

SCIENCE AND THE AUGUSTANA SYNOD

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Several months ago Bernard Erling asked if I would be willing to lead an interest group on the subject of science in the Augustana Synod. I had not thought a great deal about this topic, and said that I did not feel qualified for such an assignment. However, he had planted a seed, and I did start to think about the subject. He didn't take no as a final answer, I wavered, and finally agreed to give it a try. So, here we are!

I have been exploring the relationship(s) between science and religion in a general and somewhat philosophical way for the last twenty years. The current task calls for a specific time period and a particular religious group, and thus it gives me an example on which to apply some of my ideas. I would very much like you to listen for a little while, and then to comment and share your memories with me and the rest of the group.

We might approach this by asking and trying to answer a question, namely this. Which of the following models best fit the way in which science and religion were seen in The Augustana Synod?

1. Conflict
2. Strict separation
3. Dialog
4. Cooperation
5. Unity

It occurs to me that this is similar to asking which of the models best fits the relationship between neighbors in a town (or perhaps adjacent farms). Do they fight, ignore each other, talk about things politely, work together on projects, or act as members of one important and cohesive family?

I propose to describe what I have found for four specific times spanning the 102 year history of the Synod. I will take the evidence I find about the relationship as it was manifest at Augustana College and Seminary to be representative of the synod as a whole. In a little book written by Carl Hemborg and published by the Augustana Book Concern in 1896, the author likens the Synod to the solar system, with the College and Seminary as the sun surrounded by orbiting planets. Mercury represents Chicago (Martin Luther College), Venus represents Wahoo (Luther Academy), Saint Peter (Gustavus Adolphus) is likened to Earth, Lindsberg (Bethany) is seen as Mars. He goes on to identify Moorhead (Hope Academy) as part of the asteroid belt, Jupiter as the Rocky and Allegeny mountains, and finally Saturn as the far off New York and San Francisco.

Since Hemborg was the pastor of First Swedish Lutheran Church in Moline, he may have been a bit prejudiced. These choices are not the only ones possible, but they are the best I can do

with the materials easily available to me. Briefly then, we will look at:

1. 1860 - the founding of the college and seminary (by Lars Esbjorn and a few other Scandinavian immigrants.)
2. 1890 - a generation later (my grandfather was halfway through his studies at Augustana College and Seminary)
3. 1920 - another generation later (my father was finishing his college degree at the college in preparation for a career as chemist and chemistry teacher)
4. 1960 - yet another generation later (I was in my second year of teaching chemistry along with a little math and physics at Augustana College in Rock Island).

1860

As we consider the beginnings of the Augustana Synod in 1860, the name of Lars Paul Esbjorn (LPE) comes to the fore. I'm sure that many of you know more about these beginnings than I do, but I will review briefly a bit of what I have come to know about Esbjorn and those early days, perhaps with a little different point of view.

In the years leading up to 1860, Esbjorn filled the Scandinavian professorship chair at the Illinois State University in Springfield, IL. Though that sounds rather impressive, we should note that this school was a small college and seminary founded by Lutherans in the midwest for the purpose of educating clergy, not the state University that we think of today. Though he went there in 1858 to teach theology (he thought), he was pressed into teaching science and mathematics, "because of his great knowledge in these matters." In an extended account titled Science at Augustana College and published in the Augustana Bulletin in August, 1922, Fritiof Fryxell reports that,

"Esbjorn was profoundly interested in all the sciences, particularly Astronomy, Physics, Chemistry, and Mathematics. He studied these subjects throughout his whole life and was, perhaps, more of a master in them than many who have made Science their whole life."

It is also mentioned in this publication that the Esbjorn family proudly preserved an enormous volume filled with hundreds of pages filled with scientific data and problems worked out carefully by Esbjorn.

Esbjorn resigned from the Illinois State University in 1860 and was subsequently instrumental in the founding of both the Augustana Synod and its institution of learning, the latter to be called the Augustana College and Theological Seminary. He was the first president of the school, then located in Chicago. In the constitution of the school, Article 3 calls for two departments, preparatory and theological. Instruction in the prep department was to have 4 fields,

of which the third was to be mathematics and fourth was to be the natural sciences. Clearly, even in the difficult frontier days, and in a nation about to become embroiled in its great Civil War, the importance of science for the education of the churches leadership was specifically acknowledged.

In his history of the college Conrad Bergendoff reports that even after Esbjorn returned to Sweden in 1862, he continued his interest in science, as well as in the church and school he had helped to found. In letters he urged his friend Norelius to try to interest Equador officials to locate an observatory on the Gallapagos islands, and mentioned his interest in Darwin's The Voyage of the Beagle and his desire to obtain a copy. (Darwin had published his Origin of Species in 1859).

Another letter to Norelius shows that Esbjorn had the principles of photography in his mind at the same time that Daguerre was working out his discoveries.

These bits of information may be taken to show that in 1860, in the minds of the/a leader of the fledgling church, science was known and respected. Rather than a very separate and unimportant aspect of thought and knowledge, science and religion were considered to be congenial and necessary for an educated clergy. As we now know, many changes of many kinds were about to confront society and the church!

1890

Now we move ahead a generation to 1890. My grandfather, Peter (Per) Martinson, who had come to this country in 1884, was now enrolled at Augustana College in preparation for a life in the ministry. He had first settled near Mead, Nebraska, where his brother had preceded him. After working as a farm hand, he had attended Luther Academy in Wahoo, perceived a call to the ministry, and was moving toward that goal. I am relying here on his memoirs which he wrote in his 75th year. The original notebooks and a typed transcription copy of these memoirs is deposited at the Swenson Immigration Center in Rock Island.

T. N. Hasselquist was president of the college when Peter started in 1889 and was succeeded on his death in 1891 by Olaf Olsson. A three year program had been outlined for Peter in which he aimed for a broad preparation before entering the seminary program. It seems that he was at times allowed to sign up for several courses that conflicted in time of offering, and then actually attend only some of the sessions of each class, while submitting all of the required work. The goal was to complete his college work in three years. He managed to do this, graduating along with eight classmates (one female) in 1892.

In terms of science, he mentions a mathematics course as his favorite subject. Rather than taking formal courses, he 'read up on' chemistry and physics during vacation periods and was tested by Vestling (in physics) and V. O. Peterson (in chemistry). At that time Williamson was the professor of astronomy and mathematics and J. A. Udden of biology and geology.

We might note that the major force in the development of a science curriculum previous to

these professors had been Josua Lindahl. He had joined the college in 1880 with an impressive scientific background. He had spent time with the Royal Zoological Museum in Stockholm and participating in expeditions in the Atlantic and Mediterranean with the Royal Society of London. He also had participated in a royal Academy expedition to Greenland, and on trips in Swedish waters for the study of invertebrates during his work for a doctorate at Lund. He also served as secretary for the Swedish Commission for the International Geographical Congress and Exposition in Paris in 1875 and for the World's Fair in Philadelphia in 1876. Conrad Bergendoff comments in his book, Augustana ... A Profession of Faith that Lindahl came to Augustana at just the right moment. His thorough European training in natural sciences put him far ahead of science teachers in many American colleges. The first mention of a "scientific course" occurred in the catalogue of 1879-1880. Lindahl was named by the governor of Illinois to be state geologist and curator of the state natural history museum in 1888. His place was filled by two men, J. A. Udden for natural history and geology, and J. Westland for physics and chemistry.

Although Peter Martinson and his fellows were not primarily devoted to scientific studies, they were exposed to a science faculty that was of unusually high quality for those times. In his accounts of the years 1875-1881 Bergendoff reports that the church followed with interest the increasing emphasis on science, and was less conservative than the faculty in the moves to reduce the classical courses to make room for science. From early days the college had included a museum of natural history, with first Lindahl and then Udden building an extensive collection.

As a side-light, Peter had earned a significant amount of money during his student days in Wahoo and Mead, NE selling copies of a Swedish language book of natural history titled JORD, HAF OCH HIMMEL. This is a volume with 810 pages of text together with many illustrations. While the book's scientific level may not have been high, the fact that he was able to sell copies to almost all the members of his congregation says something about the level of interest in the congregation and in his mind concerning the sciences of that day.

In 1891, President Olsson left a description of classrooms and departments at Augustana in a letter to Augustana, which Bergendoff quotes in his book. I will read several passages from that letter:

Adjoining it (the Christianity room) is the palace of mathematics and astronomy, a long deep and unpretentious palace indeed for so great a subject as mathematics, embracing all the external universe. Here with a small piece of chalk on a blackboard one can measure the depths of space and decipher the marvelous riddles which the immense universe of measurement has revealed to the thinking person. Here it is one can acquire a clear and sharp mind. Prof. Williamson reigns in this room, and you can be sure that he knows how to handle numbers, letters, figures and the most ingenious examples of this high art.

Next we come to a room where one searches for the innermost life - forces of all of nature. Here they have discovered the curious idea of letting visible creation provide a daily exposition of the secrets of its workshop by means of bottles, jugs, and all kinds of vessels. This knowledge they call chemistry, physics, and other names beyond our understanding. Prof. Peterson here displays

the laws of nature by reference to these bottles, jugs and vessels. What a remarkable life in this place!

Now we go up some stairs, and continuing in the kingdom of nature we pay a visit to another nature-king, Prof. Udden. You cry with astonishment when you come into this room. What kind of a kingdom is this? I see only shelves and tables, full of old, dried up bones and all kinds of funny diagrams on the black walls. Strange if there aren't ghosts in this room at night. You should go in sometime during a lecture. First one, then the other, student comes with one or more of the bones and utters some mysterious words. The teacher nods assent and the student goes back to his table with his bones, large or small. On the board the teacher may draw a picture of the whole of the inside of a human body or the body of an animal. We do have some idea what it is all about - we learn about the bodily aspect of God's creation. /sometimes all the students sit here peering into microscopes, discovering in the small particles of natural objects the form of the entire texture of matter.

This passage indicates that nature study was seen as a part of the role of the church in its educational mission, not as a separate, or conflicting area of study. Unity would be too strong a descriptor, cooperation might fit well!

In his memoirs, Peter Martinson mentions that he had a room next to that of A. J. (Ajax) Carlson, who later became a renowned professor of physiology at the University of Chicago. Carlson must have been enrolled as a new immigrant in the preparatory school. He initially studied for the Lutheran ministry but switched to biology: he received his PhD from Stanford in 1904. Bergendoff mentions Carlson as graduating in '98 and counts him as Augustana's most notable graduate in the sciences. When Augustana College was experiencing accreditation problems in the early 1930's because of its inadequate science facilities, Dr. Carlson wrote,

"I received my college biology training at Augustana over twenty-five years ago; their facilities were even more meager but we had an excellent instructor. It appears that I have suffered no handicap from that biology training."

In 1890 modern science was about to begin a period of rapid growth and astounding change that has continued to this day. The church and particularly its colleges were not only aware of these developments, but they were able and willing to participate in a small but active and cooperative way! A line in one of our treasured hymns might well be taken to characterize the church's attitude toward the science:

All thy works shall praise thy Name, in earth and sky and sea.

1920

Now let us move ahead another generation. Again we look at Augustana College as in some way representative as an indicator of the thinking in the Synod. At this point, my dad, Albert

“Josh” Eliason had returned to the college after serving in the army, along with many others. He would graduate mid-year and be counted in the class of ‘21. The student body at that point was much changed and much more diverse than that of 30 years previous. Though the college was still considered a vital part of the larger church and still had many pre-seminary students, there were now many heading to more secular careers. Dad was one of these; his major was chemistry and he subsequently worked for the city of Moline in a health department laboratory, got a masters degree in chemistry from the University of Chicago, worked for a time for US Steel, and then became a professor at Concordia college where he stayed until retirement in 1962.

Bergendoff reports that “The mood of the nation after the coming of peace was one of uncertainty and frustration.” At the college and seminary things were changing and about to change. Science and the Augustana Synod were both involved in and feeling the need for these changes. Emblematic of this were the wishes and pressing needs for facilities.

Students were coming from different origins; fewer immigrants, more high school grads with many fewer needing the Academy for entrance, more entrants from the community, more students heading for non-church careers.

Support from the synod as a whole was under question, since other of the synod’s colleges (Gustavus, Bethany, Upsala) enjoyed only conference support and did not appreciate the idea that Augustana was the preferred central institution of higher education. The move to establish separate buildings for the seminary began in 1920, leading to the complex on Zion Hill. The dedication for these in 1923 was a very significant step. The ongoing pressures for separation of college and seminary administration did not succeed until 1948!

The changes in knowledge and emphasis science in general during the period since 1890 were tremendous. We might consider just a few of these:

1. Though the concept of atoms had been long used, the nature of electrons, a nucleus, neutrons, radioactivity, atomic structure, chemical bonds were being developed. Chemistry and physics were rapidly moving from description to explanation in terms of detailed but unseen structures and particles.
2. Though Mendel had conducted and recorded his famous experiments with peas and genes in the 1860's, they were only rediscovered by de Vries in 1900, with great significance for biology. The theory of evolution had become an ongoing source of controversy.
3. The practice of medicine was becoming much more “scientific”. Aspirin was ‘discovered’ in 1899. Physiology, medications, genetics and eugenics, ...etc. were leading to an expectation of a much more rational and informed treatment of disease and illness.
4. Einstein had developed his theory(s) of relativity, which greatly altered ideas concerning the universe and how it might be understood.

5. The place of science in society was increasing in importance. Applications and inventions were transforming expectations. Automobiles, radios, airplanes, farm machinery, manufacturing processes, explosives were having great impacts on the way people lived and thought.

At Augustana College, the sciences were represented by J. P. Magnusson (who had held the chair in chemistry and physics since 1907) and Hal Yingling (who held the chair in biology and geology starting in 1919). They were aided by a number of assistants: Fritiof Fryxell was one of these while still a student (he graduated in 1922, and returned to teach biology and geology in 1923.)

Karl Larson was the instructor in natural sciences in the academy from 1917. It is interesting to note that the natural sciences were divided from the chair in mathematics in 1881, and split into two chairs; one biology and geology, and the other chemistry and physics in 1888. This arrangement had persisted until the 1920s and the need for revision was strongly felt, by many. A great need for facility change and improvement for the sciences was not met until the mid-30's when Wallberg hall was built.

In his conclusion, Fryxell writes:

“That science must continue to occupy the role of a major branch of study at our institution - which position it has finally acquired after so many years of struggle and discouragement - should not longer be a debatable position. Fortunately indeed, there are few today who question the place of Science in the curriculum of a church school such as Augustana. Those who would have a liberal education today must possess as much of an understanding of Nature and the laws through which she operates as of History and the Languages. ... With the twentieth century and its complexities has come this added responsibility to Augustana: she must provide a Christian education not only to those who are to enter the ministry, but to those who are to serve in the capacity of teachers, doctors, and business men as well.”

1960

Now let us go to fast-forward, skipping over the many developments in the preceding 40 years. A great depression, World War II and the Korean conflict, atom bombs, polio vaccines and antibiotics, the DNA double helix, radar, jet planes, television, sputnik and the early space exploration efforts ... all these and many more had brought profound changes to the world being served by the churches and education, the Augustana Synod and Augustana College, and to the world view of the population in general.

I came to Augustana College in the fall of 1958, fresh out of graduate school and hopefully ready to serve. Whether it should be the country, the church, students, my new and growing family, or God, was not entirely clear in my head! I had grown up in the Augustana Synod, been educated at Concordia College (Moorhead) and the University of Wisconsin. Though I had once had

thoughts of becoming a medical missionary, my interests, talents, and the pressures of the times had moved me into the rather abstract area of physical chemistry. It is from that viewpoint that I will attempt to describe what I saw and experienced concerning the Synod and Science.

I fully realize that the college was much less a representative of the Synod's aims and concerns that it had been in earlier times. The seminary and college had moved to become separate and independent arms of the church in 1948. The seminary remained imbedded in the area comprising the college, overlooking it from Zion hill. From my observation the interaction between the college and seminary was real, but not terribly strong. Students from the college and the seminary had relatively frequent and easy contact with one another, sem students sometime were employed as teachers or in other capacities by the college, and the faculties interacted in social, local church, and other venues. The impending merger to form the LCA resulted in some feeling of uncertainty concerning the future.

The place and role of the sciences in the college had been considerably enhanced since my Dad's days there, but there was a strong element of continuity. For example, Hal Yingling was still teaching in the biology department, Fritiof Fryxell was retired but still active in the geology museum and departments, and Karl Larson continued to experiment with a wide variety of projects in the basement labs in Wallberg Hall. Karl was of great help to me as I began my responsibilities teaching labs. The facilities I found were better than I might have expected, and the programs in chemistry and geology quite outstanding for a small mid-western liberal arts college.

Particularly in the post WWII years, science had become a national priority, with education aimed at recruiting and training the best and brightest for the hard sciences. The National Science Foundation began to have an influence in the early 1950's. I was among the first to have his graduate training financed by the NSF, and felt some obligation as the result of that. Early in my time at Augustana, the possibility of obtaining NSF grants became a viable option, and one of my first extra-teaching assignments was to prepare a matching grant for chemistry equipment. I well recall going to talk about the grant with Dr. Bergendoff, and being surprised by his endorsement and recommendation that we go for bigger and more expensive equipment than we had dared to suggest. The era of much increased government financial support for colleges such as Augustana was just beginning, with implications for the bonds between Synod and the College.

1960 was the Centennial Year for both the College and the Synod. Among the festivities in honor of the occasion were several public lectures, with the Science Division inviting Glenn Seaborg to give "its" lecture. I was impressed that the college could and would bring such a distinguished scientist to the campus. Seaborg had already had a most distinguished career, discovering and naming a number of elements, playing a leading role in the wartime development of the atomic bomb, and winning the Nobel Prize for chemistry in 1951. In 1960 he was chancellor of the University of California, and was to be named head of the Atomic Energy Commission by President Kennedy in 1961. I suppose that both his Swedish heritage and the fact that J. P. Magnusson's son, Lawrence ('41), had done graduate work with Seaborg and subsequently worked with him on the Manhattan Project during WWII had something to do with his willingness to come! Then and later, Seaborg remembered Augustana and its science programs as being significant. For

better, or for worse, Augustana had its ties with big science!

My first chemistry classes were surprisingly (to me) large and good. From my first graduating class (1959) six went on to get PhDs in chemistry, one an MD, one a DDS, Carter Lindberg went to the University of Chicago School of Theology and became a professor at the Boston School of Theology, and Ken Stenman became an LCA minister after first completing an MS in chemistry at Stanford. Others went into teaching, industrial, and government jobs. Three were women, a bit unusual for the time. Fryxell's vision of the future, dating to the early '20s was holding up!

As a shining example of this, I want to point to a physics and math student, Dan Tsui, who graduated from Augustana in 1961, and shared the Nobel prize in 1998. I'll quote from the citation written and read by David Renneke (a Gustavus grad and currently head of the Augustana physics department) when Dan was awarded an honorary degree by Augustana last May.

In 1961 a young man who had spent his first 12 years on a farm in China, proudly walked across the stage at Augustana College to receive his bachelor's degree. In 1998 this same man, Daniel Tsui, walked across a stage in Stockholm, Sweden to receive the highest honor in scientific research - the Nobel prize in Physics.

...

Prof Tsui was born in the remote village of Henan, China. At the age of 12, he was sent by his parents to live with his two older sisters in Hong Kong and study at the Pui Ching Middle School. He did very well in this school and passed the Chinese High School Certification Examination with a distinguished record. Although he had good teachers in mathematics and chemistry, the school did not have a physics teacher.

...

In 1958 Dan came to Augustana, which offered him a full scholarship. He double majored in physics and mathematics. He took heavy loads, studied hard, did extremely well and was able to graduate in three years.

Dan distinguished himself not only in the classroom but also in the social life of the campus community. By his senior year he was well-known and a popular guy on campus. By campus-wide ballot, he was elected "Mr. Friendship" at the college's annual Friendship Fair. This fair was a fund raiser held in the old gym each spring to provide a scholarship of foreign study.

Motivated by a sense of common ground with the other international students and a desire to serve, Dan was an active participant in the fellowship and service initiatives of the Cosmopolitan Club, the Lutheran Student Association, and the Society for Christian Missions. Thomas Benson, a classmate and close friend, recalls that scripture and music were staples in his spiritual life, and if you sat next to him in the daily chapel services, you heard a remarkably fine tenor voice.

Renneke goes on to describe Tsui's further education and career, but for our purposes, this much of the account is sufficient to indicate something about the role of the college, and by extension the Synod, in providing leaders for the church and for society.

My Conclusions

Throughout the Augustana Century science and religion were viewed as a whole by the Synod and its educational leadership. They saw the whole creation as coming from **God**: it was **Good**, its study and use were important. We were to use the powers of our intellects, as well as our muscles, to both glorify and serve Him and His purposes.

Thus it was seen as entirely right and proper that the Synod, through its educational institutions, should include and support science and its study as vital components of the curriculum. Over the years as both science and the Synod, as well as the American society grew, developed, and changed, the emphasis shifted from educating the clergy to educating a lay leadership as well.

Though all might not have agreed, my conclusion is that the Unity model comes closest to describing the relation between science and religion in the Augustana Synod.

This is one aspect of our heritage which we should cherish and seek to preserve. The late John Mangum stated very clearly why the church needs to be involved with scientific and technological matters: "Today's churches have no other place to fulfill their mission than a world whose basic assumptions are pervaded more and more by science." This quotation is taken from a letter I received just a few weeks ago seeking support for the ELCA Alliance for Faith, Science, & Technology. It seems a shame that we may be losing, or even to have lost, an understanding of the essential connections between our church and the world it serves.

SOURCES

1. Conrad Bergendoff, *Augustana ... A Profession of Faith* Augustana College Library Rock Island, IL 1969
2. Fritiof Fryxell, *Science at Augustana College* in the **Augustana Bulletin, Series XVII, Number 4**, August 1922
3. Carl A. Hemborg, *Ord, Verk och Hvila*, Lutheran Augustana Book Concern, Rock Island, IL 1896
4. Peter Martinson, unpublished memoirs, on deposit at the Swenson Swedish Immigration Research Center at Augustana College, Box 175, Rock Island IL

5. Henry Davenport Northrop, *Jord, Haf och Himmel*, Waverly Publishing Company, Chicago, IL Entered in the Office of the Librarian of Congress in 1890
6. Hymn 131, *Service Book and Hymnal of the Lutheran Church in America*, published by The Augustana Book Concern and others, 1958