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A Critical Examination of Enrolment Forecasts and Fiscal Projections in the Worth Report

Concerns

There are seven major chapters in *A Choice of Futures*: (1) Tomorrow: Future-Forecasts, (2) A Sense of Direction, (3) Structure, (4) Process, (5) Planning, (6) Resources, and (7) Next Steps. In the study of this Report, it is difficult to discover adequate relationships of the various parts to one another even as it is difficult to discover concrete research evidence for forecasts, estimates and projections. However, the forecasts on future expenditures are obviously meant to relate to the forecasts in earlier chapters dealing with aspects of the future and in particular, the population and enrolment forecasts.

These forecasts were largely derived from a compilation of data synthesized earlier by Seastone. In the preface of his study, Seastone writes: "Thus, the study should be regarded as a compilation of available data and analyses, and extensions of these data where necessary, according to a set of assumptions and analyses that reflect my judgment about probable future patterns of behaviour".¹

As one examines the enrolment projections of the Seastone study, it becomes apparent that he was compiling data supplied by the Department of Education, the Colleges Commission, and the Universities Commission and that he had several misgivings about the optimistic projections in these reports. However, these misgivings are presented primarily in the footnotes. In the main, it appears that his report is indeed "a compilation of available data" much of which appears to have been prepared by people unduly influenced by the "growth complex" of the fifties and sixties. In short, past experience and extrapolation had been used to prepare the forecasts.

On page 275, Worth states: "The forecasts of future expenditures that follow are based on the foreground of this report and the background of past experience". Then, as he moves forward in this chapter six,

¹Don Seastone, *Economic and Demographic Futures in Education Alberta 1970-2005* (Edmonton: Human Resources Research Council and Commission on Educational Planning, 1971). p. vi

he ceases to use the word "forecasts" and increasingly uses the term "projections". It is the contention of this author that forecasts are an inadequate base for projections and, more specifically, that dubious forecasts produce uncertain fiscal projections. The extrapolation of past experience can also be a real hindrance in dealing with a future new set of conditions.

Projected Enrolments

On page 68 the Report states "Basic education should continue to consist of 12 years of schooling. Beginning at six years of age, completion of this phase of education would then coincide with attainment of the age of majority. The projected total enrolments for 1975, 1980, and 1990 are: 431,500, 414,500 and 513,500. By contrast, the enrolment in basic education in 1970 was 423,964." How reasonable are these projections, especially for 1975 and 1980?

School enrolments are a function of the number of live births, net migration, admissions policies, program offered, school retention rates, and promotion policies. Presently, not all of these factors influence equally. In making projections of school enrolments, it is important to identify the factor or factors most likely to produce change in the future.

Under *The School Act* of Alberta "every child who has attained the age of six years at school opening date, and who has not attained the age of 16 years" is expected to attend school. Retention rates have risen steadily so that Grade XII enrolments are now about 95 per cent of the corresponding Grade I class enrolments. Generally, promotion policies are such that most children on the average spend 12 years in the basic education program.

Currently, in Alberta pupil immigration only slightly exceeds emigration. Figures based on the monthly reports of the Family Allowance Division of the Department of National Health and Welfare indicate that the Province now gains less than 25 pupils on an average monthly basis. Immigration is no longer a significant factor in increasing enrolments in Alberta. Emigration is tending to cancel out the reducing immigration.

The significant factor determining basic school enrolments is the number of live births that took place over the period six to eighteen years earlier. Because of such factors as death, special infirmities, attendance at private schools etc., the total above when compared to the actual public school enrolment approximates the ratio 1.03 to 1 in recent years. Thus, by totalling the number of live births for the twelve most relevant years for any academic year, it is proposed that realistic projections of school enrolments can be made. A high degree of accuracy can be projected to 1978 for the children who will be in school; they are already born.

If the assumption is made of an increase in the birthrate of 1000 per year after 1972, approximate projections after 1978 can also be made. This has been done in Table I which indicates an enrolment projection of 408,970 for 1975 and 375,000 for 1980. The Table indicates that the peak year for Alberta enrolments in basic education was 1971-72. Thereafter, the declining birth rates since 1960 produce much lower enrolments than those projected in the *Report* i.e. lower than 431,500 in 1975 and 414,500 in 1980.

On Page 84, the Report estimates full-time university enrolments for the university system as 35,000 in 1975 and 50,000 in 1980. The estimates for colleges and institutes are 25,000 in 1975 and 33,000 in 1980. It should be emphasized that these are *full-time* enrolment projections.

Alberta university enrolments reached a peak of nearly 29,000 in 1970-71, declined in 1971-72 to 28,634 and declined further in 1972-73

TABLE I
CUMULATIVE LIVE BIRTHS BY
RELEVANT TWELVE-YEAR PERIODS RELATED TO
ALBERTA SCHOOL ENROLMENTS ACTUAL AND PROJECTED

Significant Twelve-Year Period	Total ¹ Live Births	Academic Year	School ² Enrolments	Ratio of Births to Enrolments
1944-1955	316,195	1961-62	307,702	1.03
1945-1956	331,774	1962-63	322,227	1.03
1946-1957	347,553	1963-64	336,652	1.03
1947-1958	362,211	1964-65	350,906	1.03
1948-1959	375,660	1965-66	362,158	1.04
1949-1960	390,594	1966-67	372,893	1.05
1950-1961	404,573	1967-68	385,972	1.05
1951-1962	417,752	1968-69	401,587	1.04
1952-1963	429,216	1969-70	413,719	1.04
1953-1964	436,280	1970-71	423,964	1.03
1954-1965	437,568			
1955-1966	434,567	1971-72	424,825	1.03
1956-1967	430,901	1972-73	421,910	1.03
1957-1968	426,099	1973-74	418,350	1.03
1958-1969	421,236	1974-75	413,690	1.03
1959-1970	416,338	1975-76	408,970	1.03
1960-1971	410,324	1976-77	404,210	1.03
		1977-78	398,373	1.03
1961-1972	401,300	1978-79	390,000	1.03
1962-1973	393,400	1979-80	382,000	1.03
1963-1974	386,600	1980-81	375,000	1.03
1964-1975	381,100	1981-82	370,000	1.03

¹Figures are obtained by totalling the twelve years of Alberta live births as reported by the Dominion Bureau of Statistics (#84-201). Beyond 1972, live births are projected to increase by 1,000 in each year to 1975. Based on current trends, this could be high.

²School enrolments for 1971-72 to 1981-82 have been calculated on the assumption of a 1.03 ratio of live births to enrolments, assuming present school patterns.

to a preliminary figure of 27,500. With the competition from the recently established network of colleges in Alberta, it appears to many, that in the decade ahead the rate of university growth will be relatively low. The enrolment shift toward non-university post-secondary institutions will absorb the growth in the age group 18-24 in this decade. Studies by the author suggest that the growth in university enrolments will parallel the growth in the projected total Alberta population, that is, about 2 per cent annually. Therefore, the enrolments in universities are projected to be 30,000 in 1975 and 34,000 in 1980, or 5,000 and 16,000 less than Worth estimates.

On page 84, the Worth Report states that full-time college level enrolments reached 16,500 in 1970-71. Even though this figure is defined to include colleges, technical institutes and other non-university enrolments, it is too high, for it apparently includes part-time student enrolments which have been converted to full-time equivalents. Consequently, the estimates of 25,000 in 1975 and 33,000 in 1980 are deemed to be too high for full-time enrolments.

For some years, enrolment figures from the college system have reported total enrolments to include both full-time and part-time enrolments. In the public colleges, students taking fewer than four full courses are converted to *full-time equivalents* by dividing the total number of courses taken by these part-time students by five. Both colleges and technical institutes serve large numbers of part-time students, many of whom attend for relatively short periods of the academic year. This pattern is increasing.

Here the Worth Report has provided inflated full-time enrolments due to duplication and lack of definition. In making fiscal projections, part-time students must not be confused with full-time students as has been done in Table 8. Table 10 of the Report presents estimates of operating expenditures based on projected enrolments of part-time students.

In the decade ahead, Alberta participation rates based on ages 18-24 for full-time students are projected to increase from 17 percent in 1970 to 21 percent in 1975 to 24 percent in 1980. On this basis, the total *full-time* enrolments in both the college and university systems are estimated at 50,000 in 1975 and 65,000 in 1980. This is considerably lower than the 60,000 and 83,000 given in the Worth report on page 84 for full-time enrolments in higher education institutions.

Projected Operating Expenditures

On page 275, the Report declares: "Expenditures are classified as being either operating or capital. Operating expenditures . . . are derived by calculating the product of projected operating expenditures per student, for a given educational level, by the anticipated student enrolment of the same year. It is assumed that future operating expenditures per student, regardless of educational level, will increase by 5.5 percent due

to price and salary increases, and that attempts to improve the quality of education will require an additional 2.5 percent increase each year until 1980."

This approach is acceptable and the assumptions about increases are reasonable as long as inflation and salary increases are the continuing pattern of the decade. However, it should be pointed out that there are real pressures from the present government to hold the escalation of costs to below the 8 percent level projected in the Report. However, on the assumption that the public is willing and able to accept the annual increase of 8 percent, and using the revised enrolment projections, the operating expenditures become very much less as is shown in Table II. Of course, if the annual rate of increase were held to 6 or 7 percent the total costs would be further reduced.

For the public schools, the Report states on page 277: "In 1968-69, the average per student operating expenditure in basic education was about \$650. This amount includes outlays by both provincial grants and supplementary requisitions. Assuming \$650 is an adequate bench-mark, future per student expenditures are expected to increase from \$1,125 in 1975 to \$1,665 in 1980." These figures have been used in Table II.

TABLE II

Actual and estimated operating expenditures for full-time schooling in schools and universities for selected years.

Academic Year	School Enrolment	Per Student Expenditure	Total Operating Expenditure	Worth Report Estimate
1970-71	423,964	\$ 795	\$336,895,350	
1975-76	409,000	\$1,125	\$460,125,000	\$485,438,000
1980-81	375,000	\$1,665	\$624,375,000	\$690,143,000
	UNIVERSITY ENROLMENT			
1970-71	28,991	\$3,325	\$ 96,401,000	
1975-76	30,000	\$4,885	\$146,550,000	\$178,150,000
1980-81	34,000	\$7,180	\$244,120,000	\$377,000,000

Figures for 1970-71 are actual figures, but figures for other years are projections or estimates based on the assumption of an annual increase of 8 per cent in the rate of expenditures. Projections for enrolments are low or minimum projections.

Projected Capital Expenditures

Because the Report overestimates enrolment forecasts, the estimates given in Table 9 for capital expenditures are deemed to be very high —

over 78 million in 1975 and almost 126 million in 1980 for formal schooling.

If enrolments in the area of basic education are decreasing in the decade ahead, and if university enrolments are levelling, capital expenditures in these two areas should change dramatically from record highs of previous decades. Alberta is fortunate to have built so many new schools in recent years. These will serve the needs of decreasing enrolments in the seventies. Outside of transportation equipment and school debenture payments, very much less money should be required for new buildings for basic education.

During the decade of the sixties, the Province invested \$255,236,000 in capital expenditures for universities. Splendid facilities have been provided for the three universities. Nearly all of this investment has been paid for except for dormitory and dining facilities financed at favourable rates under the National Housing Act. Generally, present university facilities are adequate for a considerable increase in enrolments as recent campus additions were built on projections yet to be reached. Thus, the estimated average annual capital expenditures are deemed to be unduly high for both 1975 and 1980. Further studies beyond the limits of this article are required to clarify these concerns. However, extrapolation techniques are not suitable for determining costs for the decade ahead.

Conclusion

The Worth Report has provided unduly high projections for full-time student enrolments in Alberta. As a result, fiscal projections are much too high for both operating and capital expenditures. For 1980-81, in the area of operating expenditures alone, the error could be approaching 200 million dollars for only two sectors of education — basic and university education. If inflation and buoyant costs can be contained in the decade ahead, the gap will even be greater.

It is unfortunate that new political decision-makers have been provided with such inflated fiscal projections in this new decade of many economic concerns and priorities. It can only be recommended that the section on "Future Expenditures" on pages 275-284 in the Report be reviewed completely. The level of accuracy has been inhibited by basing fiscal projections on extrapolated and erroneous enrolment forecasts. This study has outlined a basis for calculating more realistic enrolments for the decade ahead.