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Gifford Pinchot's Thoughts on Conservation

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Abstract Gifford Pinchot played a significant role in America's first conservation movement. He put forward many conservation policies for American federal government. Pinchot's thoughts on natural resources conservation have rich content. He realized the limitation of natural resources, so he advocated scientific management and governmental supervision on public land. He embedded conservation with moral significance and regarded conservation as an essential means of promoting social justice and international peace. The analysis on Pinchot's thoughts on conservation can help people understand the development of American environmental thoughts in the 20th century and can also provide inspiration for natural resources protection in China.

Key words Conservation, Scientific forestry, Utilitarianism, Pacifism

At the end of the 19th century and the beginning of the 20th century, there was a large-scale conservation movement in US where industrialization and urbanization had been developing at a staggering speed. Under its influence, America formulated a series of important natural resources and environmental protection policies. Although the direct leader of this movement was president Theodore Roosevelt, Gifford Pinchot, the president's science consultant, was the planner of many conservation policies at that time, especially forestry policies. Pinchot was the first professional forester in America. As the first director of the United States Forestry Service, an advocate of American national forests system, as well as the founder of Society of American Foresters and Yale School of Forestry, Pinchot was regarded as an important creator and pioneer of the conservation movement in US in the 20th century. Many of his thoughts are still guiding people today, especially for forestry^[1]. This article discusses and evaluates Pinchot's thoughts on conservation.

1 Sources of Pinchot's thoughts of conservation

Gifford Pinchot was born in a rich farmer's family in Connecticut in America in August, 1865. He had many dreams and career planning when he was young, but was finally engaged in conservation under the influence of his family and society. Taking forestry as the starting point, he gradually extended conservation to many other natural resources like rivers, land and minerals. His father, James Pinchot, was the enlightener and guider of Pinchot's thoughts. Pinchot pointed out in his autobiography that although his father was not a forester, he deserved to be called the "father of American forestry" because his father's "foresight and tenacity were responsible, in the last analysis, for bringing forestry into this continent"^[2]. Pinchot's father was not an inborn naturalist.

His enthusiasm for forest conservation was largely out of his wish of atonement and reparation since most of the family wealth had come from land speculation and lumber trade. From Pinchot's grandfather, the family had made a great fortune from such business. They usually cut all the trees in a piece of land, built temporary timber factories, and transported the processed wood to ports for selling. After all trees had been cut in that piece of forest land, they would turn to a new land and do the same thing. Therefore, the wealth of Pinchot's family was established on the cruel and excessive exploitation of forest resources, which was quite prevalent during the first half of the 19th century. James realized the disastrous effect on environment. Bare land and eroded soil deeply tortured his conscience. So he quit this job and decided to spare no effort in saving environment with his children to remedy the family's sin. He often brought his children to the countryside, making them enjoy the beauty and magnificence of nature and understand the meaning of nature protection. James also made several trips to Europe and the mature European forestry deeply impressed him. He started to believe that the neglect of forestry was not only a mistake but could bring disasters, thus forestry should be introduced to America^[2]. When Pinchot entered Yale University at the age of 20 in 1885, James encouraged his son to study forestry. Pinchot read all the forestry books and other relevant science books in the college library. After graduation, James reminded his son of the duty for nature and financed him to study forestry in Europe. Although it was somehow an exaggeration to call James "father of American forestry", James undoubtedly played a significant role in the generation of Pinchot's thoughts on conservation.

While his father's influence made Pinchot concerned about forest and environment, he realized it was necessary and urgent to develop forestry and protect natural resources in America due to the devastating effect of industrialization and urbanization. After the Civil War, the population increased dramatically and industrialization was in full swing in the US. A huge number of people crowded into the west where the bushy grassland was gradually substituted by cultivated land. The extensive agricultural manage-

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ment adopted by early exploiters finally resulted in severe land degradation. The eastern part of America also suffered from grievous environment problems. The unrestrained exploitation of natural resources caused the depletion of woods resources in many places and the deterioration of natural environment. Meanwhile, industrialization also boosted the brutal exploitation of mineral resources and a large amount of minerals was wasted. Since the middle of the 19th century, some intellectuals in America have realized the significance of environment issues. They wrote books calling on people to protect the nature and environment, among whom were writers like George Emerson and Henry David Thoreau as well as scientists and naturalists like Charles Sprague Sargent, John Muir and George Perkins Marsh. Their deep concern about natural resources, such as wild animals, plants, minerals and water power, and their sharp writing style sparked environment awareness among the public, which was also the background of the generation of Pinchot's thoughts on conservation.

Since there was no systematic forestry in America, Pinchot went to London to study it in October, 1889 and was determined to bring the advanced forestry management methods in Europe back to America. He learned from Sir Dietrich Brandis, the most prestigious German forestry expert in the world at that time. Following his instructions, Pinchot went to French Forest School in Nancy to learn silviculture. He widely read the forestry works in Europe, received comprehensive training and grasped abundant knowledge of forestry management. When Pinchot came back to America in December 1890, he began to be regarded as the authority of forestry and gradually gained the appreciation of president Roosevelt whose support realized Pinchot's environment dream.

2 Pinchot's thoughts on conservation

2.1 Limitedness of natural resources

Among western countries, America was nothing more than an infant due to its short history, but this new – born infant showed staggering ability of growth, becoming one of the main capitalist countries in the west within a short span of about 100 years. Its quick growth depended not only on the individualistic value which worships individual success and the protestant ethics which urge people to work hard but also on the favorable geographic locations as well as rich resources gifted by nature. However, human's cruel trampling and plundering of the mother nature gave a warning to people like Pinchot that natural resources were not inexhaustible. In *The Fighting for Conservation*, Pinchot strictly criticized the traditional idea and pointed out that "We are in the habit of speaking of the solid earth and the eternal hills as though they, at least, were free from the vicissitudes of time and certain to furnish perpetual support for prosperous human life. This conclusion is as false as the term "inexhaustible" applied to other natural resources."^[3] He counted the devastating impacts of excessive logging and overgrazing on such natural resources as forests and the soil and argued that the conservation of natural resources was the permanent foundation of a country's success.

Since natural resources were exhaustible, Pinchot emphasized that people should follow principles when using them and take full responsibility for the nature. He stressed that the conservation movement should establish indispensable principles and regulations for implementing the responsibility. If people wanted to protect resources, they should seriously manage and develop resources. Proper management could guarantee the sustained prosperity of society and healthy development of nature. However, without appropriate and highly efficient public management, natural resources would be confronted with real threat^[1]. Although Pinchot was sad about the damage to environment, he was convinced that a proper relationship between man and nature and the reasonable management and utilization of resources would bring mutual benefits for both nature and human society. The optimistic attitude became his motivation for reforms.

2.2 Scientific forestry

Pinchot learned the concept of scientific forestry from Brandis during his study in Europe and brought it to America. In Brandis' opinion, forests symbolized beauty and trees were also a kind of crop and thus could be cultivated like other crops. Forestry managers should stabilize timber production and meanwhile improve conditions of the whole forest land. Pinchot completely agreed with Brandis and was deeply impressed by the systematic forest management in France, where forests were well arranged like cultivated land with straight and symmetric roads among them, which contrasted sharply with those in America. He advocated that scientific forestry should also be implemented in America to improve the output and efficiency of wood production and avoid excessive and illegal logging just for short – term benefits. Therefore, Pinchot defined the object of forestry as "to discover and apply the principles according to which forests are best managed"^[4] and the initial task of forestry management was to ensure sustained output.

In October, 1891, Pinchot went to the Biltmore Estate in North Carolina to implement the first systematic forest management in American history with assistance of his friends. He planted trees on mountains whose vegetation had been seriously damaged. Pinchot emphasized that his experiment was to make people aware that it was not necessary to destroy forest when making profits and the ultimate goal of scientific forestry was to preserve American forests^[5]. Pinchot's great pioneering work won him high praise from the magazine *Garden and Forest*. One of its editorials pointed out that the project of Mr. Pinchot put forward three overall objects, namely to endow forestry with direct functions, to maintain sustainable output so as to provide stable employment for trained foresters and to gradually improve the current dissatisfactory conditions of forestry^[6]. However, Pinchot's experiment was not always smooth and Biltmore Estate did not create the expected stable economic profits. But his experiment paved the way for scientific forest management and largely helped to establish the prominent position of forestry in American culture. Being one of those who first took forestry as profession in American history, Pinchot made a significant step in conservation.

Since scientific management could not be carried out without professionals, Pinchot decided to establish forestry colleges in America to cultivate such foresters. With the financial support from his father, Pinchot established Yale School of Forestry through negotiation with the president of Yale University. He invited top scientists in America as the visiting professors and held lectures to introduce the idea of scientific forestry in person. This school cultivated a large number of professional foresters for the government and private forestry companies, and played an impressive role in the conservation of forests in the US.

2.3 State intervention Another important aspect of Pinchot's thoughts was the emphasis of state intervention in conservation. Pinchot believed that the American federal government should play a leading role in the conservation of both forests and other natural resources through legislation and administration. He claimed that effective protection of natural resources in America required top-down government control over public land as well as scientific management of natural resources on the land under the guidance of specialists. Before the conservation movement, the public land in America was free and accessible to all people without restrictions. The overgrazing or excessive mining resulted in devastating ecological disasters in many places, which made Pinchot fully convinced that the federal government should manipulate and regulate the utilization of public land in order to guarantee the sustainable development.

With this thought, Pinchot endeavored to persuade the federal government to be involved in the conservation of land and forests. In 1890, Pinchot sent an essay to American Forestry Association, introducing forest management in Europe and India. He indicated that Europe and India could implement scientific and systematic forest management principally because they had national forests, whose stable economic profits encouraged other forest owners to imitate their management mode, and hence a virtuous circle^[6]. That is to say, state control is the first step towards success and the US should set up more national forests.

Pinchot was appointed as the chief of Division of Forestry of the US Department of Agriculture in 1898 and began to implement his conservation theory with governmental force. Firstly, he made comprehensive reforms on the Division of Forestry by increasing its financial budget and enlarging its number of staff, turning it into a vigorous agency. Then in 1905 it was extended and renamed the U. S. Forest Service. Secondly, he endeavored to increase supervision of U. S. Forestry Service on public land, ban grazing in places with seriously damaged vegetation and plant trees and grass to conserve water and soil. In 1906, a cowboy in California and another one in Colorado attempted to challenge the authority of U. S. Forestry Service by grazing in national forests without approval. These two cases were transferred to the Supreme Court for trial and finally the U. S. Forestry Service won the lawsuits. The success meant a lot because since then American federal government began to strengthen the control on public land. U. S. Forestry Service undoubtedly shouldered the responsibility and Pinchot's state inter-

vention thought achieved initial success. Furthermore, Pinchot advocated the construction of national forests. He always believed that private forests in America were not promising and neither governmental subsidy nor regulation would wield much influence. Instead, the government should turn private forests into national ones by all means. His idea won the approval of president Theodore Roosevelt and the construction of state forests became one of the president's priority. During his tenure, the number of national forests in US increased dramatically from 38 in 1900 to 149 in 1910, which were all managed by U. S. Forestry Service. American national forest system was formally established. This decade has become the well-known "Age of Pinchot" in American history of conservation^[7].

2.4 Utilitarianism The most conspicuous point in Pinchot's conservationism was utilitarianism. Pinchot believed that it is not very meaningful to conserve natural resources just for the sake of saving them for the next generation because the right of contemporary people to utilize them also accounts. In *The Fight for Conservation*, Pinchot clearly explained his utilitarian conservation thought. He proposed that the conservation should follow three principles. Firstly, natural resources should be utilized fully, rationally and efficiently to meet the needs of human beings. Secondly, waste of resources should be avoided. Pinchot was confident that with social progress, humans were capable of controlling nature and avoiding abuse or waste of nature in the meantime. Lastly, equality matters. Developing and protecting natural resources is to bring benefits for the majority, not the minority. For Pinchot, conservation aims at both natural resources and human's benefits and its ultimate goal is to bring as many benefits as possible for the largest number of people^[2]. It can be inferred that Pinchot endowed conservation with democratic values, aiming to realize equality for all citizens through conservation. By equality, Pinchot did not mean equality in political involvement or power, but in material income and distribution. Therefore, Pinchot gave moral meanings to conservation movement, which became an important part of the progressive movement pursuing freedom and equality at the beginning of the 20th century.

There was great disparity between Pinchot's utilitarianism and the idea of some preservationists represented by John Muir. Pinchot believed that the goal of protection was utilization. Scientific and rational utilization can avoid the exhaustion of resources. However, Muir believed that the goal of protection was to maintain the natural condition of wilderness, which was irreconcilable with Pinchot's utilitarian conservatism. Their dispute reached climax on the issue of building a dam in Hetch Hetchy Valley. Hetch Hetchy Valley is located in California and was merged into the Yosemite National Park through the joint efforts from Muir and other preservationists in 1890, becoming one of the Wilderness Reserves in America. However, early in the 1880s, San Francisco had planned to build a dam in the valley to solve its problem of urban water shortage. San Francisco applied twice to the United States Department of the Interior in 1903 and 1905 for the water rights to

Hetch Hetchy, but was refused for violating the principle of national park. Ethan Hitchcock, the minister of the department, asked Pinchot, chief of U. S. Forestry Service, to investigate the case. Pinchot thought that people's need for water resource was much more important than the natural scenery of Hetch Hetchy Valley. Although he understood Muir's position, he insisted that the optimal use of Hetch Hetchy Valley was to provide clean water for the population in San Francisco. In December 1913, American congress passed the Raker Act and authorized the building of a dam in Hetch Hetchy Valley by San Francisco. Pinchot was no longer chief of U. S. Forestry Service at that time, but he still believed that the advantages of building the dam in the valley outweighed the disadvantages since only a few rich people would go to the valley to appreciate the beautiful scenery while the benefits of dam could be allocated to the general population democratically. For Pinchot, the construction of the dam was not only an issue related with natural resources but was more a matter of equality. His utilitarianism was fully exhibited in this case.

2.5 Conservation and world peace Another important point of Pinchot's thoughts on conservation was to link the protection of natural resources with world peace. Pinchot's horizon was not limited within the US in terms of conservation. Instead, he believed that the whole world should make joint effort for this goal. In February 1909, president Theodore Roosevelt convened the first North American Conservation Conference according to Pinchot's proposition and passed *Declaration of Principles of North American Conservation Conference*, appealing for joint effort from each country in North America to protect natural resources, which set the precedent of international cooperation in natural resources protection. After the conference, Pinchot proposed that a global conservation conference should be held in Amsterdam of Netherlands in December. President Roosevelt agreed readily and invited more than 30 countries. However, he failed to get reappointment in 1909 and the conference was not held as expected.

The succeeding president William Howard Taft did not approve of many conservation policies of Roosevelt administration and dismissed Pinchot's position as U. S. Forestry Service chief with the excuse of the controversy between Pinchot and the newly appointed U. S. Secretary of the Interior Richard Barringer, but Pinchot never forgot his mission of fighting for conservation. Instead, he kept expanding the connotations and meanings of conservation. At the end of the 1930s when the world was confronted with the threat of wars, Pinchot put forward the idea that international cooperation in conservation can effectively suppress nationalistic ambitions and bring world peace. Pinchot argued that the civilization of human beings depended on natural resources and no country could completely be self-sufficient in them, therefore nations in the world were dependent on each other in this sense. Territory claims by one country to another actually involves the demand for that country's natural resources, which was usually the main cause for war. Only by ensuring all countries to gain the needed natural resources equally can international conflicts be avoided

ded^[5]. In other words, one of the roots of international conflicts lies in the ignorance of conservation. Permanent world peace requires international cooperation in the utilization and conservation of natural resources as well as justified resource allocation. In order to achieve the goal, Pinchot argued that apart from holding international conservation conferences, an international political organization should also be established, whose mission is to collect resource information in each country, such as the natural resources that each country already has, what resources it is still lack of, as well as its consumption and protection of natural resources. Then, relevant policies should be formulated according to the information to regulate the use of nature in each country, protect the endangered wild animals and plants, guarantee the stable and sustainable prosperity of nature and promote permanent peace of human beings^[5]. Pinchot's proposition was finally put into effect in the United Nations Conference on the Conservation and Utilization of Resources in 1949 and was implemented by international society three years after his death.

3 Evaluation

It is easy to find from the above analysis that Pinchot's thoughts have abundant connotations. Although some of his ideas are nothing novel today, they were definitely radical and advanced 100 years ago. Pinchot's thoughts and practice played a significant role in conservation in US and even the whole world in the 20th century.

Firstly, at the end of the 19th century and the beginning of the 20th century, when many people who cared about nature felt anxious and helpless about the severely damaged nature, Pinchot drew for them a picture of natural resources protection with optimistic attitude and believed that human beings have the ability of overcoming environmental problems and the prosperity of nature can be sustained through conservation and scientific management of resources. Pinchot's idealism and braveness ignited those people's enthusiasm for conservation and encouraged them to join the rank, which finally set off the first conservation movement in US. Although this movement involved different ideas and Pinchot's thoughts was not always the leading ones, his passionate words and activities made him one of the most important spokespersons of the movement and most participants regarded Pinchot as a hero of conservation.

Secondly, Pinchot's idea of "scientific management" corrected the traditional practice of unreasonable exploitation and utilization of natural resources. The concept of "science" began to be deeply rooted in people's mind and "science" and "technology" gradually became the main themes in the conservation movement. Therefore, some scholars pointed out that the conservation movement of progressive era was not only a political movement, but more importantly a science movement, and future generations should understand its significance in history from the perspective of the application of science instead of democracy^[8]. Scientific management largely avoided the abuse and waste of natural resources and scientific seedling, rotate cutting and forest fire pre-

vention advocated by Pinchot also promoted the regeneration of forest resources in the 20th century

Thirdly, Pinchot strengthened the supervision responsibility of federal government for public land and natural resources, and connected the conservation of natural resources with democracy and social justice. He tried hard to persuade the government to quit *Laissez-faire* policies and restrained big private enterprises and financial groups from manipulating and monopolizing land, water or forests. His dispute with Barringer was the direct conflict with financial monopolies. Therefore, in Pinchot's thoughts of conservation, scientific management was just a means while democracy and equality were the goals, which was quite far-sighted at that time. During the progressive movement, Pinchot became the representative of "public conscience".

Lastly, the idea of restricting resources exploitation through international organization and agreement proposed by Pinchot provided inspiration for later environmental movement. It is not hard to find Pinchot's thought legacy from Greenpeace established in the 1970s and the Copenhagen World Climate Conference in 2009. Pinchot's pacifism became the important content of world environmental thought in the second half of the 20th century.

However, the limitation in Pinchot's thought should not be ignored despite his outstanding contribution to conservation, especially his utilitarianism. Pinchot excessively emphasized the economic value of natural resources and neglected their aesthetic and ecological value, so all environment-related issues were measured from the perspective of utilitarianism, which caused mistakes in decision-making. A case in point was the dam-building in Hetch Hetchy Valley which caused disastrous result in the nature and ecology of the valley. Although Pinchot gradually recognized the defects in his utilitarianism and was engaged in the preservation of wilderness later, the influence of his idea persisted till the new environmental movement in the middle of the 20th century. Therefore, the rich legacy of Pinchot's thoughts should be analyzed critically in order to better understand the development of environmental thoughts in US in the 20th century.

4 Enlightenment

Although Pinchot's reforms happened 100 years ago, some of his conservation ideas are not out of date and they can still guide our efforts in overcoming resources and environment problems today, especially in China. The writer believes that Pinchot's thoughts and reforms can provide references for China's resources and environment construction in the following three aspects.

First, scientific management should be strengthened to guarantee the sustainable development of forests. Although China owns a vast territory, its forest resources are not abundant and both overall forest coverage rate and per capita forest area are relatively low, therefore rational exploitation and scientific management are important in maintaining the sustainable development of the limited forest resources. Current forest system should be protected and

logging must be strictly controlled. Scientific and professional means should be adopted to improve forest fire prevention and pest control to ensure the safety of woods resources. Besides, the government should increase financial support to improve forestry science and technology, cultivate and introduce excellent tree species, expand forest area and increase forest resources. Furthermore, modern information technology should be fully used to measure, analyze, regulate and evaluate each section of forestry production and management and coordinate the relation between forestry protection and utilization.

Second, the country should emphasize supervision on natural resources and gradually perfect relevant regulations, ensuring the sustainable development as well as justified allocation. Renewable natural resources like grassland, forest, soil and water should be ruled by law. The government should enforce punishment for deforestation, illegal logging and other crimes like destroying vegetation and polluting water resource. Besides, regulation of exhaustible natural resources like coal and oil should be stricter to prevent wasteful logging and improve the utilization rate of resources. Meanwhile, natural resources belong to the country and the public, therefore earnings from them should be allocated fairly to ensure citizens' economic rights and promote the development of a harmonious society.

Third, close cooperation with other countries should be emphasized. Currently, many environment and resource problems are no longer national or regional ones, but international and global. Since the 1970s, China has actively participated in international cooperation for environment protection and achieved impressive progress in desertification control, preservation of forest, wild animals and plants, marine environment management, as well as treatment of air pollution, acid rain and sewage. China should keep moving forward on this route, further strengthen international cooperation and make greater endeavor in improving global ecological environment and promoting sustainable development of human society.

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