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Dr. A. Cuthbert Webber

[0:00:00]

Dr. Webber:

G Cuthbert Webber, the Department of Mathematics, came to the University of Delaware in 1937. And at that time the university was quite small. It was composed of two colleges, one for men and one for women. They were -- we had coordinate education, no not co-education.

As a matter of fact in the early days it was not permissible for women to be in the same classes as men. Later on that ruling was changed so that in the upper years we could have co-educational classes.

But in the early days of course what that meant was that sometimes you would give a course let's say, differential equations and you'd give it to a group of 8 to 10 people in the men's college and you might give it to a group of two or three people in the women's college. Naturally this was anything but efficient.

The -- as I said, the colleges quite small, in those days -- well, usually the classes in the men's college would vary 20, 25 was considered large class in mathematics anyway. It was easier to handle those classes in those days than it is to handle the larger classes today.

In that period the instructor could figure on teaching roughly 15 hours situation which occurs is considerably different from that which pertains today. In our department it was quite usual for most members of the department to teach at 8:00 O'clock in the morning and do that six days per week.

In addition to our regular classes, certainly at the freshmen and sophomore level, we could expect to give informal discussion periods with smaller groups, four or five, six times a week. As a result of all of these of course it was -- that took most of the time and it was very difficult for any person to do much research at least during the academic year. If you did any, you had to do it on weekends and evenings and of course there's certain amount of time during the summer.

And it might be interesting to attempt to compare students of an earlier with students today. I doubt that there is ever been a time when we haven't had students who are interested, students who wouldn't work and therefore, didn't do well.

I think in all likelihood there is a greater – there's more of that today than there was previously. At least if you – if you can find your thought to academic matters. That is to the interest in and the amount of time spent on academic matters.

It's been my experience in the last few years that I've had much more difficulty getting work out of students even groups of mathematics majors where you would expect them to be interested in the area.

Now, in a class today, we will have students who are just as interested and work just as hard as we did years ago. But there seems to be a greater group of those individuals who don't seem to care. And therefore, you can't get much out of them.

I'd like to comment on one other matter here. I had an experience this past year which bothered me very much. It was a cheating case. And it involved – it was – it – the class – it pertains to a group of math majors, roughly 25, 28 people in the class.

[0:05:08]

I'm afraid that the situation there were at least a dozen 14 people involved in the situation.

Now, I had felt that since these are mathematics majors, I could trust them. It was a relatively small group. The idea was that there are certain kind of examination technique in the past that seemed to work very well. This time, no. The thing just seems to blow apart.

I didn't realize until the time of the final examination that something was going on that it shouldn't have been going on. The thing that surprised me here as much as anything was what came out when we talk with the students. They just seem to feel on a listen. I just felt that I have to get away with anything I can possibly get away with; just due to the pressures they're on me in this day – in this day and age.

That to my way of thing is one is indicative of a great change. We've always had cheating cases. We have then in the early days of course but it just seemed that the atmosphere in this instance was more – I don't know what to say. There was something there that I had never seen before.

To discuss another aspect of things, we might think about what the town and the university were like when I came here in 1937, of course the

town was small, much smaller than it is today. And particularly – in particular, the town itself didn't have the housing development surrounding it than it does have today. But if we think in terms of the – of the college itself, not only was the college is small in numbers but as I have – as I have said to some folks in recent years, if we compare what it is today with what it was then, it really was almost the co-college in those days.

And I don't – I don't – I don't mean by that that it was – that is a primary interest was agricultural – was agriculture in nature. Of course we did have the school of agriculture but that has always been small, relative to the institution as a whole. But I'm thinking more in terms of – in terms of the fact that it wasn't very outgoing. It didn't have a – it didn't have a real – a really up and coming atmosphere about it.

Now, it wasn't too long before that started to change. I really believe that was – it was – it had started to change prior to the time I came here. And that change continued right up until World War II. Of course during the World War II period let's leave that out because – because it was a different kind of institution during those days.

Immediately after the Second World War, not only did we have the influx of veterans but we had a total change in the atmosphere of the institution. It just seemed as if at that particular time somebody, some group of people said, let's go, let's really make this institution into something. And in a matter of three or four years the impact of that kind of thinking was very, very evident.

Prior to the Second World War, we had relatively little graduate, certainly in our department and I believe this is true in most. I can recall giving a graduate course for two students prior to the Second World War; we didn't have any more students to put in the classes in those days.

Now, by 1949, 1950 we used to have – let's say 5 to 10 people in the classes where we had just two people prior to the war.

[0:10:09]

So we were beginning to move by that particular time. And of course that movement has continued until we see what we have today.

I mentioned the war period just a moment ago, relative to that period, let's say 1942 roughly, fall of 1942 by which time we have very few civilians at least among the men. Military I should say the government

organized a program which is called ASTP program. And they sent here as well as other institutions a group of – a group of boys; our group came primarily from New York City. And these were chaps who were either ready for induction into the service or very close to it. I just forgot the age limits. I'm too old now. These sent them here for training. Academic training, yes. We gave them work in mathematics and they were given some work in the sciences, English and so on and so forth.

And as I recall it, they were here for some three or four quarters because in those days – during that period, during the war period, we didn't work on the semester basis, we work rather on the quarter basis and we were really going 12 months a year, with no more than a week between quarters.

These individuals of course this was a totally different situation. There were many amusing circumstances here to these chaps who just come out in New York City and some have come to town with wide brim, they had some bells hanging down and so on and so forth. And they were immediately put in charge with military personnel so you can imagine what the first – that first thing the military people did with these fellows was to get rid of that garb.

And as a matter of fact they really had to get rid of a lot of thinking which went along with that particular garb. We have some discipline problems during those days, yes. At least some members of the faculty did. I can say for myself though I really enjoyed the period. But a little later, they – the military service sent in people from – who'd been overseas. Who spent considerable time overseas. And this was the ASTRP group. And this continued up until 1944, late 1944 as I recall it, just about the time of the Normandy Invasion.

As I stated earlier that in the early days, the university consisted of two parts, the men's college and the women's college. They're under the same Board of Governors, the same board – the same trustees I should say. They had common president. Each college had a dean.

And for this reason that is for the reasons of administrative detail, it was called "Coordinate education" around that co-education. It – as I mentioned earlier some of the very small classes that we had – well, for example we had a not Math Department now but let's talk Biology for a moment.

There was a Department of Biology in the men's college and a separate Department of Biology in the Women's college the same was true in

Chemistry. Mathematics was a bit different so we won't go into that. But there was a duplication of services here. You had all the laboratories for each of the two colleges. The students could not use the same laboratories.

It was realized over the years that this was probably not the best set up, certainly not the most efficient set up. And when the time seemed right, a suggestion was made that the two colleges amalgamated and that we become a university in fact as well as the name.

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And I can recall faculty meetings of all roughly 1944 when these matters were discussed and it was eventually decided to recommend to the Board that this be done. The Board eventually passed the resolution which would amalgamate the two colleges. And I believe it was in the fall of 1945 that this amalgamation actually took effect.

To my way of thinking, there's no question but I thought it was a very good move, yes, there were something that were lost. There'd been certain traditions for instance associated with the women's college, associated with the women in the women's college really, which became somewhat inappropriate. When the two – when we had two co-education and it wasn't just the – it wasn't a matter of anybody saying to the women now, look those particular traditions don't fit any more, they realized in a very short period of time that they didn't. And consequentially there were changes.

Some people have felt of course that the elimination of some of these traditions was a backward step. I suppose actually when any step is taken, there are always some good things; there are always some bad things. And one has to try to figure out which outweighs the other.

To my way of thinking the pluses are on the side of amalgamation rather than keeping the separate colleges. As far as the Mathematics Department itself is concerned, when I came here there were some five or six members of the department. Carl Ruiz *[phonetic]* **[0:17:24]** was chairman. He'd been chairman some two or three years at that time. I don't think it was much of any longer than that.

The department didn't grow very much at all between then and the Second World War. During that – during the Second World War there were some members of the department who left for service. And during the time we use two or three people who are here temporarily.

After the war, Carl Ruiz *[phonetic]* **[0:18:05]** made a studied attempt to improve the department. Improve the offerings of the department. And the membership of the faculty, he was able to do this. He introduced statistics primary at the graduate level in those days and certainly by 1949, '50 I suppose, we were giving some Masters Degrees in Statistics as well as Masters Degrees in Mathematics.

The department went ahead. When I became chairman in 1950, I don't recall how many members there were in the department. We were housed in Haldane Hall *[phonetic]* **[0:18:56]**. And it's interesting to note that I as department chairman shared an office with Ted Parker *[phonetic]* **[0:19:02]** who is chairman of the Department of Sociology. This is not – it's not very easy to administer a department from an office which you chair with another – a department chairman which you share with another department chairman but we seem to get along quite well.

We moved over to Wolf Hall about 1952 and we shared – we had quarters in that building until the – until our own building as the math-physics building was built in 1963. Yeah, 1963.

Of course the biggest change here would be in the fact that we end to offer more and more graduate work. Certainly our offerings at the undergraduate level increased, improved.

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They increased both in the stand point of quantity and the stand point of quality and the stand point of debts. Our graduate work of course was going ahead, was building up. In those days we were in the early days, we were not thinking in terms of developing graduate work in mathematics, I'm sorry, developing in Ph.D. program in mathematics at all. We were thinking in terms of giving a high quality Masters Degree and I believe we did.

We required a thesis of each and every student and that thesis were had to be substantial. We were not accepting what like to be called a descriptive thesis. We expected the student to do something in mathematics. Sometimes it contained original work. Sometimes the amount of originality was not too great but there had to be something there.

Of course as time went on it became evident that we needed to develop a Ph.D. program. There were several departments on the campus where

which were giving the Ph.D. work. Some of those as a matter of fact the early ones were Science Department, Chemistry and Chemical Engineering in particular.

And in order to develop a mathematics program satisfactorily, both for undergraduates and for graduates. And remember here when I say graduates, I'm talking about not only people who are graduate students in mathematics but also graduate students in other area be they physics or chemical engineering or electrical engineering or something of that nature, the areas where they need mathematics training at the graduate level.

It became evident that we need to go and that we needed to move into a Ph.D. program. Of course that was not done until the early 1960s, I supposed actually the program didn't really get underway until about 1965 by which time where I made the chairman of the department. And he moved that Ph.D. program ahead considerably.

We've now reach the point where we're giving anywhere from two to three or four Ph.D.s a year. And some of those Ph.D.s have been substantial.

If one might ask the question, as to whether or not mathematics has changed over the years? Well, I supposed you could tackle this from either on the two stand points. Mathematics changes in that certain areas in a given period of time are dominant. If not dominant at least are major.

For example, in the 1920s geometry was very was a major area of mathematics in this country. By the early '30s there's a change. It just seemed as though workers in the field, researchers had gone as far as they could in geometry, using the tools that were then available.

In the early '30s we saw anthropology come in to vogue. We won't worry about what anthropology is but let us say that at least some of it grew out off, replaced some of the geometry that I talked about a moment ago.

Now, in the last 10 to 15 years we've really seen a up surgery or resurgence of geometry to a certain extent. It never it has not become as major an area as it was back in the 1920s, no. But what has happened here seems to be that the work which has been done in certain other areas, let's say anthropology, analysis or even algebra.

Since the '20s that the work that has been done in these other areas, has produced tools, which individuals which researchers can then have then brought the bear on certain areas of geometry and accordingly they have made more progress.

[0:25:17]

They have made some progress in the area of geometry in the last while. Of course here I've been talking about research. I've been talking about areas in mathematics. And actually you might think about something else that is what has happened in the teaching of mathematics.

Well, how about phrasing it this way. I was an undergraduate at the University of British-Columbia and I went there in 1927. And during that first year, I took a course in calculus, a one semester course.

Now, this was really my semester year in college. Let's not go into the details of why it was, why I seemed to have skip the freshmen but it was due to the type of the educational system that I was brought up in.

My sophomore year, yes, if I said semester a moment ago I meant year. But that calculus course was just a one semester course. And oh my, it was so weak. We wouldn't even consider using that particular book at the high school level, much less the college level today.

In my junior year, I took my first course in calculus. And again, I took it out of a book that we wouldn't consider using today. It's so outdated. Outdated, it was really companion to problems almost rather than a well-developed course in calculus. Now, think about what we do today.

We expect an incoming mathematics major, physics major or engineer to start out with a full blooded course in calculus at the beginning of his freshmen year. Now, not only has that course been moved forward but also the course it's more difficult, yes, we go in greater depth. We really try to do more with it today in the sense that we try to teach concept rather than merely teaching problems as we so often did in the early days.

And by the way, I mentioned that I didn't get a course, a really full blooded course in calculus until my junior year. This wasn't just something that was due to the particular institution that I attended. This was rather usual in those days. As a matter of fact the University of British-Colombia had for those days a very good program, a program of very high level.

Of course in the early days I was a research mathematician. After receiving my Ph.D. from the University of Chicago, I spent two years as national research fellow and that meant what it said, only research, very simple. One year at Brown, one year at the University of Pennsylvania. And of course as a result of that work turned out a few papers which have been published in professional journal.

For the last several years some 13, well, really 15 or 16, I've been more involved in teacher education than I have in actual mathematics research. It started way back in roughly 1955 when we realized that we had to give a particular kind of course, mathematics course for elementary school, for students at the college who were getting ready to teach at the elementary school level.

And merely because there wasn't anyone else to do it, I took it on. And of course by 1958, John Brown joined the faculty and the two of us carried on. That program of course has gone ahead to great extent. In the early days these courses were entirely voluntary. Now, of course we are requiring three mathematics courses, three one semester courses in mathematics of all undergraduates who are preparing to teach elementary school.

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And work in recent years has had to do with these courses such as the writing of text books, collaborated with Dr. Brown on the text which we use for two of those three courses and as a matter of fact for part of the third one. A little later, we did a little bit of television work putting on tape, television tape certain courses for teachers in service. And book grew out of that because there wasn't any available that we could use as the basis for that tape. We had to write our own course. And actually had that book published at the later stage.

So my work in recent years has had to do more with that sort of thing, more with writing and publishing than it has with research as such. And the one rather interesting thing that comes out of working with teacher groups or working with education as such, I have just found that youngsters can do far more than we really believe they can, far more than we have let ourselves to believe in that past few years or at least the past few decades.

What might be the future of education at the...

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