Changes in political discourse related to technology in the reports of the 20th and 19th National Congress of the Communist Party of China: A critical discourse analysis based on corpus linguistics

Zhenghong Chen

Zhejiang Gongshang University, Hangzhou, China

blonded27@163.com

Abstract. The report of the 20th National Congress of the Communist Party of China (CPC) provides important guidance for the country's future work in the next few years. Understanding this report is of great significance for us to comprehend the current state of the country's work and its future plans. Therefore, this study, based on the knowledge of corpus linguistics and the theory of critical discourse analysis, uses the language analysis tools WordSmith6.0 and LancsBox6.0 to investigate the discourse related to technology in the text of the reports of the 20th and 19th CPC National Congress, and analyze the construction and changes of the discourse of "talents," "technology," and "innovation" in the past five years and in the future, in order to explore the domestic and international background of China at this important historical stage, as well as the focus of government work.

Keywords: Critical discourse analysis; Political discourse; Corpus linguistics; Report of the 20th National Congress of the CPC; Technology.

1. Introduction

Every five years, the National Congress of the Communist Party of China (CPC) is held, during which the General Secretary of the Communist Party of China delivers a significant report on the achievements of the past five years and the expectations for the next five years. The important speeches and talks of national leaders often convey important information about the country's major policies, which are related to the people's understanding and comprehension of the party and government's line, principles, and policies, and the implementation of major policies (Ji, 2018). As a programmatic document, the report of the General Secretary of the CPC National Congress has great reference value for the policies and other implementation measures subsequently issued by local governments at all levels. The report not only reflects the central government's work focus and content during different five-year periods, but also subtly reflects the major changes and developments in the era background of China and the international community during these five-year periods.

The report is one of the most important ways of political communication at this Congress, which not only disseminates relevant political information, but also disseminates political discourse. From the perspective of critical discourse analysis, this study uses the research methods of corpus linguistics to analyze the discourse related to technology in the text of the reports of the 20th and 19th CPC National Congress, discussing the relationship between the discourse related to "technology(“科技”)" in the report of the 20th Congress and the era background it reflects.

2. Methods

This study uses the critical discourse analysis(CDA) method of corpus linguistics, and analyzes the linguistic types such as keywords, word frequency, and collocation in the reports of the 20th and 19th CPC National Congress, with the discourse related to technology, to explore the similarities and differences and periodic changes in the construction of political discourse between the 19th and 20th Congresses, and to analyze the focus of China's work surrounding technology in the past five years and in the next five years.

For example, by observing the word list, we can see which repeated words (i.e., high-frequency words, keywords) are frequently used, and the repeated emphasis on this aspect in the text. By observing the words that are collocated with these high-frequency words (including verbs, nouns, adjectives, etc.), we can understand their correlation and the underlying meanings behind them. High-frequency words are of great significance in critical discourse analysis, as they show a certain way of expressing information, and the information they provide prompts researchers to further interpret a certain linguistic phenomenon (Qian, 2010). Analyzing the similarities and differences in the content relating technology keywords in the two reports is of great significance for revealing the cognition of things and the related social phenomena.

In this study, we first constructed two specialized corpora for the text of the reports of the 20th and 19th CPC National Congress, namely the corpus of the 20th National Congress report (2022) and the corpus of the 19th National Congress report (2017), and used the latter as a reference corpus. The two specialized corpora were comparable in length, with 15,818 and 15,770 characters respectively, making them highly comparable and operational. We used the language analysis tools WordSmith Tools6.0 (Scott, 2014) and LancsBox 6.0 (Brezina, 2021) to conduct comparative studies on the two corpora. Based on the research needs, we analyzed the keywords, word frequency, collocation, and word clusters, hoping to use the critical discourse analysis of corpus linguistics to explore the development and changes of China's science and technology in the past five years and its planning for the future.

3. Corpus Linguistics

WordSmith 6.0 can analyze the target corpus's keywords, which are the vocabulary that the corpus emphasizes compared to the reference corpus, and can be considered its main core feature. However, keywords only provide linguistic forms to researchers; to answer specific research questions, researchers must provide in-depth explanations (Baker, 2004). Using this method, this study uses the "20th National Congress Reports " corpus as the target corpus, and the "19th National Congress Reports" corpus as the reference corpus to extract and select keywords and to summarize them. The study found that "technology(“科技”)" is one of the main keywords in the " 20th National Congress Reports " and is particularly significant. The frequency of the word "technology" in the "20th National Congress Reports" and the "19th National Congress Reports" is shown in Table 1.

Table 1. Comparison of Keywords

Keywords	“20th National Congress Reports” Frequency	“19th National Congress Reports” Frequency	Keyness
Technology(“科技”)	44	17	12.32

According to Table 1, "technology(“科技”)" is emphasized more frequently in the "20th National Congress Reports," indicating that the CPC stressed "technology" more during the 20th National Congress. In the five years of progress and the plans for the next five years, the country pays more attention to the development of technology. "Technology" appeared 44 times in the " 20th National Congress Reports," indicating a significant increase in frequency. How is the specific political discourse constructed with regard to "technology" in the "20th National Congress Reports"? What is the difference between "technology" mentioned in the "19th National Congress Reports"? What does this reflect? This study will answer these questions in the following sections.

3.1 Analysis of "Technology" Keywords and Collocations

Using the LancsBox6.0 software GraphColl column (span setting is set to left 5 and right 5, and the punctuation after statistics is removed), the collation words related to "technology(“科技”)" can be obtained (Table 2). "Innovation(“创新”)," "strategy(“战略”)," and "talent(“人才”)" are common collation words for both reports. Therefore, the "19th National Congress Reports" and the "20th National Congress Reports" both mentioned scientific innovation, technological innovation, and

innovation strategy. However, these are generally emphasized to establish the strategic plan for the development of technology, requiring a commitment to achieve the predetermined goals of technology, innovation, and talent. By contrast, the "20th National Congress Reports" has a richer variety of collation words related to "technology," indicating that the "20th National Congress Reports" explained more about the purpose, direction, and content of technology development.

Table 2. Analysis of Collocation Words

Collocation Words Related to "Technology" in the "20th National Congress Reports" (2022)	Collocation Words Related to "Technology" in the "19th National Congress Reports" (2017)
Innovation (“创新”), and (“和”), construct (“建设”), talent (“人才”), deepen (“深化”), strengthen (“加强”), reinforce (“强化”), powerful nation (“强国”), reform (“改革”), capability (“能力”), persist (“坚持”), strategy (“战略”), self-strengthening (“自强”), self-reliance (“自立”), lead (“领”)	Innovation (“创新”), strategy (“战略”), talent (“人才”)

"Powerful nation (“强国”)" explains that one of the purposes of developing technology is to make our country a scientific and technological power on the international stage.

"Strengthen (“加强”)," "reinforce (“强化”)," and "deepen (“深化”)" are verbs related to "technology(“科技”)," indicating that the level of promoting technology development compared to the previous five years needs to be more in-depth, and the effect needs to be more significant, in order to achieve the image of a technological power.

"Self-reliance (“自立”)" and "self-strengthening (“自强”)" indicate that the way for our country to develop technology requires independent and self-reliant characteristics.

In conclusion, based on the analysis of both the main keywords and collocation words, the 19th National Congress report emphasized the implementation of the strategy of technological innovation and the accumulation of talents. In contrast, the 20th National Congress report further expanded the focus on independent and self-reliant development of technology, consolidating scientific and technological construction, deepening reforms, and paying attention to the qualitative leap in the development of science and technology. The country formulates the report content based on its specific national conditions, and the emphasis on technology and related aspects such as work purposes and methods reflect the changing political discourse about "technology (“科技”)," which will be further discussed in the following section. Next, these main keywords and collocation words will be analyzed and examined from the perspective of concordance lines.

3.2 Analysis of "Technology" Concordance Lines

Previous study shows the differences in the frequency of keywords and their collocates. A more accurate and profound analysis of the discourse on "technology (“科技”)" in the two reports can be achieved through further observation by looking into the concordance lines.

3.2.1 Analysis of the “19th National Congress Report” Corpus Concordance Lines

The "technology(“科技”)" concordance lines in the 19th National Congress report indicates that technology has been constructed as the core combat power, and the country's work goal is to target the forefront of technology, cultivate a team of innovative talents, reform technology, develop strategic technological strength, and build an innovation system and major technological projects. In addition, the discourse on technology constructs the language of innovation through verbs such as "target," "cultivate," and "accelerate," indicating that China's focus during this period was to reserve talent for technological innovation development in order to push China to the forefront of the world's technological advancement in the future. The following two excerpts from the 19th National Congress report illustrate the country's orientation towards this issue during this period.

Table 3. Concordance Lines of the "19th National Congress Report"

The unremitting efforts of people of all ethnic groups across the country have promoted China's economic strength, scientific and	**technological** strength, national defense strength, and comprehensive national strength to the forefront of the world, promoting
New practices in economy, politics, rule of law, science and	**technology**, culture, education, people's livelihood, ethnicity, and religion
Uphold the guiding position, adhere to political army building, reform and strengthen the army, develop	**technology**-based military, rule by law, and focus more on actual combat, and add more emphasis
Basically achieved socialist modernization. By then, China's economic and	**technological** strength will have made a significant leap, ranking among the leading innovative countries;
Improve total factor productivity, focus on accelerating the construction of a synergistic development of the real economy,	**technological** innovation, modern finance, and human resources
The strategic support of building a modern economic system. Aim at the forefront of world science and	**technology**, strengthen basic research, achieve forward-looking basic research, and lead
Major breakthroughs. Strengthen applied basic research: expand the implementation of national major scientific and	**technological** projects: focus on key common technologies, leading-edge technologies
Strengthen the construction of the national innovation system: strengthen strategic scientific and	**technological** forces. Deepen scientific and technological system reform: establish an enterprise-led
, use. Cultivate and bring up a large number of strategic scientific and	**technological** talents, scientific and technological leaders, and young scientific and technological talents with international standards
Create a large number of strategic scientific and	**technological** talents, scientific and technological leaders, young scientific and technological talents, and high-level innovative
全国各族人民不懈奋斗，推动我国经济实力，	**科技**实力、国防实力、综含国力进入世界前列，推动
新的实践对经济，政治，法治、	**科技**、文化、教育、民生、民族、宗教
指导地位，坚持政治建军、改革强军，	**科技**兴军，依法治车，重加注重聚焦 实战，重加
基本实现社会主义现代化。到那时，我国经济实力、	**科技**实力将大幅跃升，跻身创新型 国家前列;
提高全要素生产率，著力加快建设 实体经济、	**科技**创新、现代金融、人力资源协同发展的
建设现代化经济体系的战略支撑。要瞄准世界	**科技**前沿，强化基础研究、实现前瞻性基础研究，引
重大突破。加强应用基础研究：拓展 实施国家重大	**科技**项目：突出关键共性技术，前沿引领技术
加强国家创新体系建设：强化战略	**科技**力量。深化科技体制改革：建立以企业为主体
、运用。培养造就一大批具有国际 水平的战略	**科技**人才，科技领军人才：青年科技人才
造就, 一大批具有国际水平的战略	**科技**人才，科技领军人才，青年科技人才和高水平创新

Example 1: Deepen the reform of the science and technology system, establish an enterprise-led, market-oriented, and industry-academia-research integrated technology innovation system, strengthen support for innovation of small and medium-sized enterprises, and promote the transformation of scientific and technological achievements. Advocate innovation culture, strengthen the creation, protection, and application of intellectual property rights. Cultivate and develop a large

number of strategic scientific and technological talents, scientific and technological leaders, young scientific and technological talents, and high-level innovation teams with international standards.（“深化科技体制改革，建立以企业为主体、市场为导向、产学研探度融合的技术创新体系，加强对中小企业创新的支持，促进科技成果转化。倡导创新文化，强化知识产权创造、保护、运用。培养造就大批具有国际水平的战略科技人才、科技领军人才、青年科技人才和高水平创新团队。”）

Example 2: By then, China's economic and technological strength will make a significant leap, ranking among the leading innovative countries; people's equal participation and equal development rights will be fully guaranteed, a country ruled by law, a government ruled by law, and a society ruled by law will be basically established, institutional improvements will be made in various aspects, and the national governance system and governance capabilities will be basically modernized.（“到那时，我国经济实力、科技实力将大幅跃升，跻身创新型国家前列；人民平等参与、平等发展权利得到充分保障，法治国家、法治政府、法治社会基本建成，各方面制度更加完善，国家治理体系和治理能力现代化基本实现。”）

Therefore, it is evident that the focus of "technology (“科技”)" during the 19th National Congress period was on cultivating a high-quality talent team, under the support of development strategy, to enter the international stage.

3.2.2 Analysis of the “20th National Congress Report” Corpus Concordance Lines

Using "technology (“科技”)" as the search term in the 20th National Congress report, a cluster appeared. See Table 4 below.

Table 4. Word Cluster on "Technology (“科技”)" in the 20th National Congress

Cluster	Frequency
technology self-reliance (“科技 自立 自强”)	5

By observing this cluster, it can be found that the 20th National Congress report emphasizes the need for independent and self-reliant technological development. In other words, technological development should rely on its own strength and not on external factors. As mentioned in the original text of the 20th National Congress report, "accelerate the advancement of technology self-reliance(“加快推进科技自立自强”)," "the ability of technology self-reliance has significantly improved (“科技自立自强能力显著提升”)," "realize high-level technology self-reliance and enter the forefront of innovative countries (“实现高水平科技自立自强，进入创新型国家前列”)," and "accelerate the realization of high-level technology self-reliance (“加快实现高水平科技自立自强”)," among others. This cluster of words did not appear in the 19th National Congress report. Therefore, we can explore the changes in China's social background during the two sessions to explain why the 20th National Congress attaches such importance to China's independent research and development capability in technology, rather than relying on high-tech technologies from other countries. This will be explained in the following sections.

We then focused on selected search lines using "technology (“科技”)" as the query term, and conducted an analysis as shown in Table 5 below.

According to the analysis of search queries, "technology (“科技”)" has been constructed as the first productive force, with talent as the first resource and innovation as the driving force. Compared to the 19th National Congress, the 20th National Congress has mentioned different aspects of technological development several times, ranging from agriculture, seed industry, national defense, military, finance, research institutions, universities, enterprises, and other places, which have subdivided technological development into different modules under various fields. It can also be noted that the 20th National Congress report has repeatedly emphasized the central leadership position in scientific and technological innovation, reflecting the central authority's control over the layout and positioning of technological development. Furthermore, while China is developing science

and technology independently and self-reliantly, it also emphasizes the need to expand international exchanges and cooperation, strengthen the construction of an internationalized scientific research environment, and make China form an open innovation pattern with international competitiveness. In the process of constructing the discourse of "technology (“科技”)," the verbs frequently used in the 20th National Congress report are different from those used in the 19th National Congress report, such as "deepen (“深化”)," "strengthen (“强化”)," "reform (“改革”)," "strengthen (“加强”)," "upgrade (“提升”)," "optimize (“优化”)," "increase (“加大”)," "accelerate (“加速”)," which indicates that the 20th National Congress continues to increase investment in science and technology based on the 19th National Congress and the influence of science and technology is gradually increasing. The following three excerpts from the original text of the 20th National Congress are selected to reflect the above observations.

Table 5. "Technology" Search Lines in the 20th National Congress Report

Significant achievements have been made in infrastructure construction. We have accelerated the promotion of self-reliance and self-strengthening in science and	**technology**, and the total R&D expenditure of the whole society has increased to one trillion.
The unprecedented great changes are accelerating, and the new round of scientific and	**technological** revolution and industrial transformation are deepening, profoundly affecting the international balance of power.
High-standard farmland, implementing the seed industry revitalization initiative, strengthening agricultural science and	**technology** and equipment support, improving the income guarantee mechanism for grain farmers and...
The fundamental and strategic support for a socialist modern country. We must insist that science and	**technology** are the primary productive forces, talent is the primary resource, and innovation...
The core position in modernization construction. Improve the system of the central government's unified leadership in science and	**technology** work, strengthen the new national system, and enhance national...
Resources, optimize the positioning and layout of national scientific research institutions, high-level research universities, and leading	**technology** companies, and form a national laboratory system.
Cultivate the spirit of scientists, foster a good academic style, and create an atmosphere of innovation. Expand international scientific and	**technological** exchanges and cooperation, strengthen the construction of an internationalized scientific research environment, and form a global...
Guided, gather strength for original and leading scientific and	**technological** breakthroughs, and resolutely win the battle for key core technologies. Accelerate the implementation of one...
Strengthen basic research, emphasize originality, and encourage free exploration. Improve the efficiency of science and	**technology** investment, deepen the reform of the distribution and use mechanism of financial science and technology funds.
World-class leading talents in science and	**technology**, innovative teams, young talents in science and technology, outstanding engineers, major craftsmen, and highly skilled...
Modernize military training, deepen joint training, confrontational training, and	**technology**-driven training. Strengthen the regular and diversified use of military forces, and be resolute and flexible.
Coordinate the development of war and military construction, accelerate the construction of modern logistics, implement major national defense science and	**technology** and weapon equipment projects, and accelerate the transformation of science and technology into combat effectiveness.

等基础设施建设取得重大成就。我们加快推进	**科技**自立自强，全社会研发经费支出从一万亿
未有之大变局加速演进，新一轮	**科技**革命和产业变革深入发展，国际力量对比深刻
高标准农田，深入实施种业振兴行动，强化农业	**科技**和装备支撑，健全种粮农民收益保障机制和
社会主义现代化国家的基础性、战略性支撑。必须坚持	**科技**是第一生产力、人才是第一资源、创新
现代化建设全局中的核心地位。完善中央对	**科技**工作统一领导的体制，健全新型举国体制，强化国家
资源，优化国家科研机构、高水平研究型大学、	**科技**领军企业定位和布局，形成国家实验室体系
科学家精神，涵养优良学风，营造创新氛围。扩大国际	**科技**交流合作，强化国际化科研环境建设，形成具有全球
导向，集聚力量进行原创性引领性	**科技**攻关，坚决打赢关键核心技术攻坚战。加快实施一
加强基础研究，突出原创，鼓励自由探索。提升	**科技**投入效能，深化财政科技经费分配 使用 机制改革，
一流科技领军人才和创新团队、青年	**科技**人才、卓越工程师、大国工匠、高技能
化军事训练，深化联合训练、对抗训练、	**科技**练兵。加强军事力量常态化多样化运用，坚定灵活
战建备统筹，加快建设现代化后勤，实施国防	**科技**和武器装备重大工程，加速科技向战斗力转化。

Example 3: We must adhere to the belief that science and technology are the primary productive forces, talent is the primary resource, and innovation is the primary driving force. We must thoroughly implement strategies for invigorating the country through science and education, strengthening the country through talent, and driving development through innovation, explore new areas and tracks for development, and continuously shape new drivers and advantages for development. ("必须坚持科技是第一生产力、人才是第一资源、创新是第一动力,深入实施科教兴国战略，人才强国战略，创新驱动发展战略、开辟发展新领域新赛道，不断塑造发展新动能、新优势。")

Example 4: Thoroughly implement the seed industry revitalization initiative, strengthen agricultural science and technology and equipment support, improve the income guarantee mechanism for grain farmers and the benefit compensation mechanism for main production areas, and ensure that the Chinese people's food security is firmly in our own hands. ("深入实施种业振兴行动，强化农业科技和装备支撑，健全种粮农民收益保障机制和主产区利益补偿机制，确保中国人的饭碗牢牢端在自己手中。")

Example 5: Improve the system of the Party Central Committee's unified leadership over scientific and technological work, strengthen the new national system, the national laboratory system, coordinate and promote the international optimization and allocation of innovative resources in science and technology, optimize the positioning and layout of national scientific research institutions, high-level research universities, and leading technology enterprises... ("完善党中央对科技工作统一领导的体制,健全新型举国体制，国家实验室体系,统筹 推进国际科技优化配置创新资源，优化国家科研机构、高水平研究型大学、科技领军企业定位和布局……")

4. Discussion

Through the comparison and analysis of the 20th and 19th National Congress reports using the above corpus methods, we can draw the following conclusions: 1. Continuation of the 19th National Congress report, the 20th National Congress continues to emphasize the strategies of rejuvenating the country through science and education, technological innovation, and talent development; 2. Based on this, the 20th National Congress pays more attention to the practical implementation of these strategies in different fields and aspects; 3. At the same time, the status of technological development in the 20th National Congress report has been significantly elevated; 4. The 20th National Congress proposes to achieve technological self-reliance and self-strengthening, strengthen independent research and development skills, comprehensively deepen scientific and technological reforms, and enable China to become a world technological power as soon as possible, and strengthen international scientific and technological cooperation; 5. The 20th National Congress points out that developing science and technology is necessary to enhance national security, including national scientific and technological security.

Why has technology been so valued over the past five years? We can discuss this based on the results of corpus analysis combined with China's social and historical context over the past five years. First, this is related to China's extraordinary achievements in technological development. Under the guidelines of the 19th National Congress report, from the development of aerospace technology to the application of big data, science and technology have developed rapidly, and high-tech talents have continuously emerged. China's digital economy has also developed rapidly, indicating that the talent reserves in the 19th National Congress report have achieved success and breakthroughs. Second, this is also related to the international situation faced by China. In recent years, Western countries have implemented a technological blockade against China, resulting in a gap in high-end technological fields. To make up for this shortage, the 20th National Congress places particular emphasis on improving and deepening the technological system to break through the technological blockade and achieve independent research and development. Third, in consideration of the complex and ever-changing international landscape, as well as frequent disputes in China's surrounding areas, China has strengthened and deepened reforms in the field of national defense technology in order to maintain national security and stability and have more say on the international stage.

References

[1] Baker, P.2004.Querying keywords [J]. Journal of English Linguistics 32:346-359.

[2] Brezina, V. (2021). LancsBox: Lancaster University corpus toolbox [Computer Software]. Lancaster: Lancaster University.

[3] Scott, M. (2021). WordSmith Tools Help Manual Version 8 [Computer Software]. Oxford: Oxford University Press.

[4] Ji Yan. Analysis of the conceptual metaphors of General Secretary Xi Jinping's political discourse[J]. Journal of North Central University (Social Science Edition), 2018, 34(05):120-125+130.

[5] Qian Yufang. Corpus and critical discourse analysis[J]. Foreign Language Teaching and Research, 2010, 42(03):198-202+241.