Approaches towards scientific knowledge in Quaker and Jewish educational institutions

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The philosophies of educational institutions, and the wider community's responses to those philosophies, provide important insight into the intellectual priorities of the groups that founded the institutions. This seems especially true for institutions founded by relatively small and somewhat isolated religious and cultural groups. One such institution is Swarthmore College, founded in 1864 by a group of Hicksite Quakers. Its founders intended that Swarthmore would provide its students an education "equal to that of the best institutions of learning in our country,"[1] while also maintaining the "guarded" environment that Quakers desired. Thus, the founders of Swarthmore wanted to maintain the distinctive elements of their tradition while also introducing modern knowledge into the community. Despite Jewish approaches to education being quite different from Quaker approaches in general, the history of education in the Jewish community includes similar efforts to combine cultural and religious traditions with advanced worldly knowledge. The history of these efforts can provide an interesting comparison with how issues similar to those that Swarthmore faced were approached by some in the Orthodox Jewish community.

The schools described here were part of an effort to join traditional intellectual worldviews with modern culture. Their leaders were not willing to abandon their traditions, but they were afraid that if they did not attempt to integrate those traditions with modern society, the traditions would become irrelevant. Without some effort

[1] "Address of some members of the Society of Friends to their fellow members on the subject of education, and on the establishment of a boarding school for Friends' children, and for the education of teachers." (Philadelphia: Merrihew & Thompson, printers, 1861), 10. (usually called the "Joint Address", and cited below as such)

towards integration, those individuals who were interested in joining modern society would be forced to leave the community, while those who decided to remain would be isolated from modern society. Thus, it could be said that both groups began these schools at least partly to preserve the relevance of their traditions. It seems reasonable that an exploration of the way cultural knowledge was integrated with traditional knowledge within these efforts, and an exploration of the responses to those approaches, should provide insight into the overall intellectual orientation of the two traditions. This will lead us to a better overall understanding of the traditions as a whole.

One particularly interesting area to examine in this context is the approach that Quakers and Jews have taken towards scientific knowledge. In America today, scientific knowledge is often considered to be more valuable, or at least more objectively true, than other forms of knowledge, such as religious knowledge. At the same time, the scientific approach is often considered to be in conflict with a religious worldview. This antagonism is largely due to the conflict between the theory of evolution and the traditional account of creation, since evolution is viewed as a threat to religious belief. There has not always been antagonism between scientific and religious worldviews, however, as an understanding of the natural world has at times been seen as a way to better understand God's work. An understanding of the ways that Quakers and Jews approached the issue of science education will provide insight into how the two groups approached modernity. These groups are very different, but both experienced similar forces of modernity. Thus, the comparison of the different approaches can help to elucidate larger points about how small religious communities adapted to a modernizing world in the late nineteenth century.

Historiography

The literature on science education in the Quaker and Orthodox Jewish communities is somewhat uneven. In certain areas, there is a large amount of literature, while other areas have not been explored very much. Perhaps not surprisingly, it seems like there is a greater volume of literature on Jewish approaches to science. Still, the literature that is available on the Quaker view of science directly examines the issues that I will be exploring. On the other hand, the Jewish sources are more philosophical, and are often rooted in religious arguments that are sometimes difficult for a person without a comprehensive Jewish education to understand.

On the history of Swarthmore College in general, there is surprisingly little published material. Richard Walton's *Swarthmore College: An Informal History*[2] is the most comprehensive published history of the college, but it only gives a basic layout of the historical facts. On the other hand, Everett Lee Hunt's *Revolt of the College Intellectual*[3] is a much more compelling history, probably because it is based partly on the author's own experiences as a professor and dean at Swarthmore. However, his experience only goes back to the early years of the twentieth century, and by then Swarthmore had already moved beyond direct Quaker influence. For the purposes of this project, the early years of the College are much more relevant. Hunt does give an outline of the early history of the college, but it is not extraordinarily detailed. Thus, if one were limited to published sources, it would be quite difficult to fully explore the factors that shaped Swarthmore's curriculum.

[2] Richard J. Walton, *An Informal History of Swarthmore College.* [Swarthmore, PA]: Swarthmore College, 1986.
[3] Everett Lee Hunt, *The Revolt of the College Intellectual*. New York: Human Relations Aids, 1963.

However, unpublished secondary material available in the Friends' Historical Library at Swarthmore moves far beyond what is available in the published literature. The most important source is a 1953 Ph.D. dissertation by Homer Babbidge, Jr. entitled *Swarthmore College In The Nineteenth Century: A Quaker Experience In Education*. Babbidge, later the President of the University of Connecticut, examines the early history of Swarthmore in a work that is both comprehensive and absorbing. He begins by describing the state of Quaker education in the mid-nineteenth century and examining how Swarthmore fit into the more general picture of Quaker education. He also describes the circumstances surrounding the founding of Haverford, founded by Orthodox Quakers, the rival group from which the Hicksite Quakers that founded Swarthmore split in 1827. This is an important comparison, since although Haverford was also a Quaker educational institution, it was founded with subtly but distinctly different goals from Swarthmore. He goes on to describe in detail the early efforts of Hicksite Quakers to gather support for the school that would become Swarthmore, which helps to describe the founding aims of the college.

Also important for the purposes of this paper is the material describing what happened after Swarthmore began classes in 1869. Babbidge describes in detail a fascinating conflict between Edward Parrish and Edward Hicks Magill that eventually led to Parrish's resignation as President of the College. It should be noted that Babbidge relies heavily on Edward Parrish's journal in describing this conflict, and in doing so, he seems to give more weight to Parrish's perspective than he does to that of Magill and the Board of Managers. This is somewhat unavoidable since Magill barely mentions the conflict in his published autobiography and, according to Babbidge, the Board

deliberately left certain parts of the conflict out of its minutes. Indeed, Parrish also wanted to keep the controversy quiet, as his diary, which describes the conflict in detail, was not to be shared while he was alive. In fact, even Babbidge, writing 80 years after the event, had to limit his quotations based on the wishes of Edward Parrish's grandson, who still had care of the diary at that point. It is therefore inevitable that as the only surviving, detailed account, Parrish's views would be given more weight.

As interesting as this conflict is, my analysis will move away from the conflict itself, which was Babbidge's main focus. Instead, my analysis will focus on the reasons why both Parrish and the Board of Managers considered science such an important part of the curriculum. Babbidge provides evidence for the Board's sincere interest in science education and suggests that this interest is due to the practical nature of the Quaker tradition. An examination of how this interest comes out of Quaker tradition will be an important aim of my analysis.

Another important source on Swarthmore history is a Swarthmore thesis written in 1944 by Ruth Charles Enion, titled "The intellectual incubation of a Quaker college, 1869-1903." Enion provides an interesting comparison between Swarthmore and general trends in American education at the time. She also includes some important analysis on the role of and commitment to natural sciences at Swarthmore. Her analysis includes an intriguing but disputable comparison between the ways that Swarthmore and Haverford approached science, which is discussed in more detail below.

Other unpublished secondary sources on the history of Swarthmore provide additional background on the topics discussed in this essay. William I. Hull's history of Swarthmore includes a massive amount of detail about the College's early history despite

its incomplete nature. It also includes transcripts of important primary sources, such as the correspondence between Edward Parrish and Benjamin Hallowell that helped to establish the philosophy of the College. Another relevant source is a history of biology at Swarthmore written in 1989 by Anne Rawson. She describes how at first, biology was studied as a way to show types of creation, and was considered something that strengthened, rather than challenged, faith. In fact, she finds that evolution was not even mentioned in Swarthmore course catalogs until 1908, and was not taught as a biology course until 1919. This suggests that Swarthmore tried to ignore the conflict between science and religion created by the theory of evolution. Both of these sources would be useful for further exploration into the history of science education at Swarthmore.

The major sources on science education in Orthodox Judaism take a different perspective than most of the Quaker sources. They primarily look at the philosophies in general, and not as much at the history of the particular educational institutions that followed those philosophies. One of the best secondary sources on this topic is a recent book by Sol Roth entitled *The Jewish Idea of Culture*.[4] Roth describes different ways in which Orthodox Judaism, and in particular the *Torah u-Madda* ("Torah and wordly knowledge") and *Torah im derekh eretz* ("Torah with culture") movements, have approached secular culture. His work includes some insightful sections on how these movements have approached scientific knowledge, as well as some useful general background on the philosophies as a whole. Another important secondary source on the *Torah im derekh eretz* movement is an essay by Shnayer Z. Leiman in a book entitled

[4] Sol Roth, *The Jewish Idea of Culture*. Hoboken, N.J.: KTAV Publishing House, 1997.

Judaism's Encounter with other cultures: Rejection or Integration?[5]. This provides background on the *Torah im derekh eretz* movement, and also includes some description of how science was included in the curriculum of schools that followed this philosophy. Unfortunately, many of the other secondary sources on *Torah im derekh eretz* that would be useful are written in Hebrew. Thus, I will be limited in the analysis that I will be able to do here. Still, there is enough material in these and other English sources to reach at least a basic understanding of how this philosophy approached science.

There are more sources available in English on the *Torah U-madda* philosophy than there are on *Torah im derekh eretz*. However, there does not appear to be any detailed study of the approach that Yeshiva as an institution has taken towards science. Instead of providing historical analysis, most analyses of the *Torah U-madda* approach are attempts to defend the emphasis on secular knowledge that the philosophy supports. The most important work explaining and defending the Yeshiva's philosophy is a book entitled *Torah Umadda*, written in 1990 by Norman Lamm, who was president of Yeshiva University at the time.[6] He describes the historical justification for this blending of traditional and secular knowledge while also discussing some of the implications of the philosophy. Science is considered as a separate entity from secular knowledge in general in parts of this and other works, and is sometimes considered more problematic, sometimes less so. However, when the topic of scientific knowledge is approached, it is usually in an attempt to explore the place of science education that is suggested by *Torah u-Madda* as a philosophy. None of these sources include a substantial historical examination of the focus on science in Yeshiva's curriculum. Still, some discussion of

[5] Shnayer Z. Leiman, "Rabbinic Openness to General Culture in the Early Modern Period, " In: *Judaism's Encounter with Other Cultures*, Jacob J. Schachter, ed. (Northvale, NJ: Jason Aronson, 1997), 143-216.
[6] Norman Lamm, *Torah Umadda*. Northvale, NJ: Jason Aronson, 1990.

how the *Torah u-Madda* philosophy approaches scientific knowledge is possible based on the available sources.

Emphasis on science from the beginning

From the very beginning, Swarthmore's founders intended to form a college that would have a strong emphasis on scientific knowledge. This was evident as early as 1854, when a committee led by Martha Tyson first explored the idea of a Quaker college. In the committee's report, it was suggested that the curriculum provide a liberal education, which would include "an extensive *practical* acquaintance with the natural sciences."[7] This was also one of the goals for the college laid out in the "Joint Address." The Joint Address was written in 1861, largely by Benjamin Hallowell, on behalf of the Baltimore and Philadelphia Quakers who were then developing the plans for the college that would become Swarthmore. The purpose of this address was to gather support from Quakers in New York for the budding college. It is important to note that the College did not become incorporated until 1864, and did not begin classes until 1869. Indeed, while Benjamin Hallowell and Martha Tyson had been slowly gathering support for a Hicksite Quaker college since 1854, it was not until 1860 that they were able to arouse enough interest in the College in the Baltimore Yearly Meeting to begin serious planning. The Baltimore group then met with a group of Friends in Philadelphia on November 28, 1860, and after gathering more support in Philadelphia, the Joint Address was written.[8] Thus, planning for Swarthmore was still in its very early stages at this point.

Still, three major policies were outlined in the Joint Address, as characterized by Babbidge. The first is that the college was to be co-ed. The second, and most relevant

[7] "Report of the Committee of Education of Baltimore Yearly Meeting of Friends," *Friends' Intelligencier* XI (1854): 459.
[8] Homer D. Babbidge, Jr., *Swarthmore College in the Nineteenth Century: A Quaker Experience in Education* (Ph.D. diss., Yale University, 1953), 60

for this analysis, was that the curriculum was to include "extensive practical acquaintance with the natural sciences," echoing the 1854 report. The third objective was that the education be "guarded;" the school and its students were to uphold Quaker standards of dress and conduct, and the students were to be primarily Friends.[9] That an emphasis on science education was highlighted in such a prominent place shows its importance to Hallowell and the other early supporters of Swarthmore. The purpose of the Joint Address should also be considered. As it was an attempt to gather support for the college, it must have been written at least in part to appeal to the desires of the community. Thus, this provides evidence that the Hicksite Quaker community in general, or at least those who were willing to support an educational institution at all, also felt that a focus on practical knowledge would be an important part of a Quaker institution.

The importance of science education in Quaker tradition

Now, we may wonder why it was so important to the Quaker community to have a strong emphasis on science in their new college. To address this question, we must explore the history of Quaker education in general. The primary role of education in the Quaker community was to provide guidance so that Friends would live a moral life and intelligently understand the world around them. While it may seem at first that a wide range of topics could be included in this mission, it did give a preference to some topics over others. The views of William Penn, the founder of Pennsylvania and a prominent Quaker, illustrate this. As paraphrased by Meyer Reinhold, Penn's belief in "useful knowledge" was expressed in his advocacy "not only of religion and morality, but of 'fair writing', reading, 'the most useful parts of Mathematics,' and vocational training through

[9] Babbidge, 60.

'useful arts and sciences.'"[10] In addition, Penn condemned "false knowledge," a term that Reinhold describes as including "words, grammar, rhetoric, and Latin and Greek." Penn instead preferred, as Reinhold paraphrases, "mechanical, physical and natural knowledge, which would be useful to [children] for the rest of their lives."[11]

While these areas of emphasis are representative of Quaker feelings towards education, they are distinctly different from those of most other Christian denominations, during Penn's time and through the mid-nineteenth century. At colleges like Harvard and Yale, which were run by the more mainstream Protestant denominations, the primary emphasis was on classical studies. While this was beginning to change by the mid-nineteenth century, the leaders of those institutions still believed that the classics should be the core of an advanced education. For example, the report of an 1828 Yale faculty committee, as described by Homer Babbidge, "declared…that the study of ancient languages remained 'the most effectual discipline of the mental faculties.'" In addition, they suggested that any movement to decrease the importance of the classics was "a scheme calculated…fatally to affect the prosperity of the college."[12] Thus, Quaker tradition clearly had a different view of education than the more mainstream tradition that Yale represented.

The most basic reason for the difference between Quakers and other Christian denominations was probably due to unique factors in the history of the Society of Friends. George Fox, the founder of Quakerism, was uneducated and only semi-literate,

[10] Meyer Reinhold, "The Quest for 'Useful Knowledge' in Eighteenth-Century America." *Proceedings of the American Philosophical Society* 119 (1975): 110.
[11] Reinhold, 110.
[12] Babbidge, 5. Report transcribed in *American Journal of Science and Arts* 15, 1828, as cited by Babbidge.

and he believed that he had found God without academic training.[13] Thus, early Quakers, as described by Luella Wright, "placed value on training which enabled them to meet practically the experiences of every day life, and which developed in them an appreciation of moral and spiritual qualities in life."[14] Indeed, according to William Penn, "whilst [Fox] was ignorant of useless and sophistical science, he had in him the grounds of useful and commendable knowledge, and cherished it everywhere."[15] It seems likely that this background is the reason why, as described by Wright, the tradition that followed from Fox emphasized education "not wholly by factual, rhetorical, or philosophical training, but so far as possible by practical, moral, and spiritual agencies."[16] This inclination persisted in Quaker tradition through the founding of Swarthmore.

The founders of Swarthmore also had philosophical reasons of their own for being interested in science education. The best source for understanding these reasons is Edward Parrish's 1865 *Essay on Education in the Society of Friends*. This source is particularly important because, according to Babbidge, aside from the "Joint Address," which was written by Benjamin Hallowell, Parrish's writings "stand today as the most significant expression of the vision and spirit of the founders of Swarthmore."[17] In particular, Babbidge describes this essay as the most important of Parrish's "many addresses and letters designed to awaken interest among members of the Religious

[13] Lawrie Ann Mifflin. "Haverford and Swarthmore colleges : two Quaker experiments in higher education" (B.A. thesis, Yale University. 1973), 2.
[14] Luella M. Wright, *Literature and Education in Early Quakerism*, (Iowa City: The University of Iowa, 1933), 46.
[15] William Penn, "The Rise and Progress of the People Called Quakers" (1694), 42-43. In: *The Witness of William Penn*, Frederick B. Tolles and E. Gordon Alderfer, eds. New York: MacMillan, 1957.
[16] Wright, 47.
[17] Babbidge, 79.

Society of Friends."[18] Thus, while it will be important to consider other views as well, this essay is most representative of the views of Swarthmore's early leaders.

Multiple reasons for Swarthmore's curricular emphasis are apparent in Parrish's *Essay*. Parrish begins to discuss this topic by citing a Quaker writer named Jonathan Dymond, whose position supports his own. According to Parrish, Dymond addressed the question, "What knowledge is of most worth?," which was apparently a popular topic for debate in Parrish's time, forty years earlier. Parrish describes Dymond's views as follows:

> Although in his days education, which had so long lain undisturbed on "the dregs of time," was the same as "before England had a literature of its own, and when Greek and Latin contained almost the sum of human knowledge," yet he forcibly advocated the idea that, "in general, science is preferable to literature—the knowledge of things to the knowledge of words," and sketched a practical system of education adapted to the "middle ranks of society; that is, to the ranks in which the greatest sum of talent and virtue reside, and by which the business of the world is principally carried on."[19]

This quote makes a number of interesting suggestions. For one, Dymond proposes that modern intellectual achievements made classical education obsolete by the nineteenth century. This is a reasonable suggestion, and appears to be a major reason for the curricular changes that began to occur throughout American colleges. Still, just before the discussion about Dymond's views, Parrish suggests that "the present tendency of reform in intellectual culture is peculiarly in harmony with the views of Friends." Therefore, this "tendency of reform" was not the reason for the focus on practical knowledge, as it was at many colleges. Indeed, the reverse may actually be the case: it may be said that Quakers only became interested in higher education when practical

[18] Ibid., 79.
[19] Edward Parrish, *Essay on Education in the Society of Friends*, (Philadelphia: J.B. Lippincott & Co., 1865), 11-12.

knowledge began to be considered an acceptable subject for higher education. Still, while this is an interesting insight, it does not yet explain *why* Quakers were so interested in practical knowledge.

One important reason, suggested by Dymond and supported by Parrish, is that they wanted to provide an education that would be useful to all members of society, not just the elite. Thus, even though Dymond himself was educated in the traditional system, he felt that education should be accessible to all, and for that to happen, it must include more practical and scientific knowledge. Parrish concurs with this sentiment; he suggests that although traditional classical education has merit "as a means of cultivating the memory and exercising the reasoning powers…it is certainly out of the reach of the masses."[20] This is a problem for Parrish because of his belief, most likely based in the Quaker desire for equality, that education *should* be within the reach of the masses. He continues by suggesting a solution to this problem:

> it seems to me the more liberal education is popularized, the more the classics must give way to the natural and physical sciences, which are calculated to furnish inexhaustible objects of profitable study and contemplation, besides being applicable to innumerable uses in practical life.[21]

Thus, by replacing a focus on the classics with a focus on scientific knowledge in higher education, ordinary people will be able to gain the benefits of a liberal education while also gaining practical knowledge that will help in their daily lives in the future.

Another important reason for the focus on useful knowledge, which is more particular to Quaker tradition, is the idea that classical knowledge is merely ornamentation. Thus, classical knowledge was usually considered incompatible with the Friends' desire for simplicity. Because of this, Quakers have often been accused of being

[20] Parrish, *Essay*, 12.
[21] Ibid., 12.

generally anti-intellectual. Parrish vehemently disagrees with this contention, as will be discussed more below. One of the prominent Quakers who Parrish cites in defending the importance of education in Quaker tradition is William Penn, whose words again illustrate an important point about Quaker educational preferences. Penn, in what Parrish describes as a "well-known letter to his wife in regard to the education of their children," writes:

> For their learning, be liberal, spare no cost, for by such parsimony all is lost that is saved; but let it be useful knowledge, such as is consistent with truth and godliness, not cherishing a vain conversation or idle mind, but ingenuity mixed with industry is good for the body and mind too.[22]

Thus, useful knowledge is "consistent with truth and godliness," while knowledge that leads one to "cherish a vain conversation or idle mind" is not. This is most likely because of the Quaker preference for simplicity. Since, as the quotation from Penn suggests, Quakers considered knowledge with no practical value to be only useless ornamentation, that type of knowledge goes against Quaker tradition. However, knowledge that leads one to a deeper understanding of the world, and to a life of "ingenuity mixed with industry," is fully supported by Quaker tradition.

The final reason for Swarthmore's emphasis on scientific knowledge is that Quakers believed that the study of natural sciences would enhance religious faith. Partly because this was before the theory of evolution became prominent, such studies were seen as a way of achieving a greater understanding of God's creation. This sentiment is evident in Parrish's *Essay*, where he writes:

It is…a direct result of scientific studies to enlarge our conception of the wisdom and goodness of the Creator, and to furnish innumerable and instructive parallels from the

[22] Quoted in Parrish, *Essay*, 21.

external universe illustrative of those sublime spiritual truths, which are so admirably conveyed to the mind by comparison with objects which are visible and tangible.[23]

Thus, Parrish believes that along with its pure educational value, science can also help to elucidate moral and religious points. The use of science for religious purposes was also evident in the teaching of Joseph Leidy, Swarthmore's first professor of natural history. The minutes of an 1891 Board of Managers meeting mention that in his teaching, Leidy "led the minds of his followers by easy gradations from the Creation to the Creator."[24] While Babbidge writes that this "emphasis on the spiritual value of Science" ended with Leidy's retirement in 1887,[25] it seems clear that this was an important motivation for the emphasis on science in Swarthmore's early history.

Purpose of introducing higher learning into the Quaker community

To understand how Swarthmore as an institution reflected the overall intellectual orientation of the Quaker community, it is necessary to discuss why the institution was created, and what problems it was meant to address. It is also important to consider the history of Haverford as an institution, since Haverford was founded by Orthodox Quakers, a branch of Quakerism that split from the Hicksites in 1827. This school was founded in response to concerns that were somewhat similar to those of Swarthmore's founders but that were different in important ways.

Partly because of the traditional antipathy towards classical higher education described above, the Society of Friends was one of very few denominations that did not have an institution of higher learning of its own by the mid-19th century. Isaac Sharpless, in his history of Haverford, describes the situation in the early nineteenth century as follows: "A certain mediocrity of education, enough to fit for the ordinary concerns of

[23] Parrish, *Essay*, 64.
[24] Board of Managers *Minutes*, 6/15/1891, as cited in Babbidge, 222.
[25] Babbidge, 222-223.

life, became the ideal. There were always…a group of educated, public-spirited Friends…but they hardly represented the church at large."[26] Thus, most Friends were content to live a life of simplicity and spirituality that did not include advanced education.

By 1830, however, the forces of modernity led to a movement among Quakers to challenge this simple ideal. This movement began with a letter to *The Friend*, a journal of the Orthodox Quaker movement, by an author who called himself "Ascham." This letter suggested that an institution of higher learning was needed in the Quaker community to address growing concerns about the state of Quaker education. As Babbidge describes it, this letter contended that "Quaker education had not kept pace with 'the progress of society, the achievements of science,…the increased influences of letters…or with the responsibilities which our standing in the community imposes upon us.'"[27] Haverford was founded in 1833 to address these concerns. It should be noted that while it was more advanced than other Quaker educational institutions when it was founded, Babbidge writes that it did not actually become a college "until after mid-century, and it is clear that its founders did not envision it as ever becoming one."[28] By contrast, Swarthmore was always intended to be primarily a college. Still, it is useful to explore the similarities and differences in the aims of these schools.

As suggested by Ascham's letter, Haverford was founded in part because some members of the community felt that it was necessary for Quakers to be aware of modern intellectual advances. In addition, there was a feeling that without a Quaker school that could approach the level of education provided by schools like Harvard and Yale, those

[26] Isaac Sharpless, *A Story of a Small College*, (Philadelphia: John C. Winston, 1918), 22
[27] Babbidge, 39.
[28] Babbidge, 43

young people who were interested in becoming highly educated would enroll in schools run by other denominations. This, many were afraid, would lead them to abandon their Quaker tradition. Thus, the minutes of an 1830 committee reflect that part of their aim for Haverford was "to keep this interesting class of the Society, its hope and promise, attached to the principles and testimonies of Friends…"[29]

Indeed, according to Babbidge, Haverford attempted to strictly limit the presence of any non-Quaker influence on its students. Only Quakers were allowed to attend the school, and even things like reading materials were restricted to those that were considered appropriate to Quakerism. At the same time, Haverford's curriculum included study of ancient and modern literature, which was unique among Quaker schools, as well as math and natural sciences. According to Babbidge, this was a change in philosophy made "in light of realistic demands—the demands of 'position'…the demands of youth (who would get their learning outside the Society if need be), and the demands created by the need for leadership—educational and religious—within the Society."[30] Thus, Haverford's founders felt that with changing times, Quakers needed to be familiar with all types of modern knowledge, even the classical learning that was not traditionally valued by Friends.

However, Haverford's leaders did not want to introduce students to knowledge that would lead them to challenge Quaker tradition. In fact, it has been suggested that this desire led Haverford to deemphasize scientific inquiry somewhat in the mid-nineteenth century. According to Ruth Charles Enion, "the scientific method brought into the college the spirit of critical inquiry which could not be confined to science alone.

[29] Minutes of the Henry St. Meeting, 77, as quoted in *A History of Haverford College for the First Sixty Years*, 60, as quoted in Babbidge, p. 40
[30] Babbidge, 41

Purely Quaker views could not be unanimous in an institution which fostered intellectual criticism. Haverford saw this, and imperceptibly became more classical in character."[31] If Haverford's leaders did in fact have this objection to scientific study, that it would make people more likely to think in ways that are not compatible with religious belief, it would be quite intriguing. This is particularly true because it is similar to one objection by some in the Jewish community against the study of science. No objection of this sort is evident in Swarthmore's history, so the idea that Haverford did have such a concern would be important to this analysis.

However, none of the published histories of Haverford suggest any kind of an anti-science bias that would support Enion's conclusion. While it seems that the scientific curriculum was in fact emphasized less strongly there than at Swarthmore, that appears to have been due to a lack of funding and facilities, not due to a desire to discourage scientific inquiry. In fact, based on a cursory reading of the detailed history of Haverford published in 1892 by the Haverford Alumni Association[32], science appears to have been valued nearly as much, or just as much, at Haverford as it was at Swarthmore. There appears to have been steady progress in improving facilities for scientific study, and quotations from Haverford's Board of Managers seem to support science education. Thus, it seems possible that Enion's suggestion is either pure speculation or a misinterpretation of the evidence. Still, because such an objection would be important to the comparison between Swarthmore and Haverford and between Quakers and Jews, it is necessary to at least consider it as a possibility.

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[31] Ruth Charles Enion, "The intellectual incubation of a Quaker college, 1869-1903," (B.A. Thesis, Swarthmore College, 1944), 14.
[32] Haverford College Alumni Association, *A history of Haverford College for the first sixty years of its existence*. Philadelphia: Porter & Coates, 1892.

Edward Parrish, Benjamin Hallowell, and the other early leaders of Swarthmore were motivated by concerns that were similar in some ways to those of Haverford's founders. In the "Joint Address," described above, Hallowell suggests that it is the duty of "Friends, as a religious body, to provide means for the liberal education of all their children, under circumstances favorable to the maintenance of our religious principles and testimonies."[33] He suggests that the schools currently available were inadequate for this. At the same time, as described above, Swarthmore's founders wanted the quality of the education provided to be "equal to that of the best institutions of learning in our country."[34] Thus, like Haverford's founders, Swarthmore's founders intended to provide an education that was as rigorous as at any college while also incorporating Quaker moral values into the students' experiences.

Still, there were also important differences between the two schools. In his *Essay*, Parrish writes that Haverford "is a monument to the zeal and liberality of its founders, and…has sent forth many young men of solid classical and mathematical attainments."[35] However, Parrish believes that Swarthmore's founders can do better. He contends that Haverford is "too expensive an institution, and too limited in its scope, to meet the views of the great mass of Friends."[36] The concern about the cost of tuition reflects the more general desire for Swarthmore to appeal to middle-class Quakers as well as the wealthy. This was due, in part, to differences between Hicksite and Orthodox Quakers, as the Hicksites were less wealthy and generally more rural than the Orthodox Quakers. This difference also had important effects on the curriculum. According to Enion, while

[33] "Joint Address", 5.
[34] Ibid., 10.
[35] Parrish, *Essay*, 33.
[36] Ibid., 33.

Haverford included mostly wealthy Friends, Swarthmore was considered a college for "the child of the average family, whose means were slim, but whose cultural needs great." Thus, "the type of young Quaker who attended Haverford sought a classical education, but the young person at Swarthmore wanted practical and immediate value, as well as cultural background."[37] This suggests that some of the emphasis on practical knowledge at Swarthmore was based on the economic status of the Hicksite community.

The concern that Haverford is "too limited in scope" for "the great mass of Friends" seems even more important, however. While Parrish's statement could be taken to mean that Haverford's curriculum is not advanced enough for what most Friends desire, this seems somewhat unlikely. After all, despite being the most advanced educational institutions in the Quaker community, both Haverford and Swarthmore had trouble gathering financial support. This demonstrates that many Quakers were apathetic to the idea of higher education, so it seems unlikely that their complaint is that Haverford is inadequate. Instead, it seems more likely that Parrish is contending that Haverford does not provide enough of the practical knowledge that many Friends desire from a school. Parrish, as described above, clearly believes that only the wealthy can afford an education with little direct practical value. Thus, it would make sense for Parrish to criticize Haverford as too impractical for most Quakers. This criticism suggests that Swarthmore will provide an education that is of greater practical value than Haverford's, allowing it to better serve the Quaker community.

Therefore, because Haverford did not address all of their educational concerns, it was necessary for Hicksites to form a school of their own that would do so. In his *Essay*,

[37] Enion, 68.

Parrish laments the fact that since the Hicksite and Orthodox branches of the Society split in 1827, the Hicksite branch

> has not a single institution calculated to centralize the learning and science of the Society, and to foster and encourage liberal education—not one in which our children can obtain the advantages of a really liberal education under circumstances favorable to their becoming attached to the religious organization of which they are members.[38]

Thus, Swarthmore seems to have had an ambition beyond that of Haverford. Swarthmore, it would seem, attempted to incorporate Quaker values into the structure of its curriculum. Haverford, on the other hand, attempted to provide a classical education in a Quaker setting. A major reason for these differences may be the shift in emphasis in favor of practical knowledge that occurred in American colleges between 1833, when Haverford was founded, and 1865, when Parrish wrote his *Essay*. Despite this difference, it is apparent that both schools attempted to introduce the most advanced educational practices of their time into the Quaker community. Both of these attempts seem to have been at least partly in response to the forces of modernity.

It should also be noted that the most important aim of Swarthmore's founders was to create educated, moral citizens by means of a liberal education. While they believed that knowledge should have some practical value, they were decidedly not attempting to form a technical school. This belief was expressed by Edward Parrish in his *Essay*, and even more strongly by Edward Hicks Magill, who was President of Swarthmore from 1871 to 1890. Indeed, Parrish's desire for science education was not because it would be more vocationally useful to Swarthmore students than classical knowledge, although that may have been a secondary justification for it, given his belief that teaching science made education more accessible to the middle class. Instead, Parrish believed that the study of

[38] Parrish, *Essay*, 30-31.

science, along with other subjects, was the best way to develop the mind. Thus, along with its basis in Quaker educational tradition and Quaker values, an emphasis on science education was, at least for Parrish, a way of bringing about a larger goal: to create a more educated Quaker community.

However, Parrish's desire for more advanced education was not universal in the Quaker community. In his *Essay*, Parrish laments that many rural Quakers "evince quite as much interest in the cultivation of the soil, and in realizing its products, as in the development of the minds of their children."[39] Those Friends, Parrish says, are willing to trust their childrens' education to public elementary schools or to local free Quaker schools. However, either of these are inadequate, and because parents have relied on them, "a large portion of the talent of the Society lies undeveloped…"[40] Parrish scornfully notes similar frugality among wealthy Friends in his journal while fundraising on behalf of Swarthmore in 1866. He notes that "A great many wealthy have it in consideration. They want a long time to consider when their pocket is concerned. Those in moderate circumstances may yet have to carry out this great improvement."[41] Indeed, it took over four years of arduous fundraising to finally have enough money to open in 1869. Thus, while Swarthmore clearly did have some support in the community, many in the community seem to have been apathetic about the endeavor. This suggests that we must be careful not to generalize Parrish's high ideals for education to the Quaker community at large. Still, the desire for education to serve a useful purpose is something that can be generalized to Quaker tradition in general.

[39] Parrish, *Essay*, 36.
[40] Ibid., 38.
[41] Edward Parrish, "Private Notes and Memoranda," 4/8/66 entry.

Controversy over implementation of the "scientific course" at Swarthmore

Despite the strong philosophical desire on the part of Swarthmore's founders and of the Quaker community at large to include science in the curriculum of the college, its introduction did not go entirely smoothly. Indeed, a disagreement over when and how a "scientific course" should be introduced at Swarthmore was one of the precipitating factors that led to Edward Parrish's resignation as President of Swarthmore in 1871. The Board of Managers was eager to institute scientific courses as soon as possible, and Edward Hicks Magill, who at the time was principal of Swarthmore's Preparatory school, was willing to go along with this. However, Parrish, who was actually a much stronger proponent of science education than Magill, did not think the facilities or the students of the young college were prepared enough for the college to adequately teach science. The difference of opinion on the introduction of science courses was only part of a larger conflict that developed with Parrish on one side and Magill and the Board of Managers on the other. Indeed, their primary difference of opinion was actually over issues relating to student discipline. Still, the role of science education at Swarthmore was an important issue in the conflict. As the only surviving account of this conflict, Edward Parrish's journal is critical for understanding when and how the support of science education was expressed among the founders of Swarthmore.

An important point that must be made before addressing the contents of the journal is that Parrish did not intend for anyone else to read these "Private Notes and Memoranda" during his lifetime. In fact, in the 12/24/70 entry where he describes the beginnings of his conflict with Magill, he explicitly states his intentions for the journal. He begins the entry by writing that he is "going to trust to this page and the following what I want to leave on record for my children in regard to what some may speak of as a

serious quarrel between the President and 'Principal' of Swarthmore." Thus, he intends for the journal to be a statement of his side of what happened, primarily for his children to have after his death. After describing part of the conflict, he continues: "Perhaps as this is my private mem. which nobody is to read while I live, but myself, & which may serve me as a mirror of what I was, when perhaps I may be better than I am now, I may go a little further." This suggests that he is also recording these unpleasant events to help preserve his feelings on the situation so that he can remember them better in the future.

One purpose that he clearly did not have in mind in writing this was to gain external benefit from these accounts during his lifetime. This means that the journal is likely to give a much more honest impression of his feelings than a public account would provide. In fact, it is clear that those involved in the Parrish/Magill conflict did not want the details to be publicly available. Magill's published autobiography barely mentions these events, and according to Babbidge's analysis, the Board of Managers specifically did not include an account in their minutes. Parrish himself was not eager to share the details publicly either; after reading his resignation speech at a meeting of the Board of Managers, he threw the text into the fireplace. As Parrish records it in his 1/1/72 journal entry: "Taking the advice of W.C. B[iddle] that nothing should go on record showing any proceedings on the part of the Board unfriendly to me I immediately after reading threw the paper into fire." He also seems hesitant at times to describe the events even in his private journal. While he clearly believes that some details should be recorded, he also suggests near the beginning of the entry that "I have no time…to go into the narrative and find it were better left unrecorded." Thus, there were even more personal details that Parrish decided were neither necessary nor appropriate to record in written form.

It is not entirely clear whether Parrish would have wanted or expected this account to be part of the public historical record after he died. He did not want these events to be forgotten, as the other people involved apparently did, but he also disliked conflict, and therefore he was not willing to attack Magill and the Board in public. Still, he probably had at least some intention of these memoirs forming part of the historical record. On the other hand, he would probably be surprised, though not displeased, to find that historians are even interested in these events 140 years after the fact. After all, in 1866, in his remarks at the laying of the cornerstone of the College building that would later bear his name, Parrish tries to predict how history will view Swarthmore's founders. He assumes that the artifacts in the cornerstone will ensure that:

> when, centuries hence, these massive walls shall be demolished or rebuilt, the antiquarian who with eager curiosity shall explore our work, shall find something to add to that chain of facts by which men instinctively love to trace the progress of the ages. Before these walls shall have crumbled, every one of us, with our plans of personal aggrandizement, all our family and social interests and concernments, will be forgotten.[42]

Thus, while Parrish probably hoped that this account would allow the truth to come out in the short term future, he would not have expected it to have an impact on his permanent legacy. The description in this journal was instead written primarily for personal reasons, and probably at least partly as catharsis for Parrish himself.

One important effect of this goal is that it may have led Parrish to overdramatize certain aspects of the conflict. He was clearly devastated personally by being forced to resign from the Presidency of an institution that he deeply loved and had done so much to build. Therefore, he probably was not completely objective in presenting the facts. For

[42] "Proceedings on the Occasion of Laying the Corner-Stone of Swarthmore College on the 10th of Fifth Month, 1866," 85-86. In: *An Essay on Education in the Society of Friends, with an account of the proceedings on the occasion of laying the corner-stone of Swarthmore College*. Philadelphia: J.B. Lippincott & Co., 1866.

example, while Parrish disparages the scientific curriculum that the Board instituted as cursory, and in fact it was at first, Babbidge indicates that it did in fact become more substantial in less than a decade.[43] This suggests that the Board's rush to institute a scientific curriculum did not turn out to be the disaster that Parrish thought it would be. In addition, it seems reasonable that the events that led to Parrish's resignation were actually due more to a Board that did not like the idea of an independently-minded President, as Magill suggested in his autobiography[44], than they were to the sinister, MacBeth-like motives that Parrish attributes to Magill. Thus, while Parrish was rightfully upset at losing something that was so important to him personally, we should be aware that these feelings probably cloud his account of the facts.

With this background in mind, we may now examine Parrish's account of the conflict itself as it relates to science education at Swarthmore, as recorded in his journal entry of 1/1/72. He begins by suggesting that "with certain of the more active managers, [Magill] went directly in the teeth of his former view of education and begin to turn and twist the course the give an <u>appearance</u> of something like a 'Scientific School'." After condemning "the 'Science' at Swarthmore" as "little more than a blind," Parrish elaborates on his contention from the first sentence. He suggests that

> If there ever was a man of Education ignorant of the so-called Physical Sciences and Chemistry it is the 'Principal of Swarthmore' [Magill]. Yet there is no doubt the President [Parrish], because he had a higher standard and was unwilling to patch up a Course for <u>appearances</u>, was considered in the way of introducing Scientific Instruction.

Reading this, we may wonder why Magill, who was a classicist and did not consider science to be particularly important, would have been interested in starting a scientific

[43] Babbidge, 213.
[44] Edward Hicks Magill, *Sixty-Five Years in the Life of a Teacher, 1841-1906*, (Boston: Houghton Mifflin, 1907), 152.

curriculum at Swarthmore. The proximate cause, and the target of Parrish's ire, is that Magill was an opportunist. Since the Board was eager to start teaching scientific courses as soon as possible, Magill was perfectly happy with implementing that suggestion to curry favor with the Board. Parrish, on the other hand, who was a pharmacist by trade, a leader of and Professor at a college of pharmacy in Philadelphia, author of a pharmaceutical textbook, and, at least officially, Swarthmore's first professor of chemistry, believed that rushing to include science courses without the necessary facilities was a bad idea. Since it is clear that with this background, Parrish knew more about the nature of science education than Magill or the Board, it seems that it would have been prudent for the Board follow Parrish's advice on this issue.

However, the Board not only ignored Parrish's advice, they disagreed with it enough that it was one of the precipitating factors in his resignation from the Presidency. This is somewhat surprising considering that Parrish, in a journal entry written in December 1868, wrote that he and the board agreed that the Presidency of Swarthmore was "a permanent employment for me." It should be noted that by 1871, when this conflict about science courses arose, the sentiment on the Board had already turned against Parrish because of the disagreement on disciplinary standards. Still, the fact that the Board was so quick to reject Parrish's advice suggests that there must have been a strong sentiment on the Board and in the Quaker community to begin teaching science at Swarthmore.

The fact that Magill was so eager to begin a scientific curriculum upon becoming President, despite his own preference for the study of languages and humanities, provides further evidence for this sentiment. It is apparent from his remarks at the laying of the

cornerstone for the College building that he considered "culture" to be more important than practical knowledge. He expresses his hope that Swarthmore "will not be allowed to turn aside from the course marked out for it…as an institution for general and liberal culture, and become a mere practical school."[45] Thus, his view of education is different from that of Penn and other early Quakers who believed that only practical knowledge was valuable. It is true that Parrish believed that science is the best way to train the mind, as described above, so an attempt to provide culture could theoretically include scientific study of the natural world. Still, it seems unlikely that Magill shared Parrish's belief in the primacy of science. The one place where he does mention science in his remarks is in suggesting that one of Swarthmore's greatest achievements is that it will "carry [men and women] together…to the heights of literature and science."[46] Because he places literature before science here and never really mentions science elsewhere, and because his own background is in literature, it seems likely that while Magill was not opposed to science, he did not consider it as essential a part of the curriculum as Parrish did.

Thus, Parrish's suggestion that Magill instituted science courses primarily to comply with the Board's wishes is not unreasonable. Of course, this would mean that the Board itself must have been eager to begin teaching science courses. In addition, since Swarthmore at that time was dependent on tuition income, it is likely that one reason that the Board was so eager to institute scientific courses is that the larger Quaker community demanded it. Thus, the Board must have believed that the scientific course would attract more students to Swarthmore. This justification would explain why they did not mind if the course was merely "for appearances," as Parrish describes it. Even a cursory

[45] "Proceedings on the Occasion of Laying the Corner-Stone of Swarthmore College," 83.
[46] Ibid., 81.

scientific course would show the Quaker community that the college is interested in teaching science, which would attract them to Swarthmore. Therefore, the facts presented by Parrish demonstrate that there was an interest in science education in the Quaker community.

Parrish's journal provides important evidence of the strength of the Board's desire to include a scientific program in the Swarthmore curriculum. While there was conflict between Parrish and the board in how this desire should be expressed, it is clear that there was no disagreement that scientific courses should be an important part of the Swarthmore curriculum. This goal came primarily from the Quaker tradition of valuing practical knowledge over the more esoteric knowledge that was favored in most colleges at the time. While the other sources described above provide the reasoning behind this goal, Parrish's description of the conflict over when and how science education should be implemented sheds light on the importance that the Quaker community placed on scientific knowledge.

Jewish approaches to scientific knowledge

In order to provide a comparison with the Quaker approach to science education, it is relevant to describe some of the approaches that the Orthodox Jewish community has taken towards scientific knowledge, and towards worldly knowledge in general. However, it must first be noted why it is more relevant for the purposes of this comparison to discuss approaches in the Orthodox Jewish community rather than in the larger Reform movement. The primary reason for this is that the Reform movement does not try to reconcile a Jewish worldview with its support for secular education. Instead, according to Gunther Plaut, a leader of the Reform movement in America, they can coexist without conflict because they barely need to interact at all. Judaism thus provides

guidance in the moral realm while science provides guidance in its realm.[47] While this is acceptable as a worldview, it is not relevant for an exploration of how religious traditions interact with science. This is because it seems to regard the fundamental question of how Jewish tradition and scientific knowledge interact with each other as insignificant. On the other hand, because Orthodox Jews consider their religious tradition to be an overarching worldview, they consider the question of how religious and worldly knowledge should interact to be profoundly significant. Since the critical question that I am addressing here is how religious communities integrate religious and scientific worldviews, this difference in approach makes the Orthodox viewpoint more appropriate for my analysis.

One of the most influential attempts to reconcile scientific knowledge with traditional Jewish forms of knowledge is the *Torah im derekh eretz* ("Torah with culture") movement, led by Rabbi Samson Rafael Hirsch in late nineteenth-century Germany. As described by Norman Lamm, "the encounter of Torah and Wisdom as formulated by Hirsch is pleasant, harmonious, and creative. The secular studies help us to understand Torah more deeply, even as the Torah tells us how to contemplate nature and listen to history."[48] It is important to note from this description that unlike much of Jewish tradition, Hirsch believed that this cultural knowledge, *derekh eretz*, could be a way to better understand God.[49] In many ways, this approach is quite similar to how Quakers approach knowledge of the natural world. Hirsch opened elementary and high

[47] W. Gunther Plaut, *Judaism and the Scientific Spirit,* (New York: Union of American Hebrew Congregations, 1962), 9-10.
[48] Lamm, 112.
[49] Roth, 63.

schools that reflected this philosophy, providing students with a mixture of traditional Jewish learning and modern knowledge.

While Hirsch was concerned with applying his philosophy to the community at large, another leader of the Jewish community, Rabbi Azriel Hildesheimer, opened a seminary in Berlin in 1872 to train leaders of the Jewish community under the *Torah im derekh eretz* philosophy. In some ways, this seminary is the most appropriate school to compare to Swarthmore. It was an advanced educational institution founded around the same time as Swarthmore, and it aimed to preserve Jewish religious tradition while also introducing elements of modernity. Hildesheimer's seminary was unique in that his students enrolled in the University of Berlin to receive a doctorate as well as rabbinical training. At the same time, it attempted to provide a traditional Jewish education.[50] Thus, Hildesheimer was clearly committed to blending Jewish scholarship with education in modern intellectual endeavors.

It has been suggested that the *Torah im derekh eretz* program was a response to the Reform movement more than it was a response to those who would ignore modernity altogether.[51] This suggests that the need to include modern knowledge was taken as a necessity among all but the most traditional members of the Jewish community in Germany; the distinctive feature was the desire to reconcile that modernization with Jewish tradition. Still, both Hirsch and Hildesheimer believed that *derekh eretz* had to be secondary to Torah. They differed in how they approached the mixing of the two, however. Hirsch believed that studying worldly knowledge for its own sake, and nature in particular, had value as a religious endeavor if it led to a greater appreciation of the

[50] Leiman, 207.
[51] Leiman, 204

beauty of God's work.[52] Hildesheimer seems to have believed that worldly knowledge was only worth studying where it could help Jews to better understand Torah in the modern world, although there is some scholarly debate on this point. A report where Hildesheimer details his goals for his yeshiva, written a few years after it was founded, provides interesting insight into Hildesheimer's views. As described by Lamm, this report suggested that the curriculum should include:

> German language; geography and history; enough mathematics, such as the Pythagorean theorem, to understand problems in Talmud; enough Latin to understand forign words derived from latin in Midrash and Talmud—and yet, in the same report, "in addition to this, science for its own sake: If one engages in such labors with a proper attitude toward religious research, it becomes at all times for Judaism an important contribution to spiritual life.[53]

Lamm contends that this implies an ambivalence as to whether *derekh eretz* has value of its own or whether it only has "instrumental value" in service of Torah. However, I interpret this to mean that for Hildesheimer, the study of science automatically has value of its own in service of Torah, even where other subjects may not. This would be in line with Hirsch's view of scientific knowledge, and would seem to be similar to Parrish's perspective as well.

Still, the *Torah im derekh eretz* approach has had many critics in the Jewish community. For one, Eastern European rabbis contended that Hirsch's program would not produce great Torah scholars because it did not focus entirely on traditional knowledge. Some were willing to accept it in a place where there was rampant assimilation, like Germany, but they considered it to be far from ideal.[54] Indeed, it has been suggested that Hirsch's goal was to create a community of observant Jews who were

[52] Roth, 64-65.
[53] Lamm, 116.
[54] Lamm, 117-118.

educated in both traditional and modern knowledge, a goal that seems somewhat similar to Parrish's goals for the Quaker community. Another potential problem is that Hirsch's philosophy allows for the possibility of leading students away from Judaism. However, as Roth describes it, Hirsch's supporters "are willing to take the risk that science and philosophy might be perceived, though erroneously, as antagonistic to religion and erode Jewish commitment."[55] Still, this is not a risk that all Orthodox Jews would be willing to support.

Another, more recent effort to combine traditional Jewish knowledge with worldly knowledge is the *Torah u-Madda* (Torah and worldly knowledge) philosophy demonstrated most prominently by Yeshiva University. While Yeshiva's philosophy was influenced by Hirsch, there are also important differences between the two philosophies. One work that reflects the approach towards scientific inquiry taken by the *Torah u-Madda* philosophy is an essay titled "The Lonely Man of Faith" by Rabbi Joseph Soloveitchik.[56] It should be noted that Soloveitchik did not explicitly set out to describe the approach of *Torah u-Madda* towards this question. Still, he was the head of Yeshiva's Talmud department for many decades, and therefore had a critical role in shaping its educational philosophy. Thus, it is reasonable for Roth to suggest that Soloveitchik's essay "is the most illuminating expression of the *Torah umadda* viewpoint."[57]

Soloveitchik suggests that human nature can be divided into two parts, Adam I and Adam II, based on the two Creation stories. Part of Adam I's nature, according to

[55] Roth, 5
[56] Joseph B. Soloveitchik, *The Lonely Man of Faith*. New York: Doubleday, 1992. (originally published in *Tradition*, summer 1965)
[57] Roth, 159.

Soloveitchik, is a desire to use scientific inquiry to understand the world so that he can have some control over it. Soloveitchik proposes that Adam I was created in God's image, and thus, based on Roth's interpretation, the work of Adam I is in accord with God's will. However, because Adam I's creative work is only serving the interests of himself and the community, and is not directly in the service of God, it is not a genuine religious experience. Adam II, on the other hand, is the part of humanity that submits to God's will through prayer and mitzvot. This activity is directly in response to God's will, and God is directly involved in this type of activity. Thus, it is a genuine religious experience.[58] This suggests that although scientific inquiry is distinctly not prohibited as long as it is not in conflict with Jewish teachings, it is not as valuable religiously as prayer.

Soloveitchik differs from Hirsch and from the Quakers, who suggest that attempting to understand the natural world through science is a religious experience in itself. Still, Lamm makes a point to emphasize in his work that that modern worldly knowledge can help contribute to a greater understanding of Torah. Unlike some in the Jewish community, proponents of *Torah u-Madda* do not suggest that scientific or other worldly knowledge should only be studied to help Jews earn a living.[59] However, after affirming that Madda must be taken seriously, he writes that "it is imperative that Torah be acknowledged as possessing central value and primacy over all else."[60] Thus, according to Lamm, it is necessary for Madda to be in the service of Torah when Orthodox Jews integrate the two types of knowledge into a single worldview.

[58] Roth, 59-63.
[59] Lamm, 203.
[60] Ibid., 202.

Comparison between Jewish and Quaker traditions

There are many interesting areas for comparison between the ways that Quakers approached modernity, and how they approached scientific knowledge of the natural world in particular, and how Orthodox Jews did so. The first important area is in the place of education in the two traditions. Both Jews and Quakers have traditionally valued at least a basic level of education for their children. The importance of education for all in the Quaker community is defended by Parrish in his *Essay*. It is well known that Jewish tradition also values education quite highly; Lamm describes it as "the pride of Jewry that its religion has obligated study for all its communicants, not reserving it for a special professional class of priests or scholars alone."[61] Thus, it has traditionally been considered an imperative for Jewish children to receive a basic Jewish education.

Still, scientific knowledge has not had the same role in the two traditions. For Quakers, studying nature is one of the best ways to have a religious experience. On the other hand, Jewish tradition favored the study of esoteric texts, something that Quaker tradition discounts. Despite this difference, there were movements in both traditions to enhance the level of education in the mid-nineteenth century. In the Jewish community, this involved a desire to join worldly knowledge, including science, with the text study emphasized by Jewish tradition. In the Quaker community, this meant an effort to move beyond simple knowledge of the world to include more esoteric knowledge, more book learning, than was traditionally valued in the Quaker community. Thus, these two communities moved from opposite ends of the educational spectrum to a more advanced level of educational achievement. This was necessary for the traditions to maintain relevance with the approach of modernity.

[61] Lamm, 202.

Another important similarity demonstrates how the movements to modernize the systems of education were brought about by cultural changes. In both the Jewish community and the Quaker community, these new institutions were founded was because children would otherwise go outside the faith to gain the modern knowledge that they desired. A desire to prevent this is clearly evident in the motivations of Haverford's founders, as described above, and was part of the motivation of Swarthmore's founders. It is also evident in the history of the *Torah im derekh eretz* movement, and even more so in the history of Yeshiva University. At its founding, the Etz Chaim Yeshiva that eventually developed into Yeshiva University was primarily an attempt to resist the strong forces of secularization in the New York Jewish community. It only included secular subjects as an afterthought, mostly to comply with state laws, and it was considered the most traditional of the yeshivas in New York, so the children there would have come from families that wanted to maintain Jewish tradition. Still, even there, the students were particularly excited about the secular subjects. Thus, the leaders of the Jewish community realized that it would be necessary to integrate secular subjects with traditional Jewish learning.[62]

Thus, because of the power of modernity, it was necessary for both Jews and Quakers to move beyond their traditional ideas of learning. If they did not do so, as Lamm warns in his book, they would be reduced to an irrelevant sect. However, if they allowed for too much modern influence, both of these small communities risked undermining their traditions completely. Thus, the movements described here represent attempts to avoid both of those unhappy outcomes, and instead to blend the demands of modernity with traditional intellectual approaches.

[62] Jeffrey Gurock, *The Men and Women of Yeshiva*. New York: Columbia University Press, 1988.

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