Developing the Wyndham Scheme:
A Case Study of Geography Education in NSW, Australia

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Abstract

Most of us would believe that changes in education filter down from influential academics or at least professional educators who from lofty motives purvey improved remedies to forge educational progress. However, educational innovation is probably, more often than not, also the result of influences stemming from social, cultural and economic changes. Specifically this seems to have been the case with the Wyndham Scheme for education in Geography.

Rapid developments in Australian society during the first half of the twentieth century culminated in escalating retention rates for students in secondary and university education, and an explosion in the popularity of Geography as both a high school and university subject. This explosion was increasingly apparent in the decades of the 1950's and 1960's.

The increasing popular demand, in the state of New South Wales (NSW), for secondary and higher education also primed enrolments in Geography. This increasing demand arose from a rapidly growing population, professionalism in occupations, and a general prosperity across society, and these coupled with a high spirit in society for scientific pursuits, all helped growing enrolments generally in education, and specifically in geography education.

Quite an obvious break was made from the legacy within which Geography had traditionally been a humanity within the classical approach inherent in most of the geographical literature to that time. In this new unfolding context of the 50's and 60's Geography became more of a social scientific discipline emphasizing process and systems within scientific method. These innovations in Geography also facilitated its fit with the enquiry methods of the new educational thought of the post war era from 1945.

There is a dearth of papers which place the development of post-World War Two Geography education in Australia, and particularly in the state of New South Wales, in its social and cultural context. This paper attempts to fill that gap by showing that the post-war development of the Wyndham Scheme in NSW grew out of contemporary societal needs for a redirection and redesign of education in general, and in particular for the Geography syllabus. This new syllabus set the basis for a revitalized and growing popular pursuit of Geography, as a comprehensive science incorporating physical and social phenomena. This new pursuit of Geography was based upon the novel approach (at least in Australia) which emphasized learning through discovery, emphasizing the process of learning, through systems and typical examples, and not just acceptance and retention of facts and theories.

Introduction

While most geographers would at least agree that there is a need for studies in the development of their discipline, most efforts up to the 1970's amounted to little more than histories of geographers. Moreover, as Luckermann (1965) and Spate (1957) have previously emphasized, and as Powell (1980) has more recently argued for in the Australian context, these histories have paid little attention to the social and intellectual milieu in which major conceptual advances were born and matured. In short, we have been presented with statements of what a select few great men have said and this seems true of the reviews by James (1972) and Dickinson (1976), and is probably also true, despite the appeals to Humboldt and Hettner, of the massive work by Hartshorne (1939, 1960).

One might, therefore, be excused for approaching a topic such as a significant shift in a high school syllabus in the same light; that is, for seeing it simply as the seeping downwards of the ideas of great men or as the product of the decisive action of a few individuals. It is certainly tempting to view the innovations of the new Geography of the Wyndham Scheme in New South Wales in this manner, but closer inspection suggests that the roots of these changes can be traced back into, and emerge out of demographic, social and educational trends of the preceding decades.

This paper therefore attempts to highlight factors associated with the development of the Wyndham scheme for geographical education, with special focus on the Higher School Certificate Syllabus.

The development of secondary education, in general, and geographical education at secondary and university level are surveyed in an attempt to place the new secondary geography syllabus in the context of the time. Along with these factors, changes in the orientation of education in general, and specifically geographical education, are focused on. In addition, the essence of the new Geography, incorporating science-oriented and systems-based approaches is viewed as part of the changing scene in geographic pursuits.

Finally, the factors highlighted in the paper are brought together in an attempt to account for the development of the Wyndham Scheme for Geography, especially for fifth and sixth forms. This new system was a dramatic break from the “old approach” which largely emphasized content and factual learning. The new system was designed to be an education in the spirit of liberal arts, which emphasized learning through investigation and experimentation in an eclectic, comprehensive and holistic approach, often using models or systematic construction to understand the linkages and relationship among facts.

Growth and Development of School Education

Considerable growth of secondary education occurred in the early twentieth century, when public secondary education was formally undertaken by governments in their respective states (Connell, 1961, p. 18). Indeed, it is argued that secondary education in New South Wales passed through three phases that ran parallel with successive eras of changing public attitudes. During the first era, in the nineteenth century, a secondary education was, in general, the privilege of the social elite. In 1912, with the re-organization of secondary education, it became oriented to those who were academically gifted. After 1945, secondary education became broader and more accessible to all adolescents, irrespective of their interests, abilities or other prospects (Biddle, 1971, p. 125).

However, during the years intervening 1915 and 1945, enrolments in New South Wales secondary education rose at a faster pace than the increase in population, and by the latter date the enrolments had increased tenfold. The following table attests to this rapid increase.

Illustration 1
Enrolments in NSW State Secondary Schools

Year	Enrolments
1915	11,415
1925	40,169
1935	65,451
1945	86,492
1955	109,034

(Wyndham, 1957, p. 42)

Since the beginning of the second world war, the percentage of the nation's total population enrolled in secondary education over the whole of Australia rose from 3% to 3.8% an overall increase of 27% in approximately one generation up to 1961 (Connell, 1961, p. 19). Much of this increase was from the post-war baby boom and immigration which pressured the education infrastructure with increasing enrolments in education across the board. Wyndham has supplied data that show an incredible growth of enrolments and retention of students in New South Wales education over the forty years from 1915 to 1955.

Illustration 2
Enrolments in the First Post Primary Year in State Schools

Year	Last Primary Grade	First Post-Primary Grade	% Leaving After Primary
1915	30,741	6,202	80
1925	56,267	25,052	59
1935	55,218	32,572	41
1945	36,434	35,554	3
1955	42,572	43,570	-2*

* Anomaly possibly due to students repeating or immigration.

(Wyndham, 1957, p. 24)

Thus, the heavy increases in secondary education enrolments could not be accounted for by population growth alone. Indeed, increasing retention rates explain most of the rising enrolments. For instance, for New South Wales departmental secondary schools, the following figures are presented by Barcan (1965, p. 263): In 1948, 9.4% of the first year secondary school intake eventually reached the final high school year, and the same was true for 10% of the 1950 intake, 14% of the 1954 intake, and 17.2% of the 1956 intake.

Growth of Secondary Geographical Educational

Concurrent with the growth of enrolments in secondary education overall, was the growth of enrolments in secondary geographical education in particular. However, not only did enrolments grow proportionally with overall secondary education expansion, but Geography's popularity often outstripped the overall rate of secondary education growth. The following table from Barcan (1965, pp. 256-258) attests to the increasing popularity of Geography in the secondary school between 1946 and 1956 in New South Wales.

Illustration 3
Enrolments in Geography in NSW
Secondary Schools as % of Total enrolments

Year	School Level	
	Intermediate Certificate	Leaving Certificate
1946	37	33
1956	47	47

Such increases led to the comment that the tale of geographical education in New South Wales, after about 1950, was one of marked expansion (Dury, 1970, p. 121). However, as Dury emphasizes, this was not a tale of continuous expansion. Between about 1955 and 1961, under the old Leaving Certificate syllabus, the percentage ratio of Geography:English Leaving Certificate examination entrants actually declined, showing a decrease in the popularity of Geography among students.

In the first year of the Higher School Certificate examination of 1967, under the new Wyndham Scheme syllabus, 44.3% of this examination's English candidates also entered the Geography examination. In the next year, 1968, this same figure increased to the point that 46.3% of the Higher School Certificate English examination entrants also sat for the Higher School Certificate Geography examination (Dury, 1970, pp. 223-224). It began to be obvious that under the Wyndham scheme the decline in Geography's popularity with students was not only halted, but Geography actually began to increase in popularity. In terms of total enrolments in Geography, the period from 1967 to 1970 showed a mammoth increase of 92%, from 8,119 students to 15,588, clearly far outstripping any level of population increase from immigration and the post-war baby boom, and their concomitant school enrolments (Biddle, 1971, p. 133).

Here it must be noted that the increasing popularity of Geography was facilitated by the siphoning of students from other social science subjects, as the new Wyndham Geography was not only a regional or physical "science" as much of the "old" geography had been, but a comprehensive and integrated scientific approach to both physical and human (or cultural) Geography with broadened student appeal. For instance, by 1968, the percentage of Geography:Modern History Higher School Certificate examination entrants rose to 89.2%, and the Geography:combined History (including ancient and modern) percentage rose to 66% in that same year (Dury, 1970, pp. 223-224).

Clearly, geographical studies in the secondary school proved increasingly popular (see also Biddle, 1972, p. 106), but the reasons for this increase are by no means obvious without close inspection. On the contrary, as the following comment by Butts indicates, the expansion of geographical studies at that time was quite a feat:

> In my opinion the most urgent aspect of the imbalance ... is the widespread subordination of the social Sciences. The social sciences are considered to be inferior as intellectual disciplines to the languages, mathematics and science ... Therefore they may be studied by the less able students or as peripheral for the more able students (Butts, 1955, p. 37).

In the following sections of this paper, factors will be focused on which suggest reasons for this spectacular rise of geographical studies.

Development of University Geographical Education

The take-off for university Geography in Australia, it may be argued, began in 1945 when the first Chair of Geography in an Australian university was filled by Professor J. Macdonald Holmes (Dury, 1970, p. 225). However, before the development of university geographical studies is viewed, it is important to note the general development of the university system.

In 1945, there were only six universities in Australia, one in each capital city, and a University College at Armidale, in north east New South Wales. Over the following fifteen years, three new universities were founded and another university college (a branch campus of a large university) was established. By 1967, the number of universities had almost doubled with the founding of seven additional universities and another two university colleges. In this era, the number of undergraduate students in Australian universities or university colleges increased fivefold from 15,586 in 1945 to 133,126 in 1973 (Butland, 1968, p. 16; Scott, 1977, pp. 151-152). In New South Wales, university enrollments grew from 9,877 in 1950 to 13,743 in 1956 - a substantial average yearly increase of 4.7% (Barcan, 1965, p. 266).

This growth in the university system in Australia was accompanied by an even more substantial increase in the number of Departments of Geography. In 1946, the only such Department was at Sydney University. This lack of development of Geography as a university discipline, prior to this time, reflected the low priority and status of Geography in tertiary institutions (Butts, 1955, p. 37-1 Scott, 1977, pp. 152-154). However, successive expansion led to the establishment of seventeen Departments of Geography by 1971 across Australia (Spate and Jennings, 1972, pp. 114-115). The following table notes the establishment year of full Geography Departments in New South Wales Universities (including the Australian Capital Territory).

Illustration 4
Year of Establishment of Full
Department of Geography in NSW Universities*

University	Year
Sydney	1945
New England	1959
New South Wales	1962
Australia National	1963
Newcastle	1965
Macquarie	1967
Wollongong	1975

* Including A.C.T.

The number of teaching positions in Australian Departments of Geography grew spectacularly from 5 in 1946 to 115 in 1971 (Scott, 1977, p. 152). Likewise, the number of fulltime academic and research staff increased from 47 in 1959, and 76 in 1965, to 129 at the beginning of the 1965 academic year (Perry, 1965, p. 129).

Enrolments at Sydney University illustrate the spectacular rate of development of Geography as a discipline. In 1952, only 74 students were studying Geography at that University, but by 1964, 600 students were pursuing studies in Geography in that department - an incredible

average yearly increase in Geography enrolments over twelve years of just under 60% (Dury, 1970, p. 226).

Actually, the growth in Geography as a university discipline reflected the growing importance of Geography in secondary education, since the main function of these departments, at the time, was the training of Geography teachers for secondary schools (Scott, 1977, pp. 152-154).

To give a clearer picture of what led to these innovations, it would now be appropriate and helpful to place these developments in the context of their historical legacy.

A Historical View of Education in NSW

In the nineteenth century, secondary education was a privilege enjoyed only by the elite, and the criteria for selection was the ability and willingness of parents to pay fees (Wyndham, 1957, p. 20; Jones, 1974, p. 23). However, in the early twentieth century, Knibbs and Turner were able to write that:

> Secondary education is an indispensable feature of public education, and one which must not be neglected (quoted in Connell, 1961, p. 29).

In spite of such rhetoric, the response in numbers enrolled was not encouraging, so in 1912 secondary education was re-organized with scholarship as the basic factor for selection upward along the educational ladder (Barcan, 1976, p. 1). This reform laid the groundwork for secondary education to be entered through a high school entrance examination, and during a five year curriculum, the Intermediate Certificate was available after three years, and the terminal Leaving Certificate which could be used for university matriculation was attained after the fifth year (Wyndham, 1957, pp. 17-19).

After the First World War, there was a swelling interest in education, reflected by a marked growth in enrolments in post-secondary education. For instance, enrolments in the first post-primary year increased by 272% from 6,202 in 1915, to 23,052 in 1925 (Wyndham, 1957, pp. 24, 33). This interest was sparked by increasing social and industrial developments in Australia in general and in New South Wales in particular. Society began to expect more from life and saw education as a route to attaining a higher quality of life and level of professional success.

It was becoming increasingly apparent that, by the 1930s, public opinion was looking for educational reform to provide improved educational facilities and greater educational opportunity for youth. In spite of what was massive proportional growth in post-primary enrolments from 1915 to 1925, only 19.6% of pupils were enrolled in post-primary education in 1938 (Cunningham and Pratt, 1939; Jones, 1974, p. 24). Here it must be noted that the massive proportional growth reported by Wyndham (1957, p. 24) represents large percentage increases from only a small proportion of the total number of school age youngsters in the whole population in the years between 1915 and 1938. Indeed, even though approximately 50% of youngsters entered post primary education in 1938, the attrition rate in this level of education was quite high.

It may be argued that, by the end of the Second World War, the New South Wales education system confronted a crisis, due to an increasingly obsolete system, because structural changes necessary to introduce an improved system had not been instigated. This status quo prevailed until the late 1950's. That system, now obsolete, had been created in the early twentieth century and by the 1940's had lost many of its distinctive features. However, it was not until 1961 that legislation paved the way for a new system of secondary education (Barcan, 1965, p. 247).

The industrialization of Australia in the last hundred yeas and the concomitant need for a more highly educated population, coupled with the acceptance of the importance of an educated population in a democracy, led to a continued expansion in secondary education (Karmel, 1961, p. 25). After the Second World War, the community came to accept that all children should have the opportunity to progress to secondary education and this social demand, together with employment opportunities, brought about greatly increased rates of participation in secondary education (Jones, 1974, p. 26; Karmel, 1961, p. 25).

One of the most arresting features still prevalent after the Second World War was the rapid attrition from the school cohort as it passed through school. The table below documents this massive wastage from a typical cohort of students as they progressed through High School.

Illustration 5
Enrolments in Successive Years of NSW Secondary Schools

Year	Enrolment	Percent
1952	50,575	100
1953	42,225	83
1954	28,050	55
1955	9,730	19
1956	8,120	16

(Wyndham, 1957, p. 44)

However, in spite of this wastage, by 1957, more than 175,000 pupils were enrolled in secondary schools. This enrolment represented more than a tenfold increase in the secondary school population over a period of forty years. In 1956 there were 323 secondary schools maintained by the NSW Department of Education. These high schools offered five year programs leading to Intermediate and the terminal Leaving Certificates. All adolescents proceeded to secondary school and could sit for the internal Intermediate. The Leaving Certificate, an external examination, was becoming more popular, with enrolments on the increase (Wyndham, 1957, pp. 52-54).

The Wyndham Report of 1957 recommended comprehensive schooling, an additional sixth year, a core curriculum, and a substantial log of other recommendations (Wyndham, 1957; Jones, 1974, p. 51).

The Age of Transition and Expansion in Education

It has been argued that, by the end of the Second World War, education in New South Wales confronted expansion and transition at a rapid rate (Jones, 1974, p. 28; Barcan, 1973, p. 171;

Partridge, 1973, p. 88). And the context of this expansion and transition shows they were changes encouraged by many novel factors arising out of or encouraged by this mid-century worldwide conflict.

The raising of the minimum school leaving age and the abolition of external examinations at the end of primary school led to a great increase in the number and type of pupils in the secondary schools. In addition, the cut in 1949 in the number of subjects to be taken in the Leaving Certificate encouraged more specialization. A rapid rise in the birth rate after 1941 also produced increasing school enrolments, but the push for pupils to move smoothly along the educational ladder avoided bottlenecking (Barcan, 1976, p. 13).

The postwar period also saw a rise in the influence of progressive education - doctrines and ideals originating with John Dewey, the American philosopher and educational theorist, and exponent of education for democracy. Essential to his thought was child-centered and problem-solving education. Of course, Dewey's views about problem solving in education meshed neatly with the escalation of scientific endeavor and technologically oriented education in the 'fifties and 'sixties. In addition, Dewey was an exponent of equality between subjects. He repudiated any hierarchy of subjects, and argued for equality between sciences, classics, humanities and social sciences. The essential educational tenets of progressive education, as Cunningham and Ross (1967, pp. 83-103) record, included:

- The value of citizenship studies in a democratic society;
- Child centeredness;
- Internal flexible assessment.

The increasing retention rate in New South Wales secondary schools is substantiated by the following enrolments: 9.4% of the 1948 first year reached fifth year; 10% of the 1950 first year and 14% of the 1956 first year reached the fifth year. The reasons for this rising retention rate included the increased financial ability of parents to provide longer schooling as a result of prosperity. Employment demands were also changing as technological growth produced an increasing need for employees to have a more substantial educational background. Additionally, a new social class was emerging, the white-collar middle class. Access to this class lay through improved educational qualifications including at least a substantial amount of secondary schooling. The main employers of this class were the large industrial concerns, expanding public services, and large semi-government institutions.

By the mid 1950s, two processes were at work forging an educational revolution. The essence of it was that, for the first time in Australian history, education was becoming important for a very significant proportion of people and perhaps the majority of the population, as a means of access to vocational and social advancement. The educational revolution was marked by a great increase in the proportion of pupils seeking secondary education. A part of this revolution was a change in the curriculum, with a growing emphasis on scientific subjects and a greater variety of courses being available (Barcan, 1976, p. 18).

In 1953, Dr. Wyndham assumed the position of Director General of Education in New South Wales. He had been influenced by the theoretical and philosophical educational developments in America. His educational orientation was largely 'paedocentric' or child-centered, and he believed in an expanding educational enterprise within a democratic society (Wyndham, 1969).

This new leadership provided the opportunity to conduct an investigation into the secondary educational system in New South Wales. The terms of reference of the Committee, under Dr. Wyndham as Chairman, were (Wyndham, 1957, p. 9):

- To survey and report upon the provision of full-time day education for adolescents in New South Wales.
- In particular to examine the objectives, organization and the content of the courses provided for adolescent pupils in the public schools of the state, regard being given to requirements of a good general education and to the desirability of providing a variety of curriculum adequate to meet the varying aptitudes and abilities of the pupils concerned.

This Committee was required to make an assessment at a time when the numbers and variety of pupils in the secondary schools had multiplied (Barcan, 1976, pp. 18-19). The Committee summed up the central problem in secondary education in the following way:

> The most significant feature of this changing conception of secondary education has manifestly been the emergence of the view that secondary education is the education not of a select minority, whatever the basis of selection, either social or intellectual, but of all adolescents ...
>
> When secondary education was conceived as the education of an elite, almost the only point that should be at issue was the criterion upon which the elite should be selected. Organization, curriculum and method, all followed largely from that determination. To-day the issue is not so simple ... to provide suitable education not only for the "average" adolescent, but also, and on the same social and moral grounds, for the adolescent of talent and for the adolescent who is poorly endowed ... (Wyndham, 1957, p. 63).

Also the following recommendations were made after hearing evidence from many associations and individuals (Wyndham, 1957, p. 72):

1. On completion of the primary school course and, in general, about the age of twelve years, all pupils should proceed, without examination, to secondary education organized consistently with the recommendations which follow.

2. The Organization and curriculum of the high schools should be such as to provide a satisfactory education for all adolescents and should be designed to cover four years, to the age of about sixteen.

3. The curriculum should be designed to provide a core of subjects common to all schools, together with a progressive increase in the proportion of elected subjects. On this basis, the greater part of the curriculum for the first year should be allotted to the common core.

4. Under teacher guidance, election of subjects should progressively be made in the light of pupil achievement or potential.

5. On satisfactory completion of the four year course, a School Certificate should be issued on the basis of an external examination.

6. The examination should be designed as a terminal examination, and the certificate as a formal indication of the successful completion of a satisfactory course of secondary education.

7. No external examination should be held, nor any certificate of general status issued, before the end of the fourth secondary school year.

8. Pupils who wish to proceed beyond the School Certificate level, including those who aim to matriculate, should remain at school to follow a course, or courses, leading to a Higher School Certificate Examination. The type and content of this examination should be such as to make it acceptable as a test for university matriculation. The further course of study should be designed to cover two years.

Subsequent to meeting with various individuals and associations, the following program for the social sciences, with subjects designated as core and/or elective, emerged:

Illustration 6
Program of Social Sciences

Form 1	Core subject	An interdisciplinary social science course
Forms 2, 3, & 4	Core subjects	Geography
		History
		Interdisciplinary Social Studies
	Elective subjects	Asian Social Studies
		Commerce
		Geography
		History
Forms 5 & 6	Elective subjects	Economics
		Geography
		Ancient History
		Modern History

(Biddle, 1971, p. 126)

The Education Act of 1961 established the mechanism for implementation of the Wyndham Scheme. The Secondary Schools Board was to devise curricula preparing pupils for the School Certificate. Amongst the twenty members were three representatives from the universities; six from the New South Wales Department of Education (including the Director General and the Director of Secondary Education); two from Roman Catholic schools; two from other non-government schools; and four from the New South Wales Teachers' Federation. An important change was the added strength given to the Department and Federation; and the minor place given to universities.

The Board of Senior School Studies was also established to prepare curricula for pupils pursuing studies towards the Higher School Certificate. The Board consisted of nineteen persons, including seven representatives from universities; four from the New South Wales Department of Education (including the Director General); one from Roman Catholic

schools; one from other private schools; and three from the New South Wales Teachers' Federation. The university clout in this Board was maintained at a substantial level (Barcan, 1976, p. 28). This new system began to be phased in during 1962 when the students entering the first year of secondary school commenced studies in Form 1.

The Changing Scene of Geographical Education

The Geography course subsequent to the School Certificate was programmed to run over two years. The syllabus was formulated by a committee of twenty members, appointed by the Board of Senior School Studies, with voting powers evenly balanced between lecturers in tertiary institutions and practicing teachers. The membership of this Geography syllabus committee consisted of the following:

Illustration 7
Full Membership of the Geography Syllabus Committee
Appointed by board of Senior School Studies

Institution	# Members
University of Sydney	3
University of New England	3
University of New South Wales	2
Sydney Teachers' Association (teachers)	2
Teachers nominated by Director of Secondary Education	2
Catholic Schools	2
Headmasters' Conference (Private Schools)	1
Association of Headmistresses (Private Schools)	1
Department of Technical Education (Teachers)	1
Department of Education (Inspectors)	2
Teachers' College (Sydney)	1
Total	20

(Biddle, 1967, p. 46; 1972, p. 111; Deer, 1973, pp. 41-42)

Subsequently, the general aim of the syllabus in Geography for Forms 5 and 6 was stated as follows (Board of Senior School Studies, 1965, pp. 1, 9, 19):

> This syllabus assumes that the teaching of Geography in the senior secondary school will contribute to the student's general education ... Geography provides opportunities to develop understanding and skills which greatly enhance the student's value as a citizen. Emphasizing the inter-relationships of phenomena in space, studies in Geography not only counteract tendencies toward undue narrowness, but also counteract difficulties in maintaining perspective in relation to society as a whole. These studies help students to understand relationships within society in terms both of physical and social environments, and they supply a content of connected fact and principles which is interesting, significant and culturally valuable.

The object of this general aim is to indicate to the teacher that the Geography course is not only intended for students who expect to enter university, but also those who may regard the Higher School Certificate as the terminus of their formal education (Biddle, 1966, p. 1:2; Biddle, 1971, p. 130).

The specific aims which were formulated for the Geography of Forms 2, 3 and 4 were included in the syllabus for Forms 5 and 6. The three aims and their various components are outlined below (Board of Senior School Studies, 1965):

1. To establish comprehension of:
    a. Major patterns in the natural environment, with main emphasis on those patterns in which water is involved;
    b. Major patterns of agriculture, manufacturing and town development;
    c. Regional character.

These three components of the first aim closely parallel the subdivision of the syllabus into:

- Part A: Physical Geography
- Part B: Social and Economic Geography
- Part C: Regional Geography

2. To establish sensible and sympathetic attitudes toward geographical problems, whether those of the local area, the homeland, or other parts of the World.

3. To develop skills in observation and recording, and in the use of recorded material, in connection with:
    a. The employment of reference material;
    b. The use of technical vocabulary;
    c. Note making;
    d. Fieldwork;
    e. Reading and interpreting maps, photographs, graphs and other diagrams used to illustrate geographical phenomena;
    f. Measurement, analysis, and synthesis of geographical data;
    g. Presentation of records through maps, field sketches, diagrams and written reports.

The second aim directs attention to the place of Geography in establishing sensible and sympathetic attitudes towards problems of the local area, the homeland and other parts of the world. The third aim indicates the continuation and extension of skills already gained in the junior secondary school (Biddle, 1966, p. 1:3).

Various aims were include d for the different levels of geographical education (Board of Senior School Studies, 1965, pp. 2, 10, 20). First level students were expected to establish comprehension of:

> ... dynamic changes in the natural environment, problems of classification, and the geographical impact of government policies and of planning.

Along with comprehension of these matters, first level students were also expected to develop disciplined thinking associated with research and handling evidence in argument. In addition, the syllabus, for all levels, included in its basic aims, the establishment of understanding of the following three major concepts:

1. Natural and cultural features of the earth's surface reveal graded likenesses and differences.
2. Change in areal difference is transitional.
3. Alteration of areal characteristics is constantly occurring.

In the initial aim, the first of the concepts directs attention towards the importance of difference between the features and areas of the earth's surface and is intended to counteract a tendency for some teachers to accentuate similarities between geographical phenomena and avoid, or indeed even neglect, the differences. The second concept directs attention to the changes in the elements of the environment and in the total landscape which occur both within a region and along regional borders. The third concept focuses attention on the dynamic nature of geographical phenomena. At the second level, a fourth major concept was added:

4. Given points, in time reveal contrasting interaction of processes.

Also at the first level, a fifth major concept was added:

5. There is a trend towards relative equilibrium in the elements of the environment.

It is apparent that, in the programs for first and second level courses, there was an increasing focus upon the dynamic interaction of forces acting in systems over time to produce a landscape. The syllabus was organized along a systematic approach and thus gave teachers flexibility in selecting the particular conceptual networks within which to teach. This new focus was in contrast with the continental/ regional and areas approach of the previous Leaving Certificate syllabus (New South Wales Department of Education, 1961). The Wyndham Geography syllabus was largely the result of new influences of an arising emphasis on systematic Geography in the universities. The Wyndham Scheme of Geography in Forms 5 and 6 aimed not at world coverage, but for a more detailed study of selected areas. Indeed, the 'world vision' regional approach was no longer pursued. In the new syllabus, greater emphasis was placed on practicals and fieldwork. Additionally, a core area in Geography became common to all schools (Biddle, 1966, p. 1:4). This core included homeland Australia, Australasia, and South East Asia. Outside this, the teacher had relative freedom to choose area examples from other parts of the world.

The essential difference between the obsolete regional and newer systematic approach to geographical study was outlined in the preface of the syllabus (Board of Senior School Studies, 1965, pp. 1, 9, 19), as follows:

> Geographical study can include either numerous variables operating in specific areas (Special or Regional Geography), or a limited number of variables operating in the world area or part of it (General or Systematic Geography). Neither the regional nor the systematic approach is more essentially Geography than the other, but in order to reduce the content of the

> syllabus to manageable proportions, to permit certain types of study in depth, and to match the treatment of social and economic Geography, the treatment adopted here is largely systematic. Regional examples are, however, used throughout in illustration of general principles.

The three parts of the Geography syllabus were designed to mesh into a whole geographical point of view. Part A: Systematic Studies in Physical Geography, and Part B: Systematic Studies in Social and Economic Geography, supplied the generalizations about the natural and physical elements of the total environment. From this cohesive essence, regions were introduced to illustrate the systems in a 'real' way. In the physical strand, the water cycle was utilized as a unifying concept and stress was laid on the processes in this cycle as they affect landforms, soils, climate, vegetation, and land use (Tweedie, 1966b, p. 511; Board of Senior School Studies, 1965, pp. 1, 12, 25).

The following table (Board of Senior School Studies, 1965) indicates the syllabus suggestions for time to be allocated to the various strands of the syllabus. From these allocations, it is apparent that social/economic Geography took a large proportion of the total program, and, together with physical Geography, at least three quarters of the syllabus was directly systematic, with the remaining strand left to illustrate the generalizations through regional and area examples.

Illustration 8
Time Allocations in Higher School Certificate Geography Syllabus

Level	Strand	Focus	% Time
1	A	Physical Geography	30
	B	Social/Economic Geography	45
	C	Regional Geography	25
2	A	Physical Geography	30
	B	Social/Economic Geography	50
	C	Regional Geography	20
3	A	Physical Geography	35
	B	Social/Economic Geography	50
	C	Regional Geography	15

As a part of the practical component, students were expected to keep practical books. Although teachers had freedom in directing, and the setting out of these practical books, it was suggested that the following guidelines (Biddle, 1966, p. 1:14) be considered for incorporation into the program:

- A clear statement of the problem to be studied in the field;
- Cyclostyled notes from the teacher to guide the student's investigations;
- A record of data collected by students in their own notes;
- An essay, using the data in the field to suggest a solution or solutions to the problem

Students were required to sit for an essay-type examination. This type of examination was chosen because it permitted discussion of principles; interpretation and analysis of ideas; comparison of principles, propositions, ideas and landscape; and organization and interpretation of factual material. To ensure students viewed the course as a whole, questions

necessarily integrated the various facets of geographical study (Biddle, 1967, pp. 44-45; Biddle, 1968a).

Candidates were asked to answer five questions in three hours. The paper was divided into three sections: Part A: Physical Geography; Part B: Social and Economic Geography; and Part C: Regional Geography. Thus, the divisions of the syllabus were reflected. The candidate answered one question from Part A, two from Part B, one from Part C, and the fifth question from a selection of their choice (Deer, 1973, p. 43).

The changes in the NSW geography syllabus synchronized well with the changes in education thought and practice of the times in the United States. Dr. Wyndham had just returned from graduate school in the USA where he completed his PhD. He returned to Australia ready to implement ideas and practice gleaned from the cutting edge of North American educational innovation. Some of the basic tenets from which education was set to develop in NSW were:

1. Education was for democracy
2. The different disciplines or subjects in education were equal to one another
3. Problem solving was emphasized
4. Education was to be systematic and scientized
5. Discovery learning was to be through investigation and the use of typical examples
6. Education was to be child centered
7. Citizenship in a democratic society was to be emphasized
8. Assessment would tend to be internal, continuous and flexible

Overall Dr. Wyndham introduced educational innovation based on the developments he had accepted in the USA and integrated them into the context and legacy of the NSW educational endeavors. These reforms were based on progressive child-centered education in an expanding educational enterprise encouraging mass tertiary education (for those who wanted it) in a democratic society.

The Fundamental Essence of the New Syllabus

The emphasis in the new syllabus was one of an integrating science which acts as a link between physical and social worlds. In this way, Geography can concern itself with the interrelationships of the physical world and the interrelationships of the social world, plus the dynamic relationship between both physical and social worlds (Biddle, 1969, p. 1).

In this syllabus, four basic principles were integrated into a cohesive landscape orientation. These were defined as follows (UNESCO, 1965, p. 35):

1. Geography is concerned essentially with visible phenomena, and describes the earth's surface in its real aspects. It also deals with invisible factors (psychological, political, and religious) in so far as they account for visible facts.

2. Geography seeks to localize and delimit the phenomena, first because one of its tasks is to 'map' the world, and secondly because the analysis of location of phenomena reveals what problems have to be solved, and what are the factors that explain them.

3. Geography seeks to study with particular care the relations between phenomena, more especially phenomena of different orders. Without adopting an attitude either for or against determinism, it analyses the interplay of reciprocal influences exerted by natural conditions and by human groups.

4. Geography must be regarded as a science that is both contemporary and practical - an applied science.

These principles were incorporated into a systematic syllabus and became manifest in geographic knowledge through spatial and areal association, spatial and areal interaction, and areal integration and differentiation. The following table illustrates the relationships between various branches of knowledge, and Geography of a systematic orientation which highlights not only physical, biological and social environments, but also spatial association and interactions.

Illustration 9
Relationships in Systematic Geography

Physical Geography	**Human Geography**
Geomorphology	Medical Geography
Climatology	Geography of Races
Soils	Environmental Perception
Seas/Oceans	Economic Geography
Plants/Animals	Political Geography
	Social Geography
	Historical Geography
	Geography of Religions
	Geography of Languages
	Geography of Music/Art
Spatial Areal Association	
Spatial and Areal Interaction	
Areal Integration and Differentiation	
Regional Geography	

(Adapted from Biddle, 1971, p. 2)

Spatial association refers to the degree to which the distribution of phenomena in space is similar to the distribution of other phenomena. For instance, observed similarities in the distribution pattern of two features such as rainfall and relief, or steep slopes and soil depth, assist the geographer to direct his search for explanations. Spatial interaction can be described as the reciprocal effects of forces, objects and places on each other. A sea beach can be cited as a simple illustration of a zone of physical interaction between ocean water and beach deposits. Interaction between places implies mobility via communication and/or transportation. Areal integration and differentiation refer to the integration of phenomena within an area and the unique character of a geographic region when viewed as a totality. Thus, in a specific area, a peculiar combination of features making up the sum of that region, is highlighted (Biddle, 1969, p. 3). These various perspectives may be integrated into differing geographical orientations with alternative emphases.

In illustration of various emphases, the UNESCO Document (1965, p. 12) cites various orientations in Geography, but additionally argues that these perspectives may be reduced to three basic types, of which the first and second are rather broad, and the third more restrictive. The three basic perspectives are:

1. Geography as a synthesis;
2. Geography as a study of the spatial relations of phenomena;
3. Geography as the science of landscape.

Biddle (1969, pp. 1-13), on the other hand, states that the broad scope of Geography, and its approaches to knowledge, has led to a variety of views concerning its field of study. However, he breaks these views down into three major variations and they are:

1. The science of the earth's surface;
2. The study of relationships between man and his environment;
3. The study of location of phenomena on the earth's surface.

These three viewpoints are often regarded as landscape, ecological and locational schools (Haggett, 1965, pp. 1-13). The landscape approach to geographical study was used by the developers of the new Geography syllabus on the grounds that it was better to emphasize visible features of the earth's surface. In this approach, significant importance is placed on observational and inquiry learning, both through fieldwork and aerial photographs, maps, graphs and films. Obviously, students in such a syllabus have to develop skills in the use of these resources so they can utilize them as the need arises. This landscape orientation, including both natural and cultural elements of landscape, was meant to be a mechanism for bringing reality into the classroom (Biddle, 1969, pp. 3-4).

Instead of a new topic being introduced with some abstract thoughts, for instance, on climatology, the teacher described the landscape, the view or scenery which the student may be able to see from a suitable vantage point. For example, if an equatorial rainforest landscape was to be studied, illustrated descriptions of vegetation and animal life and/or village communities from selected areas could be used as a starting point. Only after students had obtained a clear visual impression of the landscape would the teacher analyze natural and cultural elements to ascertain why this landscape was present only on particular sections of the earth (Biddle, 1963).

This 'reality-based' landscape approach was congruent with educational developments associated with the thoughts of Bruner, an American cognitive psychologist who emphasized learning through seeing a picture or image, through doing, and through symbolic means, such as language (Klausmeier and Ripple, 1971, p. 416). He also argued for the importance of discovery in learning. Furthermore, he distinguished between two principal methods in teaching - the expository mode and the hypothetical mode. The former, which has previously dominated, places the teacher in the role of expositor of knowledge and the student in the role of recipient. The hypothetical mode, on the other hand, may be characterized as a learning situation where seeking, discovering, and re-organizing knowledge prevails. Students thus learn to make generalizations and develop their own conclusions (Williams and Connell, 1971, p. 170).

It is far more important to be able to observe and record facts accurately, to know how to use these facts, and to be able to judge whether other people have drawn reasonable conclusions from them, than it is to memorize 'typical' facts which become obsolete (Biddle, 1969, p. 7). Thus, emphasis in the new syllabus was placed on principles and recording and utilization of information for the solution of problems. In this syllabus therefore, a program requiring world coverage using regional examples and the study of continents, was viewed as inappropriate (Butland, 1968, p. 16).

In the senior high school, under the Wyndham scheme, systems theory was used as a way of organizing knowledge into comprehensible forms. A system may be defined as a set of inter related components, and models may be used to express systems in abstracted conceptualized form. Such models are constructed as deliberate over-simplifications of real situations so the reduced complexity can be comprehended via an approximation (Biddle, 1969, pp. 7-9).

Dury, for instance, argued that Geography, in its geomorphological manifestation, continued to be revolutionized as many of its practitioners discarded cycle concepts, a descriptive approach, and undertook empirical work in the field or laboratory, or examined the theoretical implications of systems theory - hence the rise of the empirical systems orientation. Climatology and meteorology completely reshaped in previous years by polar front hypothesis, received further advancement by means of air-mass theory. Here it had become increasingly obvious that theoretical systems had exerted substantial influence on various areas associated with geographical studies (Dury, 1966, preface).

At the secondary education level, the notion of the erosion cycle of the Davisian tradition, had been viewed as indispensable to geomorphology and so had not received any serious challenge. However, it was asserted by Dury (1966a, p. 1:1) that it is entirely possible to explore geomorphology via a dynamic quantified systems approach without any reference to the erosion cycle at all.

The systems approach in Geography replaced the orientation of classical Geography in which the object of investigation was viewed as a collection of parts, and the properties of the whole object obtained without adequate consideration being given to the interaction between these parts. The systems approach supports a holistic rather than an atomistic approach, and concentrates on the internal connectivity of elements in systems interacting externally with their environment and internally with their various components (Deer, et al., 1977, p. 60). Such an orientation rationalizes the importance of processes which act within identified systems and so a network of interacting relationships is concentrated upon in this new Geography.

For instance, the Davisian view of landscape evolution contained recognizable elements of a closed system. That is, the sequence of events in Davis' scheme was irreversible and the initial uplift provided a limited given amount of energy. However, in an open-systems view, attention could be focused upon the nature of the dynamic relationships between form and sequence without any necessary sequence and conclusion being preempted. The Davisian cycle view was deficient as it made no allowance for energy change as a result of climatic change. The open-system model had already led to advances which were well known: climatology, dealing with heat balances; and climatology, or geomorphology, dealing with the hydrological cycle. The claim was that geomorphology, in its most exciting developments

of the time, had become an empirical pursuit of the study of systems (Dury, 1966a, pp. 1:6-10; Dury, 1966, pp. 1:11-14).

Within this new approach, geographers constructed models to assist in the analysis, synthesis and understanding of phenomena like the hydrological cycle, river systems, agricultural location, and functional morphology of cities, to name just a few. Some models in use for the Higher School Certificate were von Thunen's on agricultural activity; Weber's on industrial location; Christaller's marketing principle; and the concentric zone, sector and multiple nuclei models of urban structure (Rutherford, Logan and Missen, 1968).

The construction and utilization of these models is certainly in agreement with Bruner's assumption that:

> School curricula and methods of teaching should be geared to the teaching of fundamental ideas in whatever subject is being taught (Bruner, 1960, p. 18).

Moreover, from such statements, Walford (1973, pp. 100-101) judges Bruner to be in favor of study in depth and study of process and structure.

The new syllabus utilized a selection of systematic topics and regional examples to develop an understanding of fundamental geographical concepts, and the ability to use skills of observation, recording and problem solving. In this way, it was hoped students would comprehend the dynamic nature of geographical phenomena (Biddle, 1969, p. 14).

It is important to note here that this new scientific systems Geography appeared during an era in Australia when science, per se, was being pushed at a stunning rate. Personalities like Professor Harry Messel and Professor Julius Sumner Miller were well known as scientists in Australia, and perceived by most Australians as brilliant men, pursuing science which may go a long way to solving the world's problems and facilitating a better future. At the same time, the atomic industry was attracting attention and high technology was looming larger. Thus the prestige and status of science and science-oriented pursuits increased rapidly. The reworked Geography of a scientific basis would have, therefore, been perceived as a very attractive discipline, which could act as a bridge between the traditional sciences and various cultural and physical environmental themes.

Various new teaching materials accompanied the introduction of the Wyndham Scheme in Geography. Two textbooks catering for the needs of Higher School Certificate students were written by Barlow and Newton (1968), and by Rutherford, Logan and Missen (1966).

Barlow's and Newton's publication emphasized that an important aim in the new syllabus was to develop in students an enquiring mind, thus encouraging them to search out knowledge for themselves through individual study and research. This publication was a text in physical Geography and certainly showed a heavy emphasis on process and systems. Rutherford's, Logan's and Missen's text, on the other hand, was a human Geography publication. It also was based on general processes and systematically investigated processes of economic growth, systematic agricultural Geography, systematic Geography of manufacturing, and systematic urban Geography.

Additionally, an in-service training document was prepared for teachers by Dury (1966). In this publication, Dury and Tweedie appear to have been influential figures in the organizing of content for the senior high school Geography syllabus. Ten chapters were included; three written by Dury and two by Tweedie - so half of the document was the work of two men.

Dury was Professor of Geography at Sydney University and could be termed a quantitative geomorphologist, emphasizing systems, empirical testing and model making. Also Dury, not in the tradition of Davis, argued for the importance of climate and fluvial processes (Dury, 1966a). Tweedie, as Professor of Geography at the University of Newcastle, had an established focus on climate, with moisture and heat as unifying concepts (Tweedie, 1966a, 1975). Thus it is obvious that these men and their academic geographic pursuits and focus were influential in establishing much of the overall thrust of the senior high school syllabus, particularly on the physical side.

Concluding Synthesis and Interpretation

The new Wyndham Scheme was the outcome of a particular legacy and socioeconomic context. Secondary education became truly democratized and mass oriented after the Second World War. Along with the increases in secondary school enrolments, Geography enrolments in secondary school increased substantially from the 1950s.

The post-war era was a time when society accepted the need for an educated public in a democracy. Also in the same era, industrial and manufacturing industry development and the accompanying career opportunities indicated increasing levels of education for skilled trades and career entry were needed.

The effects of progressive education began to be felt, albeit somewhat meagerly at first. This basis for education emphasized the equality of subjects, child centered pedagogy, the value of citizenship and liberal assessment procedures that would allow discovery learning to prevail. It was the design of progressive education that formal education should not occur in a vacuum, devoid of the positive influences of daily living.

In addition to the above factors, the post-war baby boom children began to enter school en masse in the early 'fifties, and the same population horde subsequently swelled the secondary school numbers from the late 'fifties.

The take-off point for university Geography began in 1945 with the establishment of the first Australian Chair of Geography at Sydney University. By the 1960s, this rise of university Geography poised for an incredible upsurge. In the years intervening 1959 and 1967, five full university Departments of Geography were established in New South Wales (including Australian Capital Territory). The resultant increase in university Geography enrolments was spectacular. This escalation of university Geography introduced a new impetus and vitality into Geography as graduates, now trained as geographers in Departments of Geography, entered Geography teaching with new geographic ideas and approaches. Many of these new ideas appeared in the 'fifties and 'sixties - decades of rapid and substantial change for Geography with the introduction of systems theory, scientific and empirical methods, and the incorporation of elements of traditional sciences into the discipline.

The Wyndham Scheme for Geography had to integrate into the scene built up by the previous factors. Indeed, it is a truism that the Wyndham Geography was the result of the prevailing conditions, and the initiatives taken by educational developers. Thus the new Geography, especially for Forms 5 and 6, was largely systematic and conceptual in its orientation. In the junior secondary school it had become a core subject from Second Form. Also, Geography had shown itself to be an increasingly popular elective in Fifth and Sixth Forms.

The texts for the Higher School Certificate were substantially systems and models based and much of the input into the texts, surveyed in this paper, was often the work of university academics who incorporated new developments in Geography into the high school syllabus. Certainly, the composition of the Higher School Certificate Syllabus Committee, set up under the Board of Senior School Studies, was clearly under significant influence asserted by eight university academics.

The Wyndham System was meant to be a broad based, eclectic and holistic education in the spirit of liberal arts and learning through investigation and experimentation. It was also designed to teach students how to think, which was considered more important than just the learning of content. However, in recent decades the education system of New South Wales has become increasingly oriented to the cramming of sufficient content, to keep abreast of massive amounts of new knowledge, and there has also been a growing trend for the measurement of outcomes (Public Education Enquiry, 2001). In this unfolding regime the "process of learning", in a liberal arts and eclectic curriculum, has weakened, and decreased in emphasis, thus giving way to dissolution of the once much hailed Wyndham System of long ago.

Finally then, it must be highlighted in conclusion, that this paper has attempted to show factors that were apparently associated with the development of the Wyndham Scheme Geography syllabus. The paper has ventured to place developments in Geography in that specific era among its socio-economic, educational and other factors, as the context from which the new high school Geography arose.

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