

THE EXPANSION OF HIGHER EDUCATION

A. F. KLEINBERGER

*Associate professor of Education the Hebrew University
of Jerusalem*

In this paper I shall attempt to analyse some of the problems involved in the rapid expansion of higher education which has been going on in many countries since the end of the Second World War, and in the still more rapid expansion which is being envisaged or projected in many countries for the next decade or two. For lack of competency I shall not deal with the economic and financial aspects of the topic, although their crucial importance for any policy of educational expansion is of course beyond dispute, and they have attracted the serious attention of scholars and policy-makers alike. The analysis will be based on comparison of actual or projected developments in the field of higher education in a number of European and non-European countries which, in respect of their economies and systems of formal education, are counted among the relatively developed nations. These countries have been selected not only on account of significant developments to be observed in their higher educational systems but also because data and literature concerning such developments have been more readily accessible to the author. This more or less arbitrary selection should by no means be taken to imply that phenomena of equal import and interest could not have been recorded in other countries as well.

Before broaching our subject, a few preliminary remarks are indicated concerning the definition of the term „higher education”, or rather the demarcation of the field denoted by that term. There are four principal approaches to defining our concept which, though not by necessity mutually exclusive, result in different ranges of application for that concept which, it is true, overlap to a considerable extent but are by no means congruent.

(1) „Higher education” may be defined with reference to the self-governing status of the institutions imparting it. This approach seems to underlie the British distinction between „higher education” and „further education”. The former is imparted by universities and institutions of similar status in an „autonomous sector”, whereas the latter is conducted by a „public sector” comprising technical and other profession-

nal colleges that are directly financed and administered by public authorities, whether local or central. Such a definition, though true to the historical origins of universities, would, if generally applied under present conditions, entail some rather paradoxical consequences. In the United States, for instance, only private colleges and universities could by this definition be considered institutions of higher education, while all publicly controlled colleges and universities would have to be excluded from the term's range of application. And countries like France, the Federal Republic of Germany, and the popular republics of Eastern Europe would turn out to be devoid of any higher education whatsoever.

(2) A secondway of delimiting the sphere of higher education is to define it with reference to its social function of training members of the „professions”, in contradistinction from preparation for other vocations. For purposes of cross-cultural comparisons, this definition is problematic for several reasons: It defines one equivocal concept in terms of another no less ambiguous one, that of „profession”, for the denotation of which there are no universally agreed criteria. To take but none conspicuous example: the status of teaching in primary schools as a profession is still a controversial issue, and only in very few countries are primary school teachers trained in the same institutions — or at least in institutions of equivalent standing — as members of the traditionally recognized — professions. Furthermore, the process of social and educational upgrading of a number of vocations has begun to blur the boundary between professions and semi-professions like advanced technicians and nurses. Thus, for instance, many Canadian universities offer undergraduate and even post-graduate degree courses in nursing, whereas in most countries nurses are trained in hospital schools extending from secondary to post-secondary level. On the other hand, in a few cases members of traditionally recognized professions receive their professional education outside institutions of higher education. In England, for instance, prospective barristers and solicitors may study for their professional examinations without attending a university or some other institution of higher education. In Israel rabbis are educated at rabbinical colleges (yeshivot) which are not regarded as institutions of higher education, whereas theological colleges or seminaries in Canada, the Federal Republic of Germany, and the United States (including those which train rabbis) are recognized as degree-granting institutions of higher education.

(3) A third possibility is to define higher education with reference to its distinctive mode of operation, that is to say the combination of teaching and research. This definition accords with the tradition of the reformed German university as conceived by Wilhelm von Humboldt. It has been incorporated into the Dutch Higher Education Act of 1961. In this Act the former designation „hoger onderwijs” (higher education) has, significantly, been replaced by „wetenschappelijk onderwijs” (scientific education), and the latter has been defined as training in the independent pursuit of knowledge and preparation for positions requiring such scientific training. The same definition is underlying the Council for Higher Education Law, 1958, in Israel, and the rules adopted by this Council for recognition of institutions of higher education, and for granting them the right of conferring academic degrees. The law defines higher education as „including teaching, science, and research”, and stipulates as a necessary condition for the recognition of an institution of higher education „an appropriate scientific standard”. The council's rules for recognition of institutions prescribe that an institution of higher education must have a permanent academic staff comprising „scientists and researchers who publish the results of their work”. However, this German tradition of defining higher education, though of considerable influence on the development of universities, and in particular of post-graduate studies, in a great number of nations, has never been universally accepted. For instance, Brazilian and other South American universities have traditionally been almost exclusively concerned with teaching, and only recently a movement has started to encourage research as one of their characteristic functions. Moreover, as will become manifest in the course of this paper, the process of rapid expansion has brought within the purview of higher education new types of institutions to which this rigorous definition is no longer applicable.

(4) The broadest and most formal definition of higher education conceives it as a stage in a continuous educational process. This definition has been adopted in the Unesco „Recommendation concerning the International Standardization of Educational Statistics” (1958), and is also underlying the Robbins Report on „Higher Education” in Great Britain. According to the Unesco recommendation, higher education is defined as education at the third level, which requires, as a minimum condition of admission, the successful completion of secondary education. Yet even this most inclusive definition of the concept is open to

conflicting interpretations according to different national traditions and conditions. In some countries, „secondary education”, the completion of which qualifies for admission to higher education, means only the traditional, academic type of secondary schools (Gymnasium, lycée, grammar school, etc), whereas in a steadily increasing number of countries higher education is being made accessible also to graduates of technical and vocational secondary schools. The term „successful completion”, too, is ambiguous. It may mean (notably in the United States) attendance at a secondary school for a certain number of years during a required number of weekly periods devoted to the study of a specified number of subjects (the range of which may or may not be prescribed) and assessed as satisfactory by the secondary schoolteachers. Or it may mean passing a school leaving examination, and obtaining a school leaving certificate (General Certificate of Education, baccalauréat, Reifezeugnis, certificat d'humanités, and the like). Even in the latter case the term may remain equivocal. In England, for instance, the Robbins Committee distinguished, in respect of further education, between courses beyond the Advanced Level of the General Certificate of Education, requiring at least one pass at „A” Level of the G.C.E. as the minimum qualification for entry, and courses below this level. Only the former were included in the category of „higher education”. But the Robbins Committee included in this category also teacher training colleges, in spite of the fact that they do not satisfy the criterion of education beyond the Advanced Level of the G.C.E., since their minimum entry requirement is only five passes at the Ordinary Level of the G.C.E. examination (although as a matter of fact over 60 per cent of recent training college entrants had at least one pass at „A” Level). In France, on the other hand, écoles normales primaires for the training of primary school teachers are not regarded as institutions of higher education, although entrants at the age of 15 take their baccalauréat after three years, and thus the last year or two at the école normale, in which the professional studies are concentrated, represent education beyond the successful completion of academic secondary education.

Sometimes yet another definition of higher education is offered: courses or work being acceptable for credit towards a university degree or equivalent diploma. But this definition is not worthy of serious consideration, because of its circularity. For the „equivalence” of non-university diplomas depends of course upon recognition as institutions of

higher education of the establishments that award them or prepare for them.

Even so this confusing array of four principal definitions of our concept, entailing as they are different and noncongruent delimitations of the field to which the concept is applicable, is sufficient to render the interpretation of international statistical comparisons of higher education a pretty hazardous undertaking. Anyone who has tried, for instance, to interpret the comparative table listing enrolments in institutions of higher education per 100,000 inhabitants in 81 countries, provided in the Unesco „World Survey of Education IV” (pp. 67—68), must certainly have become aware of this fact. Variations in the method of computing this student/population ratio range all the way from France, for which enrolment figures of universities only were taken into account, excluding even the „grandes écoles”, over countries for which enrolments in universities and specialised institutions of university standing were taken into account (e.g. Canada, Italy), to countries for which also enrolments in teacher training colleges, schools of nursing and the like were taken into account (e.g. Israel and Netherlands which in this way moved near the top of the table). But apart from its detrimental effect for the international comparability of higher educational statistics, this confusion of definitions is itself, as we shall see, one of the corollaries of the tremendous expansion of higher education.

The rate of this expansion has of course been uneven in different countries. If, in order to avoid for the moment entanglement in the complications of definition, we consider enrolments in universities and specialised institutions of university standing only, we find some countries where these have quadrupled over a period of less than two decades since the end of the Second World War. Two instances of such a rapid increase, though very different in size character, are the U.S.S.R. and Israel. In the former, total enrolment figures (including extra-mural students) doubled from 730,000 in 1945 to 1,562,000 in 1953, and then doubled again within the next ten years, reaching 2,900,000 in 1963. In the latter, they multiplied by two between 1950 (3,300) and 1955 (6,600), and then more than trebled over the next ten years, reaching almost 22,000 in 1965. In some countries the student population doubled within a period of eight years (e.g. Australia and Sweden between 1953 and 1961). Elsewhere it took ten years for enrolments to increase twofold (e.g. Canada and Czechoslovakia during the fifties). In the United States and the Federal Republic of Germany eleven years were required for a twofold increase (1953—64 and 1950—61 respec-

tively), fifteen years or more in Poland, the Netherlands, and France, while in Great Britain it took more than twenty years for enrolments to double (from 50,000 in 1938 to 103,000 in 1960). On the other hand, there were also a few countries, where enrolments declined for some time during the post-war period, and only towards the end of the 1950's regained their former level (e.g. Italy and Switzerland). Needless to say that no comparison of need and effort is implied by this random listing of nations differing so widely in their conditions, requirements, and possibilities.

Even more spectacular is the expansion of higher education (the term in this context taken to mean any form of higher education so recognized by the respective nation) that is being planned or forecast for the next decade or two in various countries. To cite only a few outstanding illustrations: The U.S.S.R. and Poland plan to treble their enrolments within the twenty-year period between 1960 and 1980. France's „fourth plan” envisages an increase by 130 per cent (i.e. multiplication by almost two-and-a-half) in enrolments between 1960 and 1970, and her „fifth plan” contains an even more ambitious programme for 1972. In the United States, the 1960 degree-credit enrolments are expected to be doubled by 1970, and further increase by 24 per cent is anticipated for 1975. In Israel, the student population is expected to increase by 175 per cent (that is to say to be almost trebled) within the ten year period from 1965 to 1974. For Great Britain, the Robbins Report forecast doubling of total enrolments in all forms of full-time higher education between 1962 and 1975. Sweden expects an 80 per cent increase over her student enrolments in 1960 by 1970, and the Netherlands anticipate a 65 per cent increase within fifteen years.

The causes of this tremendous expansion — actual and projected — can be summed up under three main headings:

(a) Growing social and national need of highly qualified manpower. This need has been generated, and is steadily being reinforced by such developments as the advance of science and technology; ambitious projects, like the exploitation of nuclear energy and the conquest of space; development of new industries or new industrial techniques; extension of social and welfare services; rising government expenditures on national defence and security; response of developed nations to the educational and technical needs of developing countries; the rise of new professions, and the upgrading of semi-professions; etc. etc.

(b) Increasing individual aspiration and demand for higher education, and for its fruits in terms of social and economic advancement. This in-

crease in the effective demand for higher education has resulted from a combination of several mutually reinforcing factors:

1. The rising post-war birth-rate, propelling a „bulge” of swelling age groups through the educational system that is just beginning to reach the threshold of higher education.
2. The expansion and progressive democratization of secondary education has brought about a steady increase in the proportion of the relevant age groups that qualifies for entry to higher education (whatever the term „qualification” may mean in different educational systems). Here are a few examples to illustrate this almost universal trend: in the United States, the percentage of persons 17 years of age who graduated from high school rose from 8.8% in 1910 to 50.8% in 1940, and reached 77.1% in 1964. In Sweden, the proportion of the 20-year age group who passed the „student examen” rose from 6% in 1945 to 14% in 1962, and is expected to reach 20% by 1969. In Israel, the proportion of 17-year olds who obtained a „certificate of maturity” increased from high schools rose from 8.8% in 1910 to 50.8% in 1940, and must of course be borne in mind that the respective age groups themselves have grown in absolute numbers.

Moreover, a growing number of states are opening up alternative routes to institutions of higher education for young adults who have not enjoyed regular secondary education of the usually required academic type. Such measures to make higher education more widely accessible include: (i) „External examinations” (i.e. examinations conducted outside the secondary school system, but considered equivalent to the regular secondary school leaving examinations) or special entrance examinations to universities; such examinations (available, for instance, in Belgium, France and Israel) are designed to give access to higher education to young persons who have missed the opportunity of attending a secondary school. (ii) Evening schools for young workers, leading to university entrance qualifications (e.g. in Czechoslovakia, the Federal Republic of Germany, and Israel). In France the universities themselves prepare young workers for entrance qualifications, in so-called „Instituts de promotion supérieure du travail” which have been established since 1950, and offer, besides part-time degree courses, a three-year preliminary course in the evenings for young people who have not obtained the baccalauréat. (iii) Admission to institutions of higher education of candidates who have successfully completed a vocational or technical secondary school. Such admission is usually restricted to faculties, institutions or courses that are directly related to the candida-

te's vocational or technical education and experience. This alternative route to higher education (*der zweite Bildungsweg*, as it is styled in German) has been opened up, in some cases as a recent innovation, for instance, in Czechoslovakia, Israel, Italy, the Netherlands, and Poland. A rather roundabout way exists in the Federal Republic of Germany for candidates lacking an academic secondary education: they may, after completing a *Berufsaufbauschule* (a part-time vocational extension course of three years), enter an *Ingenieurschule* (an institution training higher-grade technicians in a three-year course), and if they pass their final examinations there with good marks, they may be admitted to a technological university (*Technische Hochschule*), which means that they arrive there at least three years older (and possibly so much wiser) than their fellow-students in possession of a certificate of maturity.

3. *Rising family incomes in industrialized countries*, and the prospect of attractive employment opportunities for graduates (which is of course a result of the intensified social need of highly qualified manpower) have raised the level of aspirations, and led to increased demand for higher education. The same effect is being produced by a rising level of formal education of parents, so that any improvement in this respect in one generation is going to trigger off a chain reaction in the next one.

(c) The third main group of causes accounting for the expansion of higher education is *the increasing provision by society of opportunities for higher studies*. This has two principal aspects: *geographic dispersal of institutions of higher education, thereby bringing them within easy reach of wider sections of the population (of this more shall be said later)*, and *abolition or reduction of fees combined with increased financial assistance to students*. This policy is dictated both by a kind of enlightened national self-interest, and by the ideals of social justice and equal opportunities, which require alike the fullest development of all available resources of ability. However, countries vary widely in the form as well as the extent of financial aid to students they provide. At the one extreme, there are Great Britain and the U.S.S.R.; in the former virtually all undergraduates, in the latter a vast majority (estimated at about 75%) are in receipt of maintenance grants from public funds. At the opposite extreme there are countries like the United States or Israel, where scholarships are available only for a small minority of students, and the principal form of financial assistance are interest-free or low-interest loans, and even the supply of these falls short of the demand for them.

The combined effect of all these causes has been — and still more will be in the future — to enlarge the proportion of the relevant age group that enters higher education. The following few illustrations do not permit straightforward comparisons, in view both of the variations in defining and delimiting higher education, and of the differences in defining the „age group” and in computing the studentage group ratio relevant but they show clearly the general trend and its varying pace. In the United States the following proportions of the 18—21 age group were enrolled in degree-credit courses of higher education: 1939: 14.2%; 1950: 25.5%; 1960: 37.2%; by 1970 it is expected to have risen to 47,6%. In Great Britain, the percentage of the composite age group entering all forms of full-time higher education rose from 2.7 in 1938 to 5.8 in 1954, and reached 8.5 in 1962; according to the estimates of the Robbins Committee, it will be 17% by 1980. In Israel, the population aged 18 to 29 years (which in Israel is considered as the „relevant age group” for higher education) increased over the ten-year period from 1955 to 1964 by 32%, while during the same period enrolments in institutions of higher education grew by 153%; as a consequence, the studentage group ratio rose within ten years from under 2.5% to 5.0%. These developments mean that to an increasing extent the previously untapped pool of talent (consisting of women in general, and of the children of geographically, economically, socially and culturally disadvantaged groups in society) is being utilized for, and developed through, higher education.

How does this quantitative expansion of higher education (both in terms of absolute numbers and of relative proportions of the relevant age groups) affect the quality of students and study? Even if we assume that the minimum formal qualifications required in various countries for admission to institutions of higher education are not to be lowered, there will probably be substantial changes in the characteristics of the student population. Extending the opportunities of higher education means enrolment of an increasing proportion of students who are „*first generation in higher education*”, that is to say who come from geographic regions or from social strata that lack a strong tradition of higher or even academic secondary education. Although these students will probably have the same levels of formal qualifications and of natural ability as their contemporaries from more favoured social environments, they lack some of the informal qualifications required for success in higher education of the traditional type, such as cultural stimulation and enrichment by the home, intellectual

and artistic interests, appreciation of the intrinsic (in contrast with the instrumental) value of knowledge and research, etc. These changes are likely to produce two results:

(a) There will increasingly be found a new, *more pragmatically minded type of student*, who regards higher education as an instrument of social upward mobility and as a kind of advanced vocational training rather than as an intellectual pursuit valuable in itself, and who is looking for the rapid acquisition of marketable professional skills and expertise rather than for a liberal education. This might result in a relative decline of the study of pure arts and science, and possibly also in a decreasing proportion of graduates willing to stay on for postgraduate studies, and to go into academic teaching and research.

There are some clear indications of such a trend in the progressive professionalization of liberal arts colleges in the United States. Further evidence of this trend has been provided by a group of O.E.C.D. examiners of higher education in the U.S.A. They found that young people whose parents did not go to college were more likely to choose engineering than those whose parents had a higher education, whereas the latter were more likely than the former to go into science or medicine (the finding with regard to medicine is probably to be accounted for by the considerably longer period of study required for this profession). Similarly, in Israel sons of culturally deprived Oriental Jewish families, whose parents at the most had elementary education, were found to prefer study of engineering, law or medicine to the pure arts and sciences. The same change in student characteristics may account, at least partly, for the fact that whereas in France and England the total student enrolments exceeded previous forecasts, the proportions of students seeking entrance to science faculties fell below the forecasts.

(b) A second probable result of the changing social composition of the student population is an *increasing „wastage” rate*, i.e. a rise in the proportion of entrants to higher education who fail to complete their courses and to obtain degrees or diplomas. Of course, wastage rates do not necessarily reflect changes in student quality. There may be an entrenched tradition of failing a constant proportion of students irrespective of fluctuations in their qualifications. But there are clear indications that wastage rates may also be the *effect of lessening social and intellectual selectivity* in the access to higher education, combined with deteriorating student/staff ratios, which both are consequences of rapid expansion. In the United States, for instance, the wastage rate is particularly high among engineering students in State

universities (65%, as compared with a general average drop-out rate of approximately 40%) who, as mentioned before, are more likely to be sons of parents without a college education. In Great Britain the overall wastage rate in universities decreased from entrants in 1952 to entrants in 1957. During the same period there was a decline in the percentage of young persons in possession of minimum entrance qualifications who gained admission to universities, or in other words, the universities became more rigorously selective. The wastage rate in colleges of further education, which are less selective and admit all candidates with minimum entrance qualification, is much higher (37% or 62%, according to the diploma or degree sought) than in universities (overall average wastage rate: 14% for entrants in 1957). In British universities it is higher in faculties of technology (21%) than in faculties of arts (12%). This probably reflects the different social origin and ability range of their respective student population. In France the same discrepancy exists between the extremely low wastage rates at the elitist and competitively selective *grandes écoles* (2%) and the excessively high failure rates (estimated at 75% of entrants) at the universities which are open to all holders of the *baccalauréat*.

The same phenomenon is observable in other countries: faculties or institutions that are open to all holders of the required minimum formal qualification have high wastage rates, rigorously selective ones that restrict the number of entrants have considerably lower wastage rates, the only variation being in which are the open and which the restricted faculties or institutions in different societies. In England colleges of technology are less selective and have high drop-out rates, in Sweden and Israel they restrict entrance and have low wastage rates; in Sweden faculties of science are open and have high failure rates, in Israel the opposite is the case.

These high wastage rates in higher education are causing serious concern in many countries, because of the waste of public resources as well as the frustration of individual hopes they involve. To remedy the situation, steps have been taken to adjust the student/staff ratio to increasing enrolments, particularly in the first year of study, when students have normally little individual contact with university teachers, lack constant supervision of their work, and consequently failure is highest (such steps have been taken, for example, in Poland and Sweden). Besides, universities in several countries are beginning to pay more attention to the improvement of the teaching skills and methods of their lecturers who normally are selected on the strength of their

published research, without consideration of their didactic ability. *Thus higher education in the process of becoming more widely accessible is likely to undergo a similar development in the attitudes towards the preparation and selection of its teachers*, as did secondary education half a century earlier. As long as secondary education was restricted to a socially and intellectually select student population, teachers were merely required to be competent in their subject-matter. But when it became more universally available, some didactic and pedagogic training began to be made obligatory for teachers in secondary schools.

That brings us to the problem of the preparation and recruitment of teachers for the expanding system of higher education. The Robbins Committee in Great Britain asserted rather optimistically that an expanding system of higher education could produce enough teachers to maintain existing standards of staffing, provided that the rate of expansion was not accelerating, though it anticipated for the immediate future a short-term crisis in the recruitment of academic staff. As a matter of fact, many countries are already experiencing acute shortages of adequately qualified academic staff, and in some, plans of expansion had to be postponed for this reason. For instance, in the Netherlands the opening of an additional technological university had to be deferred, in spite of the fact that the need for its establishment had been acknowledged in principle by the Minister of Education, Arts and Sciences. In Poland deficiency of teaching staff was given as one of the main reasons why the practice of admission by competitive entrance examinations had to be continued, and higher education could not be thrown open to all holders of the secondary school leaving certificate (only about 50 per cent of the latter are accepted for higher education).

The difficulties of recruiting additional staff in sufficient numbers for the rapidly expanding systems of higher education are aggravated by the fact that a smaller generation (in terms both of the absolute size of the age groups and of their proportions completing secondary schools and entering higher education) has to take care of a considerably larger one. The problem becomes even more complicated by the *heavy demand made on that smaller generation by expanding industry, research institutes, and social services*. The fierce competition for graduates and Ph. D.s has particularly affected the recruitment of university teachers in mathematics, science, and technology. In the United States, for example, in the years 1958—1960, 90 per cent of all new

doctors in English, but only 19 per cent in chemistry and 27 per cent in physics went into — or continued in—college teaching. In Scotland, „Central Institutions” (corresponding to colleges of further education in England which are progressively concentrating on work of degree or comparable standard, are encountering difficulties in attracting well-qualified people with industrial experience who constitute such an important part of the staffs of institutes of advanced technology.

The growing demand for university teaching staff is likely to affect adversely the quality of teachers in other types of post-secondary education (especially in teacher training colleges), which enjoy less prestige, and offer less attractive conditions of service than institutions of university standing. There are already complaints in some countries (e.g. Australia, Israel, and indications of the same sort of difficulty in the U.S.S.R.) that teachers' colleges have found it difficult, in competition with the expanding universities, to hold their most highly qualified staff, and to attract new one. In the United States such difficulty is experienced by junior colleges and smaller liberal arts colleges, especially with regard to mathematics and science teachers.

Similarly, the increasing requirement of highly qualified staff in higher education is likely to deplete the secondary schools of their better teachers. The Robbins Report, in spite of its optimism concerning the ability of an expanding system of higher education to supply its own teachers without depriving the schools or theirs, has to admit that for some years there has been a deterioration in the qualifications of graduates teaching in the upper forms of English maintained grammar schools: 13 per cent of teachers aged 35 or over hold first class degrees, as compared with only 4 per cent of those under 35. The denudation of secondary schools of qualified members of their staffs is even worse in the United States and Israel. In the latter, only 32.5 per cent of all secondary school teachers with 4 years or less teaching experience have an academic degree, as compared with 53.2 per cent of those with 10 years or more teaching experience.

The chief bottle-neck in the supply of sufficient staff for expanding systems of higher education is the *deficiency in facilities and candidates for postgraduate studies*. In Great Britain, in 1961/62, some 20 per cent of the home graduates (excluding overseas students) went on to postgraduate study (this figure does not include those taking one-year courses of professional teacher training) — about 12 per cent preparing a Ph. D. thesis, and the rest in advanced specialised courses. 14 per cent of all full-time university students were postgraduates (ex-

cluding again those in education). The Robbins Committee recommended a substantial increase — to 30 per cent by 1980 — in the proportion of home graduates going on to postgraduate work. Yet in Great Britain his problem is less crucial than in other countries, since a doctorate or another higher degree is not an absolute prerequisite for a career in academic teaching and research.

The situation is far worse in other countries. In Israel, for instance, throughout the period from 1949 to 1965 only 5 per cent of the total enrolments in institutions of higher education were research students preparing a Ph. D. degree (which in Israel is a *conditio sine qua non* for senior staff appointments). There was not the slightest improvement in this low proportion. During the last few years only about 100 Ph. Ds were awarded annually, whereas the minimum number required to meet the needs of expanding higher education (without taking into consideration competing industrial and other demand) has been estimated at 400 to 500 annually. Israel will have to rely heavily on sending her graduates abroad for obtaining Ph. D. degrees, and on attracting qualified staff from overseas. In the United States only about 12 per cent of all bachelors go on to graduate studies, and only a relatively small number of institutions of higher education are offering Ph.D. degrees (in 1960: 219 out of a total of 1,225 degree-granting institutions). One of the purposes of the National Defense Education Act of 1958 was to increase this number, and to ensure a wider geographic distribution of institutions offering doctoral programmes. It is expected that these and similar measures (including graduate fellowships under the NDEA) will double the number of students completing doctoral studies by the end of the present decade.

Often the proportion of graduates in arts subjects who proceed to study for a higher degree is considerably lower than in science subjects. In Great Britain, for instance, 30 per cent of graduates in sciences, as compared with 15 per cent of those in humanities, took up postgraduate work. Likewise in the United States, less than 5 per cent of college graduates in the humanities and social sciences, but 12 to 14 per cent of those in the natural sciences obtain eventually a doctor's degree. In Israel, less than 15 per cent of the annual awards of Ph.D. degrees are in the humanities and social sciences, whereas over 55 per cent of the total student enrolments are in these fields. One reason for this imbalance is the greater availability of financial support from public funds for postgraduate study and research in sciences than in arts. In England, for instance, in 1962/63 there were 3,500 awards to postgradu-

ates in sciences, as compared with only 610 in humanities and social sciences. In the United States in 1960/61, 4,000 out of a total of 6,000 holders of federal graduate fellowships were working toward a doctorate in natural sciences. Unless such imbalance of opportunity for advanced study and research between the arts and sciences is corrected, there is a grave danger that the sources of supply for highly qualified academic staff in the humanities and social sciences will dry up.

One of the *most urgent problems with regard to the rapid expansion of higher education is thus to enlarge facilities for postgraduate study*, and to provide more financial support to attract sufficient numbers of able graduates to work towards advanced degrees. Even countries which until now had no provision for regular postgraduate study towards research degrees corresponding to the British or American Ph. D., are planning their introduction, in order to ensure the orderly supply of academic staff. In the Federal Republic of Germany, for instance, where no postgraduate courses were offered in the past, and the qualification for university teaching (called „Habilitation”) was normally acquired during an assistantship, the creation of universities of advanced studies is under consideration. In the Netherlands, where the doctoral examination is regarded as equivalent to the British master's degree, and no postdoctoral degree existed, the 1961 Higher Education Act provided for the introduction of a new post-doctoral diploma on the basis of research, and for State grants to support students working towards the new diploma.

Unless reinforcements of academic teaching staff in sufficient quantity and of adequate quality can be prepared and attracted to the institutions of higher education during the period of their rapid expansion, the quality of their under-graduate instruction is bound to deteriorate in two ways: (a) Student/teacher ratios will become far less generous, and classes will become overcrowded. This appears to have happened already in France, where the overall student/teacher ratio is far less generous than in most other developed countries, and is particularly bad in the faculties of letters (54 to 1, as compared with a ratio of 9 to 1 in British faculties of humanities). (b) An increasing share of under-graduate instruction will be borne by inexperienced and not fully qualified junior staff, consisting in the main of postgraduate students working towards their advanced degrees. This is already happening in a number of countries, including Poland, the United States, and Israel. In order to achieve the utmost utilization of scarce teaching personnel and scarce equipment, it would seem expedient to concentrate the

facilities of higher education. However, this course of expediency is often in conflict with the social tendency to democratize higher education, and to make it more universally accessible by distributing institutions more evenly throughout the country. A good example of this conflict is provided by Sweden. Until recently all Swedish institutions of higher education had been concentrated in the southern part of the country. The Royal Commission on Higher Education, appointed in 1955, warned against the creation of smaller institutions in outlying regions, and recommended the expansion of existing establishments as affording better opportunities for research and instruction. Nevertheless a new university was founded in 1963 at Umea in the less densely populated northern part of the country, in order to bring higher education within the reach of the educationally disadvantaged sections of the nation who are living far from the traditional centres of higher learning. Still further decentralization of higher educational facilities is under discussion.

A similar policy of geographic decentralization of higher education, designed to increase the proportion of young people able to enjoy it without incurring the expenses involved in living away from home, is being followed by a number of other nations. Some of these have, like Sweden, also reformed their systems of secondary education with a view to their democratization (e.g. France, Great Britain, the United States and the U.S.S.R.).

Of particular interest is the case of France. There almost 40 per cent of all university students were concentrated in the capital, and the provincial universities were also unevenly spread over the country. In the course of implementing her ambitious plans for more than doubling the student population within ten years, France has embarked upon a policy of wider geographic dispersal of higher education on a grand scale. She is not only setting up new universities in major population centres, but is also establishing faculties and schools, institutes or colleges in close association with existing universities in densely inhabited areas that had previously been without facilities of higher education. Some of the schools, institutes or colleges will eventually be elevated to the status of faculties, and become the nuclei of new universities, as has happened to others in the past. The principal role in this process of geographic decentralization has been assigned to a steadily growing number of *collèges universitaires* (university colleges, not to be confused with their earlier British namesakes), whose main function is to provide first-year courses in arts and sciences, and to serve as

screening and feeder institutions for the universities. The main advantage of such first-stage feeder institutions is of course that they are less costly to establish and operate than full-fledged universities.

A similar solution to the problem of making higher education more easily accessible by bringing it within commuting distance of a large proportion of students has been devised, long before the French have hit upon it, in the United States. There it took the form of two-year junior or community colleges, offering, besides vocational terminal courses, the first two years of college work credited towards a bachelor's degree. Similar first-stage screening and feeder institutions under the supervision of existing universities, to which students must transfer a year or two before taking the degree, are being planned or have been opened also in Belgium and Israel; in the latter they are often offering evening courses for students in employment. In the Netherlands, on the other hand, this solution to the problem of dispersal of study facilities has been rejected. The two Dutch commissions, appointed in 1957 and 1958 to advise on the expansion of higher education, opposed the establishment of institutions offering only the first stage of the full degree course in regions that had no universities, because the education provided by them would be of unsatisfactory standard, and the Minister of Education, Arts, and Sciences concurred with this judgment.

A different pattern of even distribution throughout the country of facilities for higher studies has evolved in England. There exists a large number of regional, area and local colleges of further education, which combine, in varying proportions, lower level work for training technicians and craftsmen with advanced courses leading to an academic degree or a professional diploma of degree standard. These colleges offer the full range of the course, either in full-time or in part-time study, but the degrees and diplomas are awarded by outside bodies. Yet another pattern of geographic dispersal of study facilities can be found in the communist countries of Eastern Europe, especially in the Soviet Union. In these countries there exists a vast network of specialised institutes, each offering professional studies in a particular field, and located as far as possible according to regional economic needs of the respective category of specialists.

What has here been termed „first-stage screening and feeder institutions” is designed not only to ensure a more even spread of higher education, but also to provide a response to the twofold challenge of a tremendous increase in enrolment figures and of alarmingly high wastage rates. Their object is to shield the more selective and high-pres-

tige institutions from an unmanageable and steadily swelling torrent of young people who satisfy the minimum university entrance requirements, but many of whom are likely to drop out without successful completion of their courses of study. „Sub-universities” like the French collèges universitaires or the American junior colleges dam up a considerable proportion of this torrent by offering the first part of a degree-credit course. In the United States one out of every four entrants to higher education starts his studies at a two-year college (in California the proportion is as high as 75 per cent), and it is anticipated that by 1975 junior colleges will enrol about half of the undergraduate students in the U.S.A. Those who successfully complete this first part of the course can proceed to a regular degree-granting college or university for the final stage of work towards a degree. Thus the latter institutions are enabled to employ their superior resources on more promising students and more advanced work.

There is another way to satisfy the swelling demand of formally qualified secondary school leavers for higher education, while at the same time protecting the high-prestige institutions from being flooded with entrants of dubious calibre. *Post-secondary establishments which in the past were not regarded as institutions of higher education are being upgraded to that status.* In the United States this happened twice in the course of the present century to teacher training institutions: At first their status was raised from two-year normal schools to four-year, degree-granting teachers colleges, and after the Second World War an increasing proportion of the latter have been transformed into liberal arts or State colleges, offering a wider range of studies beyond the preparation for teaching. But usually these institutions do not provide facilities for postgraduate studies. A similar policy was recommended by the Robbins Committee in Great Britain for teacher training colleges: these should offer opportunities for suitably qualified students to read for a bachelor's degree in education (but in contrast with the American arrangement, degrees should be awarded by a university with which the college would be associated or federated), and some of them should eventually broaden their scope to become liberal arts colleges. Only the first of these two recommendations has been accepted by the British Government.

Another example of such upgrading of post-secondary educational institutions is provided by colleges of further education in England. A certain number of these were raised in 1956 to the status of *Colleges of Advanced Technology*, with progressive concentration on full-time

study for degrees or equivalent diplomas, and these have now been upgraded for the second time to the status of technological universities, although the average entrance qualification of their students is lower than in universities. At the same time, courses leading to a degree or diploma of university standard have been provided to a growing extent in other colleges of further education, particularly in those designated as regional colleges, although still the vast majority of their students are enrolled in courses at the secondary level, training craftsmen and technicians. The same development is taking place in Australia. Of course, the chief motive of these steps has been to promote and expand technological education. But their effect was nevertheless diversion of less promising students from the universities proper. In Sweden, where a steadily growing proportion of the relevant age group is passing the „studentexamen”, it is planned to raise the entrance requirements to certain non-university post-secondary institutions for professional training (e.g. of social workers, physiotherapists etc) which in the past had not required the studentexamen. Here, too, the intention is to offer sufficiently attractive alternatives to qualified secondary school leavers, so as to divert part of them from the universities.

A third way of enticing formally qualified secondary school leavers away from the traditional type of higher education is the establishment, within the higher educational sector, of *institutions offering shorter courses towards less advanced degrees or diplomas, usually of semi-professional character* (high-grade technicians, etc). Such institutions stand between vocational or technical education at the secondary level and universities proper. In France, for example, University Institutes of Technology are to be established for the training of higher grade technicians and middle-grade executives in a two-year course, following the baccalauréat. In the United States the same function is being fulfilled by two-year junior colleges which, in addition to the first stage of degree-credit work, are offering vocational or terminal courses preparing for direct entry to employment. Plans for the establishment of similar colleges in Israel, designed to serve the same purpose, have been announced by the Minister of Education and Culture in 1966, but as yet no details are available. In Sweden the Federation of Engineers has proposed to organize at university level a two-year course leading to a degree in engineering at an intermediate level between that of a „civil engineer” (the degree obtained after completing a four-year course at a technological university) and a technician trained at the secondary level.

Such lower level professional qualifications are also designed to solve the problem of drop-out or „wastage”. Weaker students who prove unable to complete successfully a longer and more exacting course of study for a regular degree are offered an intermediate certificate that testifies to the successful completion of a shorter course, such as the „associate” degree taken after two years in a junior college in the United States.

The same purpose is achieved by breaking up the course leading to the traditional first degree into stages or cycles, and recognizing the successful completion of the first stage or cycle by an intermediate degree or diploma. In France, for instance, the course towards the „licence” in science, applied science, letters or law has been reorganised in such a way, and successful completion of the first two-year cycle of the course is sanctioned by the award of a university diploma of general scientific studies (*diplôme d'études scientifiques générales*), of practical literary studies, of higher technical studies, or of general legal studies. Students may terminate their studies at this stage and go into employment, without being counted failures or drop-outs. In Israel initially the master's degree was the first academic degree. The nominal duration of studies for this degree was four years, but in practice it took five to six years. In the fifties, when the rapid expansion of enrolments started, a bachelor's degree, taken after three years, was introduced. Similarly, the introduction of a bachelor's degree on the British model is planned in the Netherlands, in order to make a completion of studies after a shorter period possible.

In the communist countries of Eastern Europe a different method has been chosen for the protection of the regular institutions of higher education from the swelling stream of secondary school leavers, without depriving the latter of all opportunity to pursue higher studies and to acquire advanced professional qualifications. The admission to regular full-time studies is rigorously restricted by competitive entrance examinations, in addition to the secondary school leaving examinations. Those who are not accepted go into employment, but can obtain the regular degrees or diplomas by *evening or correspondence coursus*. No lower level or intermediate degrees or diplomas below the traditional first degrees are offered in these countries. Development plans for higher education in the communist countries usually envisage a more rapid expansion of such „study while you work” arrangements than of regular full-time study. Such part-time or correspondence courses are offered also in non-communist countries. But there they usually fulfil

a different function: They provide opportunities for higher education to those who cannot afford to interrupt their employment or to remove to centres of higher learning.

All these developments suggest a general hypothesis: Higher education, in the process of becoming more widely accessible, seems to follow the same patterns of evolution and transformation that were characteristic of secondary education when it became democratized and universal. In that case, too, *the concept of „secondary education” was broadened beyond the traditional selective and academic type of secondary schooling to include multifarious „tracks” and programmes of a less theoretical and abstract nature.* In that case, too, the swelling stream of adolescents interested in secondary education was *diverted from the traditional high-prestige schools* by the same methods as we encountered in higher education: Alternative institutions were opened for young people who were not interested in — or not adequate to — academic curricula (e.g. secondary schools for girls, secondary schools for commerce, etc.). Long courses were broken up into stages and cycles, and intermediate certificates were offered (e.g. *mittlere reife*, *brevet d'études des du premier cycle du second degré* — B.E.P.C., *real-examen*, etc.) of elementary schools became secondary modern schools, *écoles primaires supérieures* became *collèges modernes*, *cours complémentaires* became *collèges d'enseignement général*, etc.). Usually such upgraded institutions do not offer the full range of studies provided by the traditional academic secondary schools (e.g. secondary modern schools and *collèges d'enseignement général* do not offer courses beyond the intermediate certificate, *collèges modernes* do not provide classical studies), just as the upgraded institutions in the sphere of higher education do not offer postgraduate courses.

Even the transfer from first-stage screening and feeder institutions to more advanced institutions with a concentration of better qualified teachers and facilities for advanced work has its parallel in such British two-tier systems of secondary education as the Leicestershire scheme or a sixth form college fed by comprehensive secondary schools.

The French are even contemplating the introduction of a sort of “*cycle d'orientation*” into higher education: The jury of the examination at the end of the first university cycle is to counsel each student with regard to the course of further study that suits his aptitudes — whether to prepare a “*licence*” (one additional year) or a “*maitrise*” (two additional years), or to be transferred to a University Institute of Technology.

Just as in the case of secondary education, the policy of equalization of opportunities in higher education is likely to lead to parity of formal status but not of esteem between the various institutions and courses of post-secondary education, and the fierce competition for entry into the more rigorously selective institutions of high prestige is bound to be intensified. What has been predicted by Frank H. Bowles and Robert J. Havighurst¹ for the United States, is likely to become the pattern of development of higher education in most highly industrialized countries: There will be a dual system of higher education, and the gap between two types of institutions will probably widen. On the one hand, there will be institutions of relatively lower standard and prestige, offering courses that are either shorter in duration and of a more directly applied and concrete character or that can be taken in the form of part-time and correspondence study. (There is evidence that in the Soviet Union evening and correspondence courses, though leading to the same degrees and diplomas as regular full-time study, are of inferior quality and esteem, and this has been confirmed by a resolution of the U.S.S.R. Council of Ministers of April 1964 on the improvement of higher correspondence and evening education). These institutions of lower standard and prestige will be easy of access for all candidates who satisfy formal minimum requirements for entrance. Their principal function will be teaching undergraduates, and relatively little research will be carried out by their staff. Their facilities and equipment will be less elaborate. Hence they will attract less highly qualified staff. On the other hand there will be institutions of high standard and prestige, offering longer courses of a more academic and theoretical type (this includes also the „applied” sciences), and providing opportunities for postgraduate and doctoral studies. They will be rigorously selective, and admit students who are far above the minimum entrance standards. They will attract the more highly qualified staff, will have better facilities for advanced study and research, and their function will be a mutually fertilizing combination between teaching and research. All these are in fact but extrapolations of trends which are already clearly observable in several countries.

That takes us back to my opening remarks. Higher education in the industrially highly developed nations may well be on its way to become universal — it all depends upon what you mean by „higher education”.

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