St. Louis University

The Air Force arranged for me to receive a year of training in meteorology at St. Louis University after leaving Officer Training School. There were about a half-dozen universities around the United States where prospective weather forecasters were sent to learn about the weather. I was never sure why I was assigned to St. Louis University, but I think it was because students were assigned to the school closest to the city where they entered the Air Force.

St. Louis University was unique because it was a private, Jesuit school--the others were all state schools. I often joke with my friends about having attended a Catholic university by saying that I'm a Jesuit. Most people are puzzled by this comment because they either don't know what a Jesuit is, or they think it's strange that, being raised a Baptist, I would make such a claim.

Actually, one isn't a Jesuit just because he received a bachelor's degree from a Catholic university. He must be ordained by the Catholic Church and complete a full regimen of instruction. A Jesuit is a member of The Society of Jesus, one of the Catholic societies.

Catholics are identified by the society or order that ordained them, like the Franciscans, Benedictines, etc. Jesuits tend to be more academically oriented than the other societies and orders and more liberal theologically and politically. Orders like the Franciscans are historically known for spreading Catholicism into foreign cultures. For example, the series of missions along the coast of California established by Junipero Serra in the 1800s are Franciscan.

The Air Force didn't care whether I received a degree from St. Louis University or not, they just wanted me to obtain a year of training in meteorology. But, I figured if I was going to invest a year of my life at a University, I would be advised to obtain a degree as well. The school said if I were to take three courses in theology and social studies in addition to the meteorology courses, they would award me a bachelor's degree in meteorology. They required me to take Catholic History, the Philosophy and Theology of Thomas Aquinas, and Ethics. All three courses were heavily informed by Catholic thinking, which I didn't particularly

enjoy at the time, being a conscientious Baptist, but found later to be very useful for understanding Catholics and world religions in general.

Two of my courses were taught by Jesuit priests who were involved in implementing many of the Vatican II encyclicals. Vatican II was a directive published by the Council of Cardinals and approved by the Pope. It authorized major liberalizations to church functions such as holding mass in the local vernacular, such as English, rather than Latin; more participation by the laity in the liturgy, such as the guitar mass; and the adoption of "scientific explanations" for life, such as the theory of evolution. One of my professors used Teihard de Jardin's book, *The Phenomenon of Man*, as a textbook for his philosophy class. Teilhard de Jardin was the current leading thinker for the liberal Catholic view of evolution. Being exposed to the "inside view" of Catholic thinking on evolution became useful years later when I became an active creationist. St. Louis University was one of the leading Catholic schools in the United States to implement the new liberal Vatican II directive.

The meteorology classes at St. Louis university were the same as any you might receive from a State school. They contained no theological content and the only evidence they were taught on a religious college was that the professors were Catholic and there was a crucifix in every room. One of the professors offered prayer on the first day of class, but he was ridiculed by so many of my classmates that he never tried again.

Classes didn't formally begin until September of 1966, but my class of about 30 students was assigned a rather tedious project to work on for the month of August--draw a detailed contour map of the entire United States. Colonel Linn Irish, our instructor, was a retired Air Force officer who had served in both WWII and Korea. He taught our classes in Synoptic Meteorology and Forecasting at St. Louis University from an old-school perspective. There were three fundamental principles he insisted all his students learn and practice:

(1) **Know the local topography**--to this end he had us draw a contour map of the United States with elevation contours shown at 100-foot intervals. This was easy for the eastern US, but the mountains in the West took a lot of time to draw. He wanted us to know where the terrain changed rapidly because when the wind

blows uphill it produces clouds and precipitation and downhill clear skies and dry conditions.

(2) **Memorize the three-letter codes for all primary weather stations in the US**--there are over 200 primary weather stations and have codes based somewhat logically on the name of the city where a weather station is located, e.g., STL for St. Louis, DEN for Denver, LAX for Los Angeles, etc.

(3) **Plot and analyze all weather data by hand**--Colonel Irish had us learn to translate surface and upper-air weather data from coded teletype messages and, using a sharpened #2 pencil, print temperature, dew point, pressure, pressure tendency, cloud cover, visibility, precipitation, wind speed, and wind direction in a very prescribed manner on maps with locations of the weather stations preprinted on them. We were graded by how legible our printed data were and if it fit under a dime on the map!

But, we weren't done yet. We then had to draw isolines for each type of data to prepare forecasts for weather ahead. We started with archived data and slowly graduated to current weather data. At the beginning of the year we transcribed and analyzed the data and formulated the forecasts so slowly that our weather predictions were older than the actual weather. We eventually increased our decoding, plotting, and analyzing skills to the point that we could make forecasts at least for the day ahead, rather than the day past!

Forecasters today seldom, if ever, decode, plot, and analyze weather data. It's all done by computers! A forecaster now simply decides which of several computer models provides the best guidance and tailors his forecast for one type of user. In the '80s the weather service experienced a period when the accuracy of weather forecasts declined. During the transition from hand analysis to computers-generated forecasts several problems developed.

One reason was that younger forecasters blindly accepted computer forecasts without adjustment or application to the local environment. I've told my students that an old farmer who knows the local terrain and is trained in meteorology makes the best forecaster. He understands how to use his knowledge of the local weather by watching the clouds, wind, and barometer with tools like weather radars,

satellites, and computer models to make the best forecasts. He can combine data from local, regional, and global sources.

But, I digress. Back to our weather class at St. Louis University. Colonel Irish graded our forecasts by comparing them against the change in actual weather and persistence. That is, our forecasts were compared to the future weather normalized by a forecast of no change. For example, when we prepared temperature forecasts we would be awarded points for how many degrees the temperature changed and how close our forecast was to the actual temperature. The more change that occurred and the closer our forecast was to the actual temperature, the more points we were awarded.

To make a conservative forecast of temperature change, we would forecast a small change, or if we wanted to be more aggressive, we would forecast a large change. When the actual weather changed a lot and we accurately forecast a large change, we received a larger score.

Scores were calculated not only for temperature, but for numerous other weather elements like pressure, wind speed, wind direction, cloud cover, and precipitation. The grade for our forecasting class was partially based on these scores. All forecasters, whether working for the government or private companies, are evaluated on their forecasting skill. Salary and promotions are sometimes based on these scores.

All this training in weather forecasting was to prepare us to brief Air Force pilots about the weather at a departure base, the arrival terminal, and conditions enroute. It always amused me that because aviation is inherently risky, the name "terminal forecast" for the destination seemed a bit macabre.

Although, my meteorology training in forecasting has been extremely valuable, I never actually served as a forecaster during active duty in the Air Force. Due to my strong physics background, my assignment was changed following graduation to an applied research division within the Air Weather Service.

Because I elected to earn a second bachelor’s degree in Professional Meteorology while at St. Louis University I attended the graduation ceremonies on the last Friday and Saturday of May in 1967. It was the most colorful graduation

I've ever experienced. Catholics know how to conduct ceremonies. On Friday evening, the night before the awarding of degrees, a Baccalaureate service was held on campus. Religious ceremonies dedicating graduates for service to God are becoming less common today, even in religious colleges and universities. This service was memorable because it took place in the beautiful university cathedral, was conducted in Latin, and was initiated by some of the most glorious music I've ever heard. A group of priests sang a series of Gregorian chants at the front of the church, out of sight behind the alter. Their voices rang through the cathedral, echoing off the stone walls with a clarity and beauty that still runs chills up and down my spine. The only other time I've heard music similar was at Symphony Hall in San Diego when the Canadian Brass introduced their program by playing horns from the wings and at the back of the auditorium.

The main ceremony for graduation was held in downtown St. Louis at Kiehl Auditorium because of the large size of the graduating class. An indoor venue is typical for graduations in St. Louis because of the probability of rain in the Spring. The auditorium was filled with over 10,000 faculty, students, parents, and loved ones.

On the stage at the front of the auditorium, where the orchestra would normally sit, were the Archbishop of St. Louis, the President and Academic Dean of the University, about 100 Department Chairs, and a portion of the faculty. With few exceptions, the entire company on stage was dressed in brilliant red robes and tall, pointed caps, signifying they were members of the Society of Jesus.

Graduating students were seated on the main floor wearing black robes, mortar boards, and brilliant red hoods that matched the robes of the Jesuits onstage. The pomp and circumstance of Catholic graduations compare closely to celebrations at the Vatican in Rome or Buckingham Palace in London.

Although I was part of the graduating class of 1967, I decided to sit out the actual ceremony and watch from afar. All the red gowns, incense, and chanting was a bit disturbing for my Baptist sensitivities. I observed the ceremony among the parents and friends in the back of the auditorium and received my diploma as a professional meteorologist through the mail.