrain and enable the spatial decision of high-skilled and professional migration [21, 27]. For example, Gu et al. (2019) employed the data from the Chinese national one percentage population sample survey and pointed out that social networks exert a vital role in location choice [28]. Based on the existing research, this study theorizes two types of social proximity that can have a significant impact on backflow style toward a city choice [21].

One of the frequently examined factors is the alumni connection [29]. Prior research suggested that most of the high-level returned talents who had graduated from the top universities all over the world had domestic education

experiences, which can be part of primordial ties. Research on the return choice of social factors has shown empirical evidence that the alumni community plays an essential role in the return choice. This choice is usually heavily influenced at the beginning of coming into a new environment and requires personal connections to change the natural instinct of alumni to return to the familiar [8].

In addition, the birthplace is attached to emotional gains and endows an inevitably cultural and social comparative advantage to determine the choices, such as being close to one's friends/relatives [30]. For most high-level returned talents, the experience in a foreign country brings with it unfamiliar environments and societies, which may in turn create more emotional needs with parents, spouse, friends, and other relatives [31]. In the context of China, some high-level returned talents comply with their parents' wishes to return home because of filial obligations [29, 32]. For example, Xue (2012) employed a comparative analysis among birthplace, workplace, and where one studied, which suggested that social ties to one's birthplace play one of the most important factors in the decision-making of relocation choices of high-level returned talents [33].

3. Materials and Methods

In the so-called "war" or "race" for talents, the 1000 plan was established in December 2008 and was monitored by representatives from several central government bodies, with the aim of bringing back distinguished professors and scholars, highly skilled engineers, and entrepreneurs to China. The plan consists of several categories that offer significant financial support to high-level overseas scientists who decide to relocate to China for conducting research in high-tech industries or in new fields of the exciting frontier

of science. In participating in major Chinese scientific projects, key laboratories, state-owned enterprises, state-owned financial institutions, high-tech development zones, and industrial parks, China offers scientists a wide range of incentives to relocate in its major cities. Toward this objective, this paper uses the database from young talents from the website <http://www.1000plan.org>, which is vital to China's talent program.

3.1. Data Sources. Data preparation involves several steps that are listed as follows. First, the basic qualification requirements of eminent overseas young scholars are as follows: the candidate should be below 40 years of age and possess a doctoral degree in natural sciences, engineering, or technology. In addition, they should have at least three years of postdoctoral research or professional experience in popular overseas universities, research institutions, or enterprises.

Second, the Young 1000 plan commenced in 2011; the selection procedure is rigorous and has a certain publication periodicity; therefore, the results are not published every year. Combined with the research goal, this paper gives priority to the dynamics of network structure and the year window. This window commences from the planned start of 2011 to the end of 2016. In sum, there were eight announcements, with 2,846 young talents in total.

Third, the spatial network of the talents can be attributed to the cities in which they are from. Hometown, education, and career path are all influential units of geographical analysis, defining what makes up local, national, and global. Moreover, some missing individual information is enhanced and collated through consultations over telephone and email.

Fourth, as part of the research, five selected talents were included in the experimental phase. Information was obtained from in-depth semistructured interviews from December 2018 to December 2019. The face-to-face surveys lasted anywhere between half-an-hour and an hour. The interviews were conducted in Mandarin and were recorded using tape and transcribed into text word by word. As a supplement to established interview transcription, additional information was accessed online and from books and periodicals.

As a preliminary finding (see Table 1), it can be inferred that, in line with previous studies, the premium choice of most of the overseas high-level returned talents was the university, accounting for an approximately 83% share; primarily in the fields of Biological Science, Engineering & Materials Science, Mathematical & Physical Science, and Chemistry. China's cities differ greatly in terms of research resources, showing that the spatial configuration is highly clustered around certain cities: Beijing and Shanghai are clearly leading with respect to the location of overseas high-level returned talents (677 for Beijing; 466 for Shanghai), followed by Wuhan, Nanjing, Hangzhou, Hefei, Guangzhou, and Chengdu, whose sum of professionals is between 201 and 112.

3.2. Study Method. The empirical analysis consists of two aspects: spatial visualization and qualitative interviews.

First, this paper visualizes the candidates' migration trajectories from their birthplace, study, and work cities in China and abroad to relocation choice and subsequent work changes. Despite certain shortcomings, the return location has developed into a standard tool in the empirical literature. (1) Dynamic places can fully reflect the need for socioeconomic development, which leads to the mobility of talented personnel in different cities. (2) This indicator hits close to the core of an important network formation and changing process. Talents can be assumed to share knowledge and innovation thoughts in the same domains, building a collaboration pipeline and bringing about the dynamics of the city system. (3) This approach shows how cities worldwide are linked.

Second, location does matter for the mobility and circulation of talent. Attractiveness of a cosmopolitan living environment, quality of life, business, employment, and educational opportunities all play a crucial role in bringing back talent to Chinese cities. This paper uses open and axial coding to determine relevant concepts in the data and then group them into categories. Open and axial coding has proven to be the most applicable method in analyzing these driving factors. Using this coding, it was possible to access five selected talents that formed the empirical cases (see Table 2). The course of these interviews can be categorized into three sections: (1) detailed information on the movement path and its influencing factors, (2) information of government support on innovation and involved scientific research, and (3) basic status of life in the selected city and corresponding evaluations, such as city infrastructure, R&D support, and restrictions.

4. Results

4.1. Actor Composition. In order to assess the dimensions of a cooperation network driven by the overseas high-level returned talents, the study categorizes the corporative ties of returnees in accordance with the organization that they graduated from and worked for. In the actor composition of the return choice of China's organizations (see Table 3), the top-tier universities in Beijing, Shanghai, Wuhan, and Nanjing have turned out to be the key actors, holding about 60% of the overseas high-level returned talents focused on the top 20 first-class universities. The above trend is extremely obvious in that 42.45% of those returnees are dominated by the top 10 actors. Hence, we can duly say that a large number of cities with prestigious research organizations might be an unintended consequence of exacerbating the national uneven tendency of high-degree innovative resources.

Regarding the characteristics of the overseas actors' centrality, the paper notably finds that 52.32% had educational and work experience in the USA, 5.90% in the UK, 12.39% in Europe (other than the UK), 10.61% in Asian countries, and 2.99% in Australia. Moreover, in terms of the number of actors, the Chinese professional primarily had overseas experience in American elite universities: Harvard University, Stanford University, Massachusetts Institute of Technology, and the University of California.

TABLE 1: Descriptive statistics of location choice.

Subjects	Work unit			Top 3 locations	Sum
	University	Research institute	Enterprise		
Mathematical & Physical Science	357	83	1	Beijing (163), Shanghai (81), and Hefei (44)	441
Chemistry	311	71	10	Beijing (62), Shanghai (60), and Nanjing (30)	392
Environmental & Earth Science	191	52	0	Beijing (72), Nanjing (28), and Wuhan (26)	243
Information Science	273	24	0	Beijing (57), Shanghai (46), and Chengdu (28)	297
Biological Science	587	169	0	Beijing (176), Shanghai (174), and Hangzhou (63)	756
Engineering & Materials Science	631	81	5	Beijing (147), Shanghai (87), and Nanjing (60)	717

TABLE 2: Profile of five cases.

Case	Backflow year	Subject	Backflow location	Interview time
A	2018	Biological Sciences	Shanghai	2019-09-20
B	2015	Engineering & Materials Science	Xi'an	2018-10-08
C	2015	Information Science	Chongqing	2019-07-20
D	2016	Mathematical & Physical Science	Beijing	2019-01-30
E	2012	Engineering & Materials Science	Suzhou	2019-12-01

TABLE 3: Spatial structure of top 20 important actors and overseas organizations.

Rank	Return choice			Overseas experience			
	Actor	Location	Sum	Actor	Country	City	Sum
1	Peking University	Beijing	160	Harvard University	USA	Boston	82
2	University of Science and Technology of China	Hefei	160	Stanford University	USA	Palo Alto	75
3	Zhejiang University	Hangzhou	159	Massachusetts Institute	USA	Boston	68
4	Tsinghua University	Beijing	157	University of California, Los Angeles	USA	Los Angeles	48
5	Shanghai Jiaotong University	Shanghai	128	University of California, Berkeley	USA	Berkeley	47
6	Nanjing University	Nanjing	105	Nanyang Technological University	Singapore	Singapore	47
7	Fudan University	Shanghai	103	Yale University	USA	New Haven	45
8	SunYat-Sen University	Guangzhou	87	Columbia University	USA	New York	35
9	Huazhong University of Science and Technology	Wuhan	86	National Institutes of Health	USA	Bethesda	34
10	Wuhan University	Wuhan	63	National University of Singapore	Singapore	Singapore	32
11	Shanghai Institutes for Biological Sciences	Shanghai	61	University of Pennsylvania	USA	Philadelphia	31
12	Tongji University	Shanghai	57	University of Michigan	USA	Michigan	30
13	South University of Science and Technology	Shenzhen	52	University of Hong Kong	China	Hong Kong	26
14	Sichuan University	Chengdu	51	University of California, San Diego	USA	San Diego	26
15	University of Electronic Science and Technology	Chengdu	51	Northwestern University	USA	Evanston	26
16	Xiamen University	Xiamen	47	Purdue University	USA	West Lafayette	25
17	Xi'an Jiaotong University	Xi'an	46	Cambridge University	England	Cambridge	23
18	Suzhou University	Suzhou	39	California Institute of Technology	USA	Pasadena	23
19	Beijing University of Aeronautics & Astronautics	Beijing	38	Los Alamos National Laboratory	USA	Los Alamos	23
20	Tianjin University	Tianjin	36	University of Texas at Austin	USA	Austin	21
	Sum		1696				767

4.2. *The Backflow Structure.* The centrality, indicated by the size of the nodes, is the extent to which a city is essential for channeling information, to identify key cities in the network. Figure 2, in order to produce high quality, only demonstrates

those cities linked to more than five other cities. The study can therefore draw up the following conclusions: the city map shows Beijing as a significant core-pillar to the entire structure and Shanghai, Nanjing, and Wuhan as three subpillars, involving

TABLE 4: City hierarchical structure in China.

Type of city	Number	Cities example
National core city	4	Beijing, Shanghai, Nanjing, and Wuhan
Regional excellent city	23	Hefei, Guangzhou, Hangzhou, Chengdu, Xi'an, and so on
Regional special city	25	Mianyang, Xianyang, and so on
Sum	52	

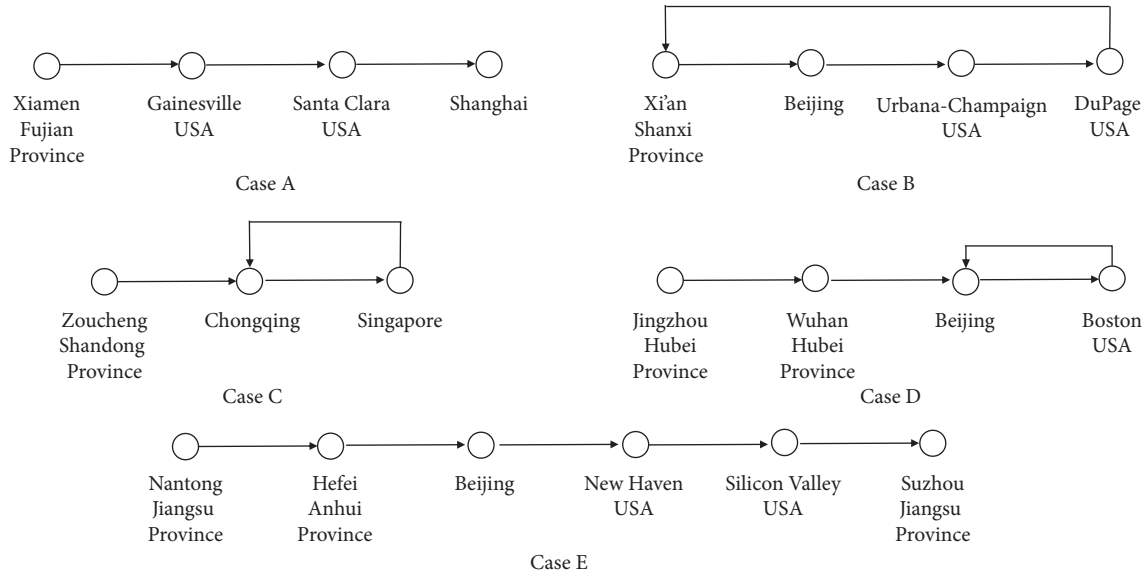


FIGURE 3: Backflow character formed by the migration tracks of five talents.

are circle routes while A and E are city explorers with a linear route.

A majority of Chinese experts have a common background, namely, bachelor and/or postgraduate phases in China, and more than three years of overseas study and work, predominantly in developed countries. Generally speaking, 90% of returnees have received a doctoral title from overseas universities and they have several years of work experience, while 10% of returnees are domestic scientists without foreign degrees and acquired five years of overseas experience either by working or through visiting programs. The study aims to find the relationships between these identified factors. Data analysis was supported by a coding procedure from the interviewees' transcripts and other supplementary materials. Finally, 21 codes were generated, and then the paper was collected and classified into six categories that can summarize the dynamics and its backflow structure of China overseas high-level talents from the perspectives of case studies (see Table 5).

There is no doubt that the return-migration decision of overseas high-level young talents is heavily influenced by professional and personal factors. These factors often result in the balancing/rethinking of innovation context versus social proximity of the relocation city in China. Based on the above analysis, the study combines the city's type, its backflow mechanisms, and its patterns to create Figure 4.

In general, the circle pattern builds on a series of formal relationships. The talents usually return back to a prior circumstance to minimize the risk of failure and to realize the personal development within a reasonable time course. Therefore, the circle pattern tends to rely much more on social proximity, especially with respect to the parent university. Meanwhile, these backflow cities can also have certain advantages, such as developed infrastructure facilities, a high quantity of high-level universities and research institutions, a good cultural environment, and/or a highly developed economy.

Comparatively speaking, the linear pattern is mainly related to new city explorers. These overseas high-level returned talents normally focus on the factors associated with innovation context and city amenity, such as personal development, high level of income, children's education, and science research cooperation. It supports the notion that linear patterns, generally speaking, may give priority to innovation context over social proximity, and that they would rather choose distant top-tier research organizations than secondary ones in local city and/or provinces. By investigation and interview, we found that a large number of talents, whose hometowns were the second- and third-tier cities, tried to enter higher-level cities to change the shortage of innovation resources. In addition, social relationship networks usually still played an important role in attracting high-level returned talents backflow.

TABLE 5: The process of coding procedure.

Evidence from the cases	Code	Category
I knew long ago that the funding for research projects here was sufficient (case C)	a ₁ income satisfaction	A ₁₁ income level
The institute offered me a new R&D laboratory and enough initial funding (case A)		
Xi'an Jiaotong University in this field is the best in China, and it is helpful to my growing up (case B)	a ₂ academic capability	
It has strong technical strength and teachers (case C)		
The high-level teacher resources here are abundant (case E)		
There is no doubt that Beijing University is the best in China (case D)	a ₃ university ranking	
We have a lot of partners in Shanghai, such as Fudan University. [...] most partners in China are world-class (case A)		
Xi'an is a profound historical and cultural detail of the ancient culture, and its innovation environment is good (case B)	a ₄ academic atmosphere	
Suzhou has fostered an environment of respect for knowledge, ability, and creativity throughout society (case E)		A ₁₂ personal development
Xi'an Jiaotong University is the only university to offer a course on nuclear fuel (case B)		
It has a national defense key discipline laboratory platform (case C)	a ₅ research platform	
As Peking University needs to build an electron microscope platform, I will certainly come back and do something if I have the opportunity (case D)		A ₁ innovation context
Shanghai is an international metropolis with a highly developed economy and first-class infrastructure in China. It has always been my favourite city (case A)		
Suzhou has perfect infrastructure and a relatively developed economy (case E)	a ₆ city's competitiveness	
.....	
The resources of basic education in Shanghai are rich, and the children of high-level talents are given priority for admission at high-quality schools (case A)	a ₁₀ the priority for high-quality education resources	A ₁₃ children education
The preferential policy of education for children of high-level talents in Beijing has certain appeal (case D)		
We worked together when I was in the USA (case A)		
As early as 2009, we already had a cooperative relationship with Prof. Li (case D)	a ₁₁ foundation for cooperation	
Four years ago, I knew the professor from an international seminar (case E)		A ₁₄ science research cooperation
The scientific research direction is very consistent with my tutor (case C)	a ₁₂ teacher-student research relevance	
My tutor has been a beacon for my scientific research, so I am very willing to continue to work and study here (case D)		
.....	
I returned to Suzhou, because of my parents [...] I am the only child, and Suzhou is near my hometown (case E)	a ₁₈ birthplace	A ₂₁ Kinships
Before I graduated, I told my supervisor that if I did well, I would come back (case D)	a ₁₉ teacher-student relationship	
Many people asked me why I didn't choose Tsinghua university. You know, I finished my bachelor's study there (case B)		
Chongqing is my second hometown, I graduated from here [...] I know every professor in the university, and I had a wonderful time studying there (case C)	a ₂₀ alumni network	A ₂₂ place identification
I think it is a good choice to return to my parent's university (case D)		A ₂ social proximity
We kept in touch with a friend who I knew before, now he is one of the members in the department. He recommended that I joined the department (case B)	a ₂₁ friend recommendation	

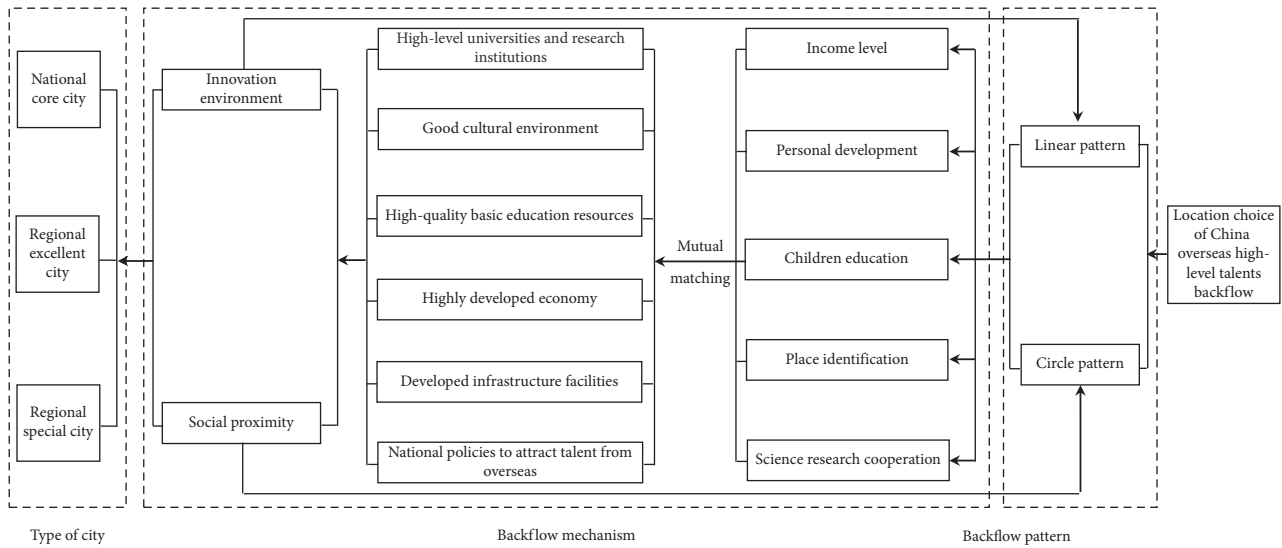


FIGURE 4: Backflow mechanism and location choice of high-level returned talents.

5. Conclusion

In examining the database for overseas high-level returned talents from Young Thousand Talents Plan during 2011–2016, the results discussed in this paper characterize important features of the spatial structure of the backflow choices of high-level talents, by focusing on the city-level locations and their driving factors. The findings indicate that the interaction between innovation context and social proximity has a direct influence on the returnee-related choice, including the city orientation and backflow pattern.

- (1) In line with Ma et al. (2018), the results of the analysis confirm that high-level returned talents enhance the connectivity of Chinese cities in the world city network, which shows a significant core-peripheral structure, involving 440 city nodes, with the most important overseas regions being North America, Western Europe, Japan, Singapore, and Australia. Three types of cities driven by the relocation of China overseas high-level talents backflow will appear: national core city (4), regional excellent city (23), and regional special city (25). The backflow path of overseas high-level talents within China, hence, presents a spatial uneven pattern as a core-peripheral structure. The main return locations are high-level cities such as municipalities or provincial capitals. Specifically, the backflow talents take seven cities as the premium return choice: Beijing, Shanghai, Wuhan, Nanjing, Hangzhou, Hefei, and Guangzhou, whose convergence proportion accounts for 71.18% during 2011–2016.
- (2) Building upon the theory and empirical analysis, this paper identifies how specific factors influence location choice as well as the two main corresponding elements: innovation context and social proximity. Herein, opportunities for self-realization in academic careers are significantly important, and

national core cities possessing dense research resources have objectively more favorable conditions and wider opportunities for attracting highly qualified specialists. Hence, we can infer that a large number of cities with highly overlapping innovative agglomerations, which coincides with an area with superior infrastructure and resources, might be an intended consequence to balance out the relocation tendency of some professionals in smaller cities. Moreover, personal connections and birthplace ties are shown as social proximity on the location of overseas high-level young returned talents.

- (3) The paradigm about which cities will be chosen as a return location can be divided into two camps. The larger of the two camps is the backflow type, in which the talents return to a place previously familiar to them. This shows that prior experience plays a key factor in the decision-making process and the choice is mainly driven by social proximity. A smaller but growing camp is the linear route. This path places the emphasis on university prestige and its hierarchy in the China science and technology system. In the search for return targets, the core cities may generate a rather unintended magnetic field, and its knowledge endowment can push in accessing the potential decisions of high-level returned talents.

While this study provides some valuable insights into the backflow structural characteristics, several limitations should be addressed for future research. First, the empirical focus on overseas high-level returned talents involves young particularities that may affect research findings. Second, the academic field is unlike knowledge bases. This dissimilarity will affect the results of the backflow structure and backflow patterns. Future studies should focus on one subject and conduct in-depth research. Third, future studies should expand their view to other developing countries and

integrate quantifiable data with knowledge outcomes and questionnaire information to add empirical evidence.

Data Availability

The data used in this paper are found in the database for young talents from the website <http://www.1000plan.org>.

Conflicts of Interest

The author has no conflicts of interest.

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