

## ESSAY 20 : Methodology and Scholarship to Graduate Level

The methods of learning that I use originate in Grammar School days at Pontardawe, when the day was divided up into lessons in as many as fifteen different subjects covering the arts and science. Some teachers at the school used the method of dictation, so the class was expected to write to dictation. I am not sure whether this is the best method but I was certainly a servant in those days, there was no choice with examinations looming. There were up to about forty five written examinations each school year, a set of examinations each term. Most of the real learning work was done after school hours at home on the smallholding of Pant y Bedw. This consisted of problem solving in the sciences and learning by heart in the arts from a set of notes or occasionally from course books. The school finished at ten minutes to four in the afternoon, and it took an hour to get home. At about six p.m. I retired to a small room of the small stone house of Pant y Bedw to work out problems for the next day. Often I would finish about 1.00 a.m. the next morning, and start the day at 7.00 a.m. This is because the smallholding was remote from the school, which started at ten minutes to nine a.m. Even before that time the school children who arrived early were used as unpaid manual labour, moving four hundred chairs into the school hall for assembly. By the time I was about twelve years old I found that I could memorize many pages of notes. The system used for arts examinations was therefore to begin preparation a few weeks beforehand, and optimize the memorizing to the night before the examination by going through the notes many times. During the examination itself the notes were poured out on to paper and the day after they were forgotten, dumped out of my mind. I usually chose the easiest question first. In languages reams of Latin and French declension were similarly processed. In the sciences it was part memory part problem solving.

By the time I was about fourteen or fifteen this method has been honed to perfection, so I was number one in the class for essentially the entire time up to O levels. I was intensely but very carefully proud of this because otherwise I would just have been a farm servant destined for some menial boredom such as factory work. The method gradually led to real understanding in subjects such as geometry and algebra, but in other subjects such as history or literature there was little depth of understanding, merely a good memory. The understanding in those subjects developed much later. However I had a tremendous and instinctive desire to learn and get away from the life of my immediate ancestors as recorded in the family history, one of illiteracy and hard labour. So at the school there was an almost inhuman load of work if one did it all. The great majority did not and literally took to alcohol at an early age. I have an intense dislike of alcoholism and smoking because of those early lives they ruined. After a while I was expected to excel, and to be the inevitable number one. This was not a pleasant state of affairs, because youthful adolescent envy could erupt at any moment. The culture of the school was the wasteful rugby culture where hard training was offset by controlled violence on the field and drinking off the field. That is fine in a primitive tribal environment, but not a Grammar School. I could take care of myself, but I was at the Grammar School for learning.

At advanced level, from age 16 to 18, problem solving became more important because the subjects were specialized into chemistry, physics, pure and applied mathematics, and pure mathematics. Learning by heart was still used up to the A level examinations in the summer of 1968. The worst type of examinations were the practical examinations in physics and chemistry, where things could go wrong no matter how thorough the preparation. The mathematics examinations were razor edged, either you solved the problems in the time allotted or did not. In the A level chemistry examination in 1968 for example the whole class was thrown into it unprepared, because of an unforgivable mix up in the syllabus. The school

never admitted to this and no attempt was made at grade adjustment. Fortunately I did well enough from the theory examinations to attain a B grade (the next best to the A grade I wanted out of pure pride). That was my first experience of how a system of education could fail drastically, and my first experience of an educational cover up.

A level was a very awkward time because I was expected, as a servant of the system, to go to Cambridge. This ludicrous idea was resisted until I finally managed to get out of the school and qualify for a place at Aberystwyth. The latter was chosen purely at random because it was not too far away and because it was within Welsh speaking Wales. I had also been on holiday there and it seemed not too bad. My father had purchased Pant y Bedw but did not quite know why, I was a farm servant there from the age of about seven, but it was never economical. So by the time I was eleven or so I was expected to leave home. However, I had to remain there to stay at school. My father was very proud of those school reports each term, but did not know anything about the school. Knowing the family history now I can understand this attitude because my immediate ancestors were all farm servants, all starting at the age of about seven or so. This does not mean that I did not like being a farm servant, but that was the predestined life that I was so keen to avoid. Having arrived at Aberystwyth the somewhat damp reality of the place was such that it made me concentrate more than ever on academic achievement. If there is one thing I remember about undergraduate Aberystwyth it is damp accommodation saturated by sea air, and cold hard seats in ancient lecture theatres. There was certainly no purpose in being at Aberystwyth if one did not work, or took to drink. Fortunately I regard alcohol as being a toxic chemical tasting like bitter cabbage water. As it turned out, Aber was not a Welsh speaking College at all. The lectures were of poor quality so it took hours in the library to make them into notes. These notes were carefully gone through for weeks before a looming examination until they were honed by heart and poured out on paper. This worked particularly well for chemistry in the third year, when I began to have a deeper understanding of the subject than ever before. Combined with continuous assessment in practical examinations, the method led, so I was told, to the best undergraduate degree in the history of the Edward Davies Chemical Laboratories, if not the whole College, and the top first. That enabled me to proceed to the relative freedom of graduate studies with a Dr. Samuel Williams studentship. Earlier, the method has led to a Amethews Prize for the best first year results. That envelope came as a total surprise to me in Pant y Bedw on vacation. Vacation actually consisted of work in a factory, work which made me study even harder.

At last, in graduate studies, there appeared a freedom to think, and the burning desire to pass examination with a flying leap was replaced by a burning desire to produce high quality scientific papers. The notes system that I developed then is still used now, and there are over a thousand notes collected on [www.aias.us](http://www.aias.us). They are the end product of striving for understanding. Now I know that the lecturers of the ECDL did not really understand much of the subject themselves, and were probably bored with the life they had to lead, a life of towing the line in a small town environment. That is why their lectures were so monotonous and insipid with memorable exceptions. It is only the restless striving of the human mind that leads to learning.

