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American Higher Education Curricula in 19th Century

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Abstract

Higher education curricula typically include required courses in general education as well as specialized courses in a student's chosen major or field of study. It may also include elective courses outside of their major area. The curriculum is designed to ensure that it meets both academic standards and the needs of students. The curriculum may be revised periodically in response to changes in the field, feedback from students and faculty, and other factors. This entry paper attempts to study the transformation of American higher education from classical universities to modern universities in the 19th century by discussing the evolution of American higher education curricula.

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1. Introduction

In the 19th century, American universities underwent significant changes in response to the country's rapid industrialization and the need for higher education that could support economic growth. Land-grant colleges were established to provide practical education to the working class, while research universities focused on advancing knowledge in specific fields^[1]. Co-education and physical education also became important features of American universities during this time. Additionally, the concept of junior colleges emerged, providing a pathway for students to transfer to four-year colleges and universities. These developments laid the foundation for the diverse and dynamic higher education system that exists in the United States today^[2]. The curriculum is one of the most important elements of the higher education system. Due to the close relationship between higher education curricula and social development, the

changes in course content and form reflect the demands of society on citizens to some extent. This entry paper attempts to study the transformation of American higher education from classical universities to modern universities in the 19th century by discussing the evolution of American higher education curricula^[3].

2. Downturn and Revival of College (1800-1840)

The American industrial revolution began in 1790 when Samuel Slater replicated the British hydraulic spinning machine and established the first hydraulic spinning factory in the United States. As American society became more industrialized and matured in the early 19th century, the country's higher education curriculum underwent significant changes. In 1810, the administrators of Columbia College, now part of Columbia University, attempted to reform undergraduate courses by reducing the emphasis on Latin and Greek and introducing courses for the general public and the navy^[4].

However, by 1830, this curriculum reform had encountered difficulties, as Columbia College struggled to establish clear objectives and implement effective changes. Such challenges were not unique to Columbia College, as American higher education as a whole faced issues of disorder, a lack of unified standards, and a lack of continuity during this period^[5]. The profound shifts in American social values also manifested themselves on university campuses, as conflicts between egalitarians and racists, between agriculture and industry, and between religious and political forces influenced the direction of university curricula^[6].

The weakness of Latin and Greek in college courses was one of the primary issues facing American higher education during this period. In the early days, universities in the United States were considered incubators for leaders and guides for societal progress. However, in the first half of the 19th century, influenced by the California Gold Rush, personal economic achievements became a crucial value criterion for American society^[7]. As a result, the study of classical languages like Greek and Latin, which were primarily used to understand ancient classics, appeared to be out of touch with the American trend of pursuing personal economic success. In the central and western regions, the influx of new immigrants believed in the values of personal struggle to gain wealth and had no interest in classical languages and works. Consequently, gentlemen who were knowledgeable about ancient books and had received higher education gradually lost their political influence in these regions^[8]. However, in the southern plantations, classical works were still respected because they provided a legal basis for slavery^[9].

Another significant development during this period was the growing recognition of science as a tool for social progress and personal success. In addition to the knowledge content of science itself, the values of science, which emphasize that "truth does not come from the past but from unremitting exploration of reality," were increasingly accepted by young people who pursued progress and personal success^[10]. However, the American higher education curriculum was criticized for catering too much to the clergy, neglecting to provide guidance for the lives of ordinary people, and lacking the pioneering nature of the curriculum in the 18th century. In 1818, Benjamin Silliman, a professor of chemistry, geology, and mineralogy at Harvard University, founded the periodical "American Journal of Science and Art" to promote science to a wider audience. In 1802, chemistry was taught to senior students at Yale as proof of creationism. However, influenced

by Professor Silliman, in 1807, it became compulsory for senior students as a science subject^[8].

During the period described, undergraduate curricula in higher education were chaotic due to differences in students' sources and enrollment levels. Junior courses in various universities were almost duplicates of senior courses, and specific requirements for students' prerequisite levels were difficult to establish. The number of universities was expanding rapidly, and each university had no time to specify admission standards for students in detail. Between 1800 and 1830, there were 44 new universities in the United States, and in the decade from 1860 to 1870, there were 175 new universities^[11].

Thomas Jefferson played a significant role in curriculum reform in higher education. Following the independence of the United States, Jefferson initiated a curriculum reform at William and Mary College. He added practical courses such as modern languages (French, German, Spanish, Italian), political science, law, economics, and others to the traditional classical courses. However, due to religious factors, Jefferson's curriculum reform at William and Mary College faced challenges. As a result, he shifted his focus to the newly established University of Virginia^[12].

Jefferson's curriculum model at the University of Virginia departed from the traditional "vertical" model and adopted a "parallel" model. The "parallel" courses included eight options: classical language, modern language, mathematics, natural philosophy, natural history, anatomy and medicine, moral philosophy, and law. At the University of Virginia, students were given the freedom to choose among these courses, which allowed for greater flexibility in their studies^[8]. This approach marked a departure from the rigid curricula of earlier universities and reflected Jefferson's belief in the importance of individual choice and intellectual autonomy^[13].

At Harvard College, the reformers represented by George Ticknor have also made large-scale changes to Harvard's undergraduate courses. These young scholars have all studied in Germany, deeply influenced by Germany's idea of "academic freedom", and advocate bringing Harvard's curriculum closer to the German model^[14]. George Ticknor pointed out that the existing courses in Harvard College couldn't meet the needs of students' survival and development in the real society, and Harvard should introduce a student elective system into the courses, allowing senior students to take some courses freely; In addition, considering the uneven enrollment level of students, colleges should implement group teaching according to student's ability; Besides, colleges should encourage teachers to carry out advanced knowledge research and develop high-level postgraduate education^[8]. George Ticknor believes that Harvard College must meet the needs of the community for practical education in the fields of science and technology research, and at the same time suit students' abilities, interests and needs for further study^[4]. In the end, the reform was not carried out in depth because of the opposition of most faculty members, but the departmental system was retained, and then professors in various departments had the right to hire teachers and set courses^[15].

However, the publication of Yale Report in 1828 hindered the curriculum reform carried out by Jefferson and Ticknor to adapt to the development of industrialization. The report claimed that the only appropriate curriculum in the college is a compulsory curriculum characterized by learning classical languages, which was used to standardize and improve students' minds and lay the necessary knowledge foundation^[16]. The curriculum should be the preparatory content to

study specific professional education, broaden students' horizons and cultivate students' comprehensive personalities. The purpose of the curriculum should be to cultivate "all-round people" with balanced personalities and comprehensive knowledge and skills^[17]. For the changing professional education and practical knowledge education, Yale Report advocated that this kind of knowledge should not enter the undergraduate curriculum, but should be carried out in specialized colleges (such as theological seminaries, medical schools, and law schools) or practical jobs. In terms of the teaching system, Yale Report held that students were immature intellectually and unable to accurately grasp the structure of advanced knowledge, so students should not be given the right to choose courses freely^[18]. Yale Report is a revival of British classical liberal education. It emphasizes that American universities should keep the tradition of medieval British classical universities, set strict enrollment standards, select the best students and train them to become elites^[19].

3. Regional Differences and Scientific Progress (1840-1860)

After the Civil War, the American industrial bourgeoisie emerged as the victorious force and cleared the way for industrial development. The process of industrialization and urbanization advanced by leaps and bounds^[12]. American education evolved from British classical education to practical higher education with American characteristics. In the process of the formation of American localization consciousness, pragmatic philosophy exerted a great social influence and became the ideological basis for the formation of land-grant colleges. Pragmatic philosophy fits well with American values centered on individualism, and it has infiltrated all levels of American social and cultural life. Pragmatic philosophy faces the present world, pays attention to action and pursues effect. It reflects the general psychology of American people and has a profound influence on many aspects of American culture and social life, including the field of higher education^[20].

The scientific inventions and innovations brought about by the industrial revolution constantly impacted people in various countries, and classical education increasingly failed to adapt to the rapid development of society. A series of scientific innovations shaped a new world and put forward new requirements for higher education^[6]. The classical curriculum could no longer adapt to the rapid development of society, and the content of the curriculum was very limited to the development of students. The curriculum needed to adapt to the change of the new world. Among many ideological trends, the trend of science education was the most influential one. In the mid-19th century, the trend of science education emerged in Britain and spread to the American continent. Spencer, one of the representatives of this trend, proposed a curriculum system for science education that covered five major knowledge fields. The first part covered physiology and anatomy, the second part covered reading and writing, calculation, physics, chemistry, astronomy, and other disciplines directly related to production activities. The third part covered psychology and education related to raising children, the fourth part covered history related to national and social life, and the fifth part covered music, painting, sculpture, and other subjects needed for students to entertain and enjoy leisure^[8]. Spencer believed that science was the most effective, productive, and economical means in all fields of knowledge. After the works and ideas of Huxley and Spencer spread to the United States, they met the needs of the rapid development of American capitalism after the Civil War and were widely favored by American scholars^[10].

4. Land-grant Colleges (1860-1900)

As American society became more industrialized, the demand for workers with higher education increased, which promoted the development of the educational democratization movement in the second half of the 19th century. Additionally, the changing role of women, with some starting to work outside the home in factories, led to an urgent need for re-education to adapt to their new identity. To meet these needs, land-grant colleges emerged^[21].

In 1862, President Lincoln signed and passed the Morrill Act, which required the federal government to subsidize at least one college in each state to engage in agricultural and technical education. The act also provided detailed provisions on land and fund use. In 1890, the Second Morrill Act was passed, which required the federal government to allocate funds to land-grant colleges every year^[22]. The land-grant college movement greatly promoted the development of public and practical higher education, and met the demand for higher education from the rapid development of industry and agriculture in the United States. Between 1862 and 1872, the number of engineering schools increased from 12 to 70^[8]. The curriculum emphasized practical links, and students were encouraged to undertake local production practices during winter and summer vacations. Curricula became more refined and specialized, and the division of disciplines continued to advance. Partridge College was the first to divide civil engineering from military disciplines, and Pennsylvania State College was the first to teach mechanical engineering courses, and mining disciplines, power engineering disciplines and chemical engineering disciplines appeared one after another^[9].

After the Civil War, the important role of science and technology became increasingly apparent, and the social status of engineers, scientists, and technicians was recognized^[22]. College curricula for training these professionals and curricula for training judges and doctors were gradually regarded as equal^[7]. The curriculum reform movement with the elective system as the core set off a new round of enthusiasm. In 1869, Eliot, the new president of Harvard University, explicitly announced his support for the elective system in his inaugural speech. By 1874-1875, the compulsory courses at Harvard University were limited to the first year of the undergraduate curriculum. Later, the first year of Harvard also began to implement the elective system. By 1895, the required courses were reduced to only two: English and one modern foreign language, and the free elective system was fully implemented at Harvard. Under the influence of Harvard, the elective system quickly became popular in universities^[23]. According to a survey of 97 colleges and universities in 1901, there were 34 schools with elective courses accounting for more than 70% of the total curricula^[8]. Under the effect of the elective system, modern languages, social science, and natural science gained legal status in higher education, and practical courses gradually replaced the dominant position of classical subjects in the curriculum system. The small-scale implementation of classical education in old colleges quickly transformed into modern universities that promote the development of modern science and technology and serve the needs of social production^[24].

5. Founding of Research Universities(1860-1900)

In 1868, Cornell University was founded in Ithaca, New York, as a land-grant college serving the industrial class. Its donor, Cornell, put forward his own educational views, stating, "We should build this university on the basis of combining

classical education with practical education to meet the needs of young people who work in farms, mines and factories^[25]." White, a famous educator, applied his vision of higher education to the Cornell Project. Firstly, Cornell University established the College of Science and Art, consisting of nine departments: agriculture, manufacturing art and municipal engineering, commerce and trade, mining, medicine and treatment, law, education, public legal services, political science, and history. Its aim was to cultivate talents for agricultural, industrial, and commercial development, especially welcoming students with specific career tendencies. Secondly, Cornell University reformed the classical curriculum in the College of Science and Art, providing students with general education without any professional inclination, and offering five courses: classical courses, German, French, natural science, and elective courses. Cornell University also emphasized physical education, regarding military training and physical education as necessary components of undergraduate courses. In addition, Cornell University implemented co-education, which influenced the concept of traditional colleges in the East. After 1870, a large number of women's colleges, such as Wellesley, Smith, Radcliffe, etc., were gradually established, opening up new career fields for women and providing vocational courses for female students to engage in social services^[26].

The fire of the industrial revolution spread throughout the United States after the Civil War, and steam engines were widely used in various industrial sectors. The development of the American economy put forward new requirements for higher education, requiring universities to try their best to introduce advanced scientific and technological achievements from European countries and increase research on basic theories and related disciplines. A large number of American scholars returned to teach after studying in Germany, and more than 300 German scholars taught in American universities^[27]. The human and financial conditions for the establishment of research universities matured in the second half of the 19th century. Johns Hopkins University was founded in 1876, and from the very beginning, postgraduate education was regarded as the most important mission. Johns Hopkins University still retained its undergraduate college, but the enrollment of graduate students was relatively small. Johns Hopkins University put forward the concept of majors and set up continuous courses related to this theme. Minors were set up to broaden students' horizons^[10]. In addition to Johns Hopkins University, a number of research universities such as Clark University, Catholic University, and the University of Chicago have been founded.

The wave of industrialization has also prompted higher education to improve the quality and efficiency. The public began to pay attention to how to distinguish the first two years of college education from undergraduate education and senior high school education, and the junior student movement emerged at the end of the 19th century. Harper, the president of the University of Chicago, took the lead in dividing the university into basic colleges (first and second years of undergraduate studies) and university colleges (third and fourth years of undergraduate studies) in 1892^[5]. Students who completed basic college studies could obtain an associate degree. After that, several junior colleges were established around the University of Chicago, and other universities began to award associate degrees. In terms of curriculum, most of the curricula offered by junior colleges were the same as those offered by four-year colleges in the first two years, enabling students to smoothly transfer to the third and fourth grades of universities. Public junior colleges provided students with various vocational courses, while private colleges provided more classical courses^[8].

6. Conclusion

The transformation of American higher education curriculum during the 19th century had a profound impact on the development of the modern university system in the 20th century. In the first half of the 20th century, three representative ideas significantly influenced American higher education^[28].

The first idea is American localized pragmatic thought that emerged in the early 20th century. This idea is based on Dewey's pragmatic philosophy and theory of knowledge, and it gained mainstream acceptance in the field of American university curriculum^[29]. The popularization of pragmatic curriculum thought was closely related to the popularization of the free elective system in American universities in the 1870s. As a result, modern language, social science, and natural science gained legal status in higher education, and practical curriculum gradually replaced the dominant position of classical subjects in the curriculum system^[30].

The second idea is liberal educational thought, which took the form of the timeless curriculum reform practice initiated by Hutchins et al. in the 1930s. This idea opposes the excessive specialization of the university curriculum. Hutchins' ideas were already expressed similarly in the Yale Report of the 19th century, and the pursuit of liberal education was rooted in the classical university tradition^[31].

The third idea is scientism, which advocated that college courses should develop students' intelligence and cultivate their research ability. This trend of thought is an outgrowth of the scientific education advocated by Spencer and others in the 19th century^[27].

Overall, the development of higher education curricula in the 19th century played a vital role in shaping modern American higher education, as the American university system continues to evolve and adapt to changing times.

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