

Schools

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My son, Edward Witten, is a Professor at the Institute for Advanced Study in Princeton, New Jersey. This statement often elicits questions. “Does he enjoy teaching?” “What is the Institute for Advanced Study?” “What does it do?” “How is it related to Princeton University?” “Is it supported by public funds?” “What is the origin of the Institute?”

The Instituted for Advanced Study is a private, independent academic institution located in Princeton, New Jersey. It was founded in 1930 by Louis Bamberger and his sister, Caroline Bamberger Fuld. It is today one of the world’s leading centers for theoretical research and intellectual inquiry. The mission of the Institute is to encourage and support fundamental research in the sciences and humanities – it encourages thinking, often speculative, that may change or advance our understanding of the world. It has always had a small and distinguished faculty. The Institute has no formal links to Princeton University or to any other educational institution; faculty members of the Institute and of the University do enjoy close collaborative relations on a personal basis. The 800 acre campus of the Institute and the University campus are, at their closest points, about two miles apart. The Institute is the Institute and the University is the University and the twain are two independent and distinct entities.

The Institute has no degree programs, no formal classes, and no experimental facilities. Research is funded by endowments, grants, and gifts. There is no tuition and there are no fees. Each individual Member is free to pursue his or her own interests; research is never directed. The Institute is divided into four Departments or, as they are called, Schools. The size of the permanent faculty is approximately thirty and each year there are about 200 visiting members. The visitors are all beyond the PhD level in their education.

An Institute Professor’s responsibility is to advance knowledge, by his research, by his writing, and by interacting with the visiting Members who are doing their own work. A Professor has no teaching or lecturing responsibility, the typical academic year lasts from approximately early October to late May. The salaries are such as to permit a Professor to live a comfortable middle class life - without financial problems. Being a Professor at the Institute is a Scholar’s dream job.

How did such an Institute come into being? An understanding of its origin requires an appreciation of the founding of my own Alma Mater, The Johns Hopkins University. There is a direct chain connecting the philosophy behind the founding of the two institutions. The chain is supported by the remarkable career of the first director of the Institute for Advanced Study, Abraham Flexner.

Johns Hopkins, the founder of the hospital and of the university that bear his name, was born in 1795 on his family's 500 acre tobacco plantation in Anne Arundel County, Maryland. He was one of eleven children and only Johns had an unusual first name. He was given the maiden name of his great grandmother.

The Hopkins family was well off, tobacco was a profitable crop and the plantation work was done by slaves. In 1807, when Johns was twelve, the family fortunes changed dramatically. The Society of Friends had declared that maintaining slaves was inconsistent with the Quaker's faith. Johns's parents freed their slaves without compensation. The two oldest sons, Johns was second, had to quit school to work on the plantation.

When Johns was seventeen he left the plantation and went to Baltimore where he was employed by his Uncle Gerard in the uncle's wholesale grocery business. Johns quickly showed an aptitude for work and at nineteen became the general manager of the business, increasing its profitability quite considerably.

Johns lived in his uncle's house and fell in love with the uncle's daughter, Elizabeth, and she with him. He proposed marriage to his cousin and she accepted. They had not fully appreciated the opposition maintained by the Quakers to the marriage of first cousins. Gerard refused to sanction a marriage of the two and Elizabeth obeyed her father's wishes. Johns and Elizabeth each promised never to marry another and both remained single for the rest of their lives. In his will, Johns left her the house in which she was living. Had they married, with children, he probably would not have founded the University.

At the age of twenty-four, soon after losing Elizabeth, Johns left his Uncle Gerard to start his own business. He started a wholesale grocery firm and was successful from the very beginning. He quickly branched out in different directions with a self-confident boldness. He became president of the Merchants Bank and director of many financial institutions. His progress from wholesale grocer to leading citizen was rapid and steady. He rebuilt Baltimore harbor and he was among the first to recognize the value of the Baltimore and Ohio Railroad and bought a considerable amount of stock in the company.

In 1867, six years before his death, Johns Hopkins formed two corporations, one to build and maintain a Hospital and the other to found a University. He picked the two boards of trustees

consisting of broad-minded and intelligent men, leading citizens of Baltimore. His founding of a hospital with an accompanying medical school probably resulted from his having seen epidemics of smallpox, cholera, and yellow fever in Baltimore during his lifetime. He was acutely aware of the poor quality of Baltimore's medical facilities.

It is not clear why he endowed a university: possibly he was compensating for his own shortened education. It is even more puzzling what the word "university" meant to him. He founded the university without a single adjective that might have restricted the trustees. There was no definition or limitation placed upon the trustees other than to create a university. The form and function of the institution to be created was left entirely to their discretion.

In his will, Hopkins left the university his residential estate and an endowment valued at three and a half million dollars. For the hospital, he left real estate whose total value was also approximately three and a half million dollars.

The trustees of The Johns Hopkins University held their first meeting on June 13, 1870, and did not meet again until after the death of Hopkins in 1873. After receiving the principal part of the University bequest in 1875, they met frequently and took their task very seriously. For guidance, they first turned to books describing university histories, discussing educational reform movements in Britain and in America, and containing accounts of the personal reminiscences of scholars. They also sought information and interviews from university presidents and trustees. Three university presidents responded in detail and became influential advisers. The three were the president of Harvard, the president of the University of Michigan, and the president of Cornell. All three were deeply interested in rescuing American higher education from its outmoded classical emphasis and style.

The trustees wanted to determine whether the university could become America's first great graduate university. They focused on the issue, as they described it, whether the university should "attempt to give a higher degree of education than has heretofore been attempted" or whether it "should create an institution which should educate a greater number". All three presidents discouraged the trustees from attempting too ambitious a start and recommended that the university be essentially a technical college that would concentrate on teaching occupational skills. But all three independently suggested that Daniel Coit Gilman be approached to become President of the university.

Based on this unanimous and independently offered recommendation, the trustees approached Gilman and he was receptive to their inquiries. Gilman was not a research scholar but he was a skilled and experienced educator. In 1872 he had become the second president of the University of California at Berkeley. Although he made notable advances in his three year

tenure at the University of California, he was not popular with the public and suffered interference from the politicians in the legislature.

During his first interview with the trustees, Gilman made it clear that he did not wish to lead a college of merely local significance. He felt the time was ripe for a university national in scope on a plan radically different from any then in operation in America. He declared that promotion of advanced scholarship and training of graduate students would be his aim in the new university, that he would leave the training of undergraduates to other institutions. The trustees responded promptly and heartily to his advanced views. The next day they offered him the presidency and he accepted.

Gilman and the trustees were in agreement that “the philosophical faculty of the university give instruction of a superior character in mathematics, science, and language...That students who had already been taught in other colleges would be drawn by the eminence of the professors and the excellent opportunities for advanced study to be afforded in Baltimore...”

Gilman gave his inaugural address early in 1876. He emphasized again that to his mind a university is not a college but a place for the special education of youth who have been prepared for its freedom by the discipline of a lower school. The first academic class at The Johns Hopkins University started in the fall of 1876. There were six professors: of mathematics; of physics; of chemistry; of biology; of Greek; and of classics. All six were or became distinguished scholars and leaders in their fields.

The graduate school was an immediate and outstanding success. Gilman had established a university that for advanced opportunities was comparable to the best European universities which were then attracting qualified students from all parts of the world. The success of graduate studies at Hopkins spurred the development of graduate studies at Harvard and at other major universities in the United States.

Gilman and the trustees were early persuaded that the youth of Baltimore had particular claims upon Hopkins. They should not be compelled to go away from home in order to prepare themselves for entry to the new institution established at their doors. Hence, the undergraduate college was started. The relative importance of graduate and undergraduate teaching during the first twenty years can be perceived by the enrollment figures. During its first year, 1876, there were 54 graduate students and 23 undergraduates; twenty years later there were 406 graduate students and 149 undergraduates, during the whole 20 year period there were about 2.5 graduate students for every undergraduate.

This was the college atmosphere that Abraham Flexner met when he arrived at Hopkins at the age of 17 in 1884; eight years after the first classes had opened. Flexner's experience at

Hopkins was the first step that led towards the founding of the Institute for Advanced Study. The unusual career of Abraham Flexner is well summarized by the first stanza of the great poem by Robert Browning entitled “Rabbi Ben Ezra”

“Grow old along with me
The best is yet to be
The last of life, for which the first was made:
Our times are in his hand
Who saith, ‘A whole I planned,
Youth shows but half; trust God, see all, nor be afraid’.”

The first half of Flexner’s life was clearly preparation for the second.

Abraham Flexner was born in Louisville in 1867, the sixth of nine children. His parents were immigrants from central Europe who married in Louisville and settled there. The family lived in financially straitened conditions after the financial panic of 1873. The father died in 1882 and the oldest brother, Jacob, took his place at the head of the family. Shortly before his father’s death, Jacob opened a drug store which became a meeting place for many of the leading physicians in Louisville. Jacob used the first money he saved (about \$1000) to finance a college education for Abraham and chose The Johns Hopkins University for him to attend. Flexner later wrote, “Why did my brother select The Johns Hopkins University? Upon that choice my whole subsequent career and those of others of our family depended?” The Johns Hopkins University was only eight years old; Jacob had heard of Hopkins from a fellow Louisville resident who had been a student in the first class and had returned to Louisville after his graduation.

When Flexner arrived at Hopkins, he found an academic institution committed to maintaining a pioneering difference from other American colleges and universities. The emphasis was clearly on graduate studies and on the advancement of knowledge. The small undergraduate college had flexible rules with no four year lockstep program for graduation. An easy informality governed the life of the University. It was the perfect environment for young Flexner. He majored in the classics, including Greek and Latin, but his strong interests were in education and psychology. By dedication to his studies and by working very hard, Flexner graduated after only two years at Hopkins. During these years Flexner observed at Johns Hopkins, then primarily a graduate institution, the emphasis on academic freedom and on the discovery and dissemination of new knowledge.

He returned to Louisville and obtained a position teaching in the Louisville Male High School from which he had graduated only two years before. After school he tutored well-to-do boys to prepare them for entry to prestigious colleges. Tutoring boys became a flourishing enterprise and in 1890 Flexner quit his job teaching at the High School and opened his own

private school. For 15 years (1890-1905) “Mr. Flexner’s School” won high praise locally and nationally. President Eliot of Harvard noted the unusually high rate of success Mr. Flexner’s School achieved in having students admitted to Harvard and elsewhere at a relatively young age. He wrote Flexner asking him the secret of his success and urging him to publish his educational methods and philosophy. Flexner did publish and did so often and with a concomitant increase of recognition and reputation. He studied and contributed to the growing literature on the psychology of learning and new methods of teaching.

The first female student in Mr. Flexner’s School was Anne Crawford, a great granddaughter of William Crawford, a serious candidate in 1824 for President of the United States. It took only one year for Anne to pass all the required examinations and gain entrance to Vassar College. She returned to Louisville after four years at Vassar and a romance bloomed between her and Abraham. They married in 1898 when she was twenty-two and he was eight years older.

Anne was a playwright. In Louisville she belonged to a group of seven or eight women aspiring writers who read their works to each other; a small Literary Club. A member read the comical novel she had written which had become a bestseller. Anne thought the story would make a fine play and wrote a drama version of “Mrs. Wiggs of the Cabbage Patch”. The play was produced locally, then in New York, then throughout the world, and it was filmed twice by Hollywood. Its success surpassed all expectations. It was the biggest hit on Broadway from 1904 continuously through 1911.

A few years after his marriage, Abraham began to feel vaguely uncomfortable by the limited scope for professional development offered by remaining in Louisville. He had accomplished with his school and its national reputation all he could hope for. He could make the school larger but he was beginning to have an urge for further self development. Anne was feeling that if they remained in Louisville they would grow old, be comfortably well-to-do, and lead dull lives. One evening, in the winter of 1904, Anne asked Abraham, “What would you do if you had never married?” He replied, “I should quit school teaching and go to Europe.” “Then,” Anne said, “That is what we will do. As our joint earnings have been pooled, we shall not be troubled by a time limit”.

Thus began for Abraham Flexner the second phase of his career – “The last of life, for which the first was made.” In 1905, he sold his school and immersed himself in study and reflection. He spent a year studying in Harvard’s graduate school of education. The following two years he was in England and on the European mainland. He attended lectures at Oxford and Cambridge and he studied at the universities of Berlin and Heidelberg. After his return in 1908, his first book, “The American College” was published. In it he criticized the teaching methods at Harvard and other major institutions and offered recommendations for improvement.

In 1906, the Carnegie Foundation for the Advancement of Teaching was chartered by an act of Congress as an independent policy and research center with the charge “to do and perform all things necessary to encourage, uphold, and dignify the profession of the teacher.” Flexner sought employment there, obtaining letters of recommendation from prominent educators and scholars. The director of the Carnegie Foundation received the recommendations, read and was impressed with Flexner’s book. After several meetings, he made Flexner an unexpected offer, a position with the primary responsibility to do a survey and critique of medical schools in the United States. The director assured Flexner that he knew that Flexner had never been inside a medical school. He wanted him to do the survey as an outsider in medical matters but as an expert educator and critic of education. Medical doctors, he declared, cannot or will not criticize the teaching methods of their colleagues.

Flexner started his assignment by reading everything he could find that dealt with the history of medical education in Europe and America. He visited the Johns Hopkins Medical School where he talked at length with its distinguished faculty, particularly with Dr. William Henry Welch. As a student at Hopkins, Flexner had attended lectures given by Dr. Welch who became one of the founders of the Hospital and of the Medical School. Flexner maintained contact with Dr. Welch and considered Hopkins to be probably the best medical school in the country. When he began his study, there were 155 medical schools in the United States and Canada. They differed greatly in their requirements for admission and graduation, in their curricula, and in their financial and facility resources. Flexner visited all 155 schools looking primarily in the areas of entrance requirements, size and training of faculty, endowment and fees, laboratory equipment, and clinical training of students.

The final report Flexner wrote is a book-length study of medical education in the United States and Canada. It was published in 1910 and is called the Flexner Report (also sometimes called the Carnegie Foundation Bulletin Number Four). At the start of Flexner’s study, many American medical schools were proprietary, namely small trade schools owned by one or a few doctors, unaffiliated with a college, and run to make a profit. A degree was typically awarded after only two years of attendance provided that all tuition and fees were paid. There was no meaningful government supervision of standards. Fewer than 20 of the 155 medical schools required applicants for admission to have completed at least two years of university study. The Flexner report was notorious for its frank and harsh description and ruthless condemnation of most of the medical schools, for example he called Chicago’s fourteen medical schools “a disgrace to the State whose laws permit their existence – indescribably fowl – the plague spot of the nation...” Shortly after the report was published, two thirds of the medical schools ceased to exist.

In his report, Flexner recommended a set of standards for admission to medical schools and recommended that the schools adhere strongly to mainstream science in their teaching and

research. He described his recommendations in precise detail, modeling many of his recommendations after the practice at The Johns Hopkins Medical School. Many aspects of the present-day American medical profession stem from the Flexner report, its specific recommendations, and its influence. After the publication of the report Abraham Flexner became famous and his life turned around. The obscure, forty-four year old school teacher, with no professional authority in medicine, had created a furor regarding the training of doctors.

In 1913, Flexner left the Carnegie Foundation and joined the General Education Board to direct the allocation of Rockefeller millions to help develop education generally and medical education in particular. After the notoriety achieved in the country by the Flexner Report, the General Education Board had decided to broaden its activities and to help modernize medical education. Flexner became assistant secretary and then secretary (the principal executive officer) running the operations of the Board in partnership with its president.

Flexner was the resident intellectual and educator on the board. His specialty was education and he used the Board's money and influence to further progressive education in the United States. His knowledge of higher education and his skill at management and philanthropy allowed him to become one of the most influential persons in the history of American philanthropy. Among many other accomplishments, Flexner, through his philanthropy, brought about a major reorganization of America's medical schools and introduced clinical research and practice as an important ingredient in teaching at the schools. He encouraged the spread of good medical schools as needed throughout the country and discouraged too large a concentration of schools in one area.

Flexner was excellent at raising money for the Board and developed the art of challenge gifts and matching grants. Flexner retired from the board in 1928. He had dispensed over 80 million dollars in Board funds to various hospitals and medical schools as well as the huge sums he raised over the years, estimated to exceed 600 million. No foundation official has ever left so large a mark on so many levels of education. He now looked forward to enjoying a leisurely retirement.

But first he accepted an invitation from Oxford University, England, to deliver a series of lectures, the Rhodes Trust Memorial Lectures. The lectures reviewed educational institutions in America, in England, and in Germany. He considered the German Universities at that time (1928) to be, despite the ravages of World War I, the best in the world. After completing the course of lectures and a year spent revisiting universities in England and on the mainland, he returned to New York. He wrote a book describing and contrasting American, English, and German Universities.

While he was working on the book, he received a telephone call from representatives of the Newark department store magnates, Louis Bamberger and his sister, Caroline Bamberger Fuld. Louis Bamberger was born in Baltimore in 1855. At the age of 37, he moved to Newark and opened a department store, L. Bamberger and Company. The store was managed by Bamberger, his sister, Caroline, and her husband, Felix Fuld. The store became very successful. In 1928, the sales totaled 28 million dollars, the fourth highest gross of any store in the United States. In 1929, just before the stock market crash, Felix Fuld had passed away and Bamberger and Mrs. Fuld sold the store for cash to R. H. Macy and Company. Louis had never married, Caroline was childless; the two were looking for a way to show their gratitude to the Newark community. They had in mind the creation of a hospital in Newark. Since Abraham Flexner was known both for his philanthropic work and for his knowledge of hospitals and medical schools, it was natural that he should be approached for advice and assistance. This led to a meeting in his office with the two attorneys representing the Bambergers. The attorneys presented the Bambergers' desire to build a hospital in Newark.

Flexner thought the idea of a hospital in Newark was foolish and impractical. Newark did not have a good medical school, nearby New York did and also had good hospitals; in addition there was no need at that time for a new hospital in Newark. As he was talking with them, he looked at the pages of the galley proof of his new book on American, English, and German Universities which was on his desk. In the book, he had described his dream of a real university to be built in America. He asked his visitors permission to describe his dream to them. As Flexner tells in his autobiography, "I informed them that the time was ripe for the creation in America of an institute in the field of general scholarship and science, resembling the Rockefeller Institute in the field of medicine, not a graduate school training men in the known...but an institute where everyone – faculty and members – took for granted what was known and published and, in their own individual ways, endeavored to advance the frontiers of knowledge". He gave them for further reading a copy of his already published address, "The Usefulness of Useless Knowledge", as well as a memorandum he had prepared on the subject for the General Education Board.

The visitors were deeply intrigued by his remarks. Events followed rapidly. He had meetings with Bamberger and Fuld and they were favorably impressed. They accepted the idea of creating an institute instead of a hospital but initially offered some resistance to locating the institute in Princeton rather than in Newark. In May, 1930, the Bambergers told Flexner that they were prepared to give him five million dollars to start the enterprise and authorized him to begin a search for the best persons available in all the scientific and scholarly fields of interest. The gift was conditional on Flexner himself directing the activity. So he embarked, at age 64, on a mission to realize one of his noblest dreams: creation of a school for advanced graduate studies for those who would seek wisdom and learning for their own sakes.

He spent the first year discussing with educators and scholars both in America and in Europe how best to proceed. One question was especially prominent in his mind. Should he imitate President Gilman who started Hopkins with several subjects or should he start with only one; and, if with one, which one. He eventually concluded to begin with one and decided on Mathematics for several reasons: it was fundamental; it required the least investment in buildings, laboratories, and books; it was obvious that there would be greater agreement upon personnel in the field of mathematics than in any other subject.

While considering the first faculty he recapitulated his goals for the institute. It should be small and flexible. It should be a haven where scholars and scientists could regard the world and its phenomena as their laboratory without regard to immediate results. It should be simple and comfortable but not remote. It should be afraid of no issue. Scholars should not be pressured in any way to take a particular side of an issue. The institute should provide the facilities, the tranquility and the time required for fundamental inquiry into the unknown. He insisted also on a higher financial salary scale for professors than was usual in order that professors enjoy the amenities of life and provide comfortably for their future.

He was prepared for the institute to open in the fall of 1933. He was aided in the recruitment by the rise to power of the Nazis in Germany and the exile of Albert Einstein. After some meetings between Flexner and Einstein in which the plans and purposes of the institute were thoroughly explored, Einstein agreed to be the first scientist to accept employment at the institute.

The Institute for Advanced Study opened October 2, 1933, with one school, the School of Mathematics. The faculty consisted of Albert Einstein, Oswald Veblen, James Alexander, John von Neumann, and Hermann Weyl. Together with the Mathematics Department at Princeton University, this made Princeton, New Jersey, overnight, the leading center of mathematics in the world.

Slowly over the years, three other schools have been added: the Schools of Historical Science, of Natural Sciences, and of Social Science. Each has a permanent small faculty of fewer than ten Professors and a large number of visiting Members. The visitors are mostly young with a sprinkling of established and distinguished scholars. For young scholars already possessing advanced degrees and just entering the academic world, the opportunity to work at the Institute may set the direction for lifelong research interests. The Institute provides more mature scholars, during leaves of absence, with the opportunity to take new directions in their research or to complete a major piece of work. The Institute Professors do no formal teaching unless they wish to; a Professor's most unpleasant administrative responsibility is to help decide from the many applicants which should be accepted as temporary Members.

Flexner himself wanted the faculty to be divided into “Schools” rather than departments. He stated “I wish to guard against a misinterpretation of the term ‘Schools’. It is to be loosely interpreted...it involves no particular theory as to how knowledge is to be advanced.” He thought that perhaps small schools may encourage collaboration or discussion where a relatively small group of scholars will have abundant opportunities to discuss with one another their own individual problem or problems that lie on the borderline between schools.

The Institute is beginning a program in Systems Biology. It also has an artist in residence program that provides an annual series of concerts and lectures for the Institute and for the broader Princeton community.

Among the distinguished scientists and scholars who have been on the faculty in the past are Albert Einstein, Kurt Gödel, and John von Neumann of the School of Mathematics; J. Robert Oppenheimer and Freeman Dyson of the School of Natural Sciences; George F. Kennan and Erwin Panofsky of the School of Historical Studies; and Michael Walzer of the School of Social Science.

Today the institute enjoys a healthy endowment. The Trustees of the Institute have always faithfully obeyed the following wish expressed by the founders, Louis Bamberger and Caroline Fuld, in a letter to the Trustees dated Newark, New Jersey, June 6, 1930.

“It is fundamental in our purpose, and our express desire, that in the appointments to staff and faculty, as well as in the admission of workers and students, no account shall be taken, directly or indirectly, of race, religion, or sex. We feel strongly that the spirit characteristic of America at its noblest, above all, the pursuit of higher learning, cannot admit of any conditions as to personnel, other than those designed to promote the objects for which the institution is established, and particularly with no regard whatever to accidents of race, creed, or sex.”

Recommended reading:

Iconoclast: Abraham Flexner and a Life in Learning / by Thomas Neville Bonner

Published by The Johns Hopkins University Press, 2002

Tom Bonner was the Provost of the University of Cincinnati when I joined the faculty in 1968.